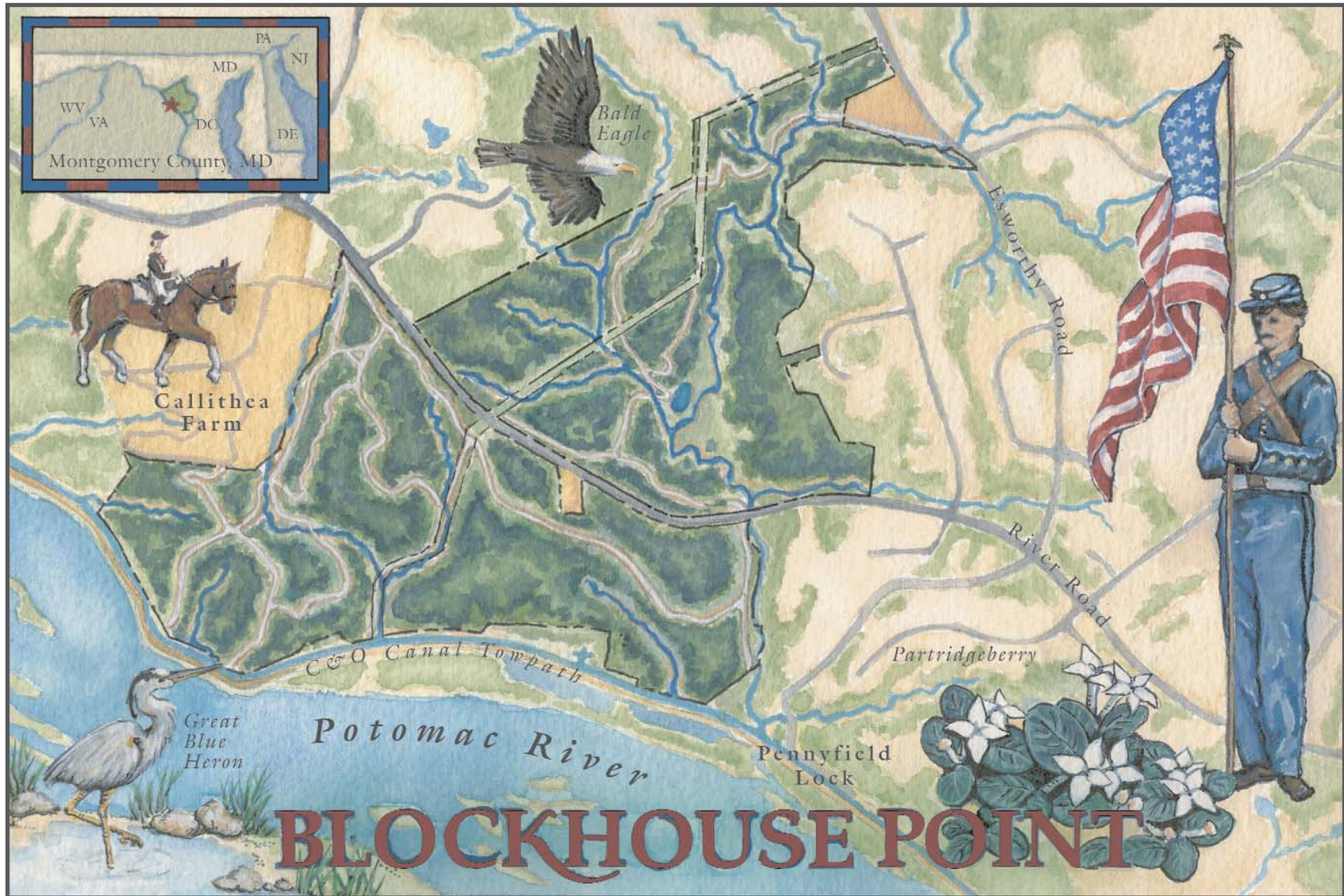


Blockhouse Point Conservation Park Master Plan



Maryland - National Capital Park & Planning Commission
Montgomery County

Abstract

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Abstract	<i>This Master Plan provides background materials, describes the planning process and outlines a plan for the development of Blockhouse Point Conservation Park. It contains materials on natural and cultural resources, needs assessments, implementation strategies and cost estimates.</i>

Blockhouse Point Conservation Park Master Plan



Approved and Adopted December 2003

*The Maryland-National Capital Park & Planning Commission
8787 Georgia Avenue, Silver Spring, MD 20910*

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Montgomery County, Maryland.

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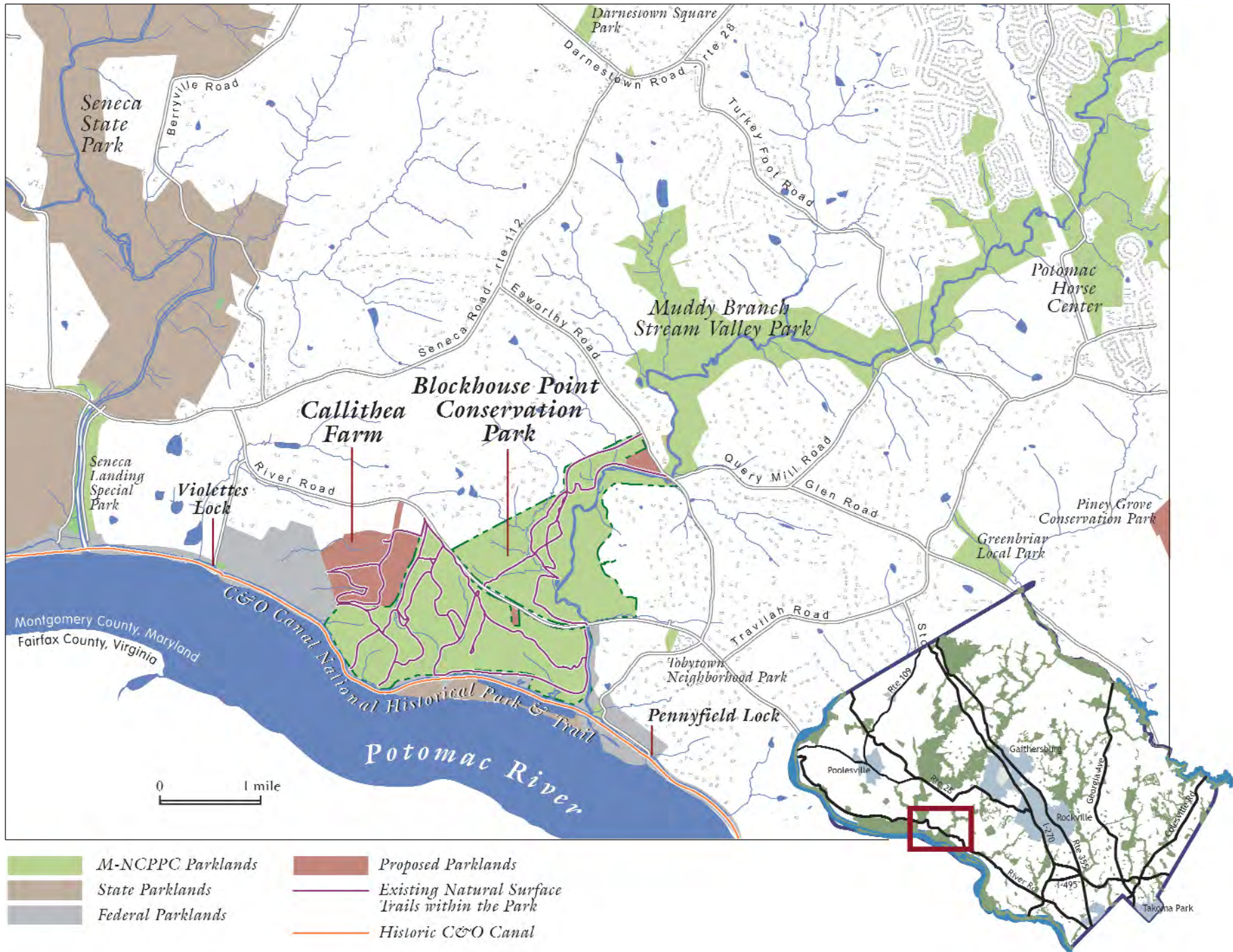
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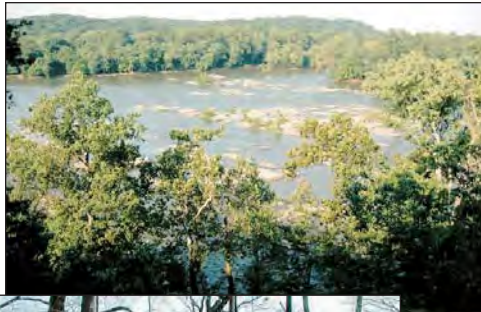
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2 Figure 1. Blockhouse Point Vicinity Map



Introduction



This park master plan provides a policy rationale for balancing stewardship of natural and cultural resources with recreation in Blockhouse Point Conservation Park. Goals of the plan are as follows:

Preserve and enhance natural and cultural resources.

Provide opportunities for recreation.

Provide connections to adjacent parks and regional trail systems.

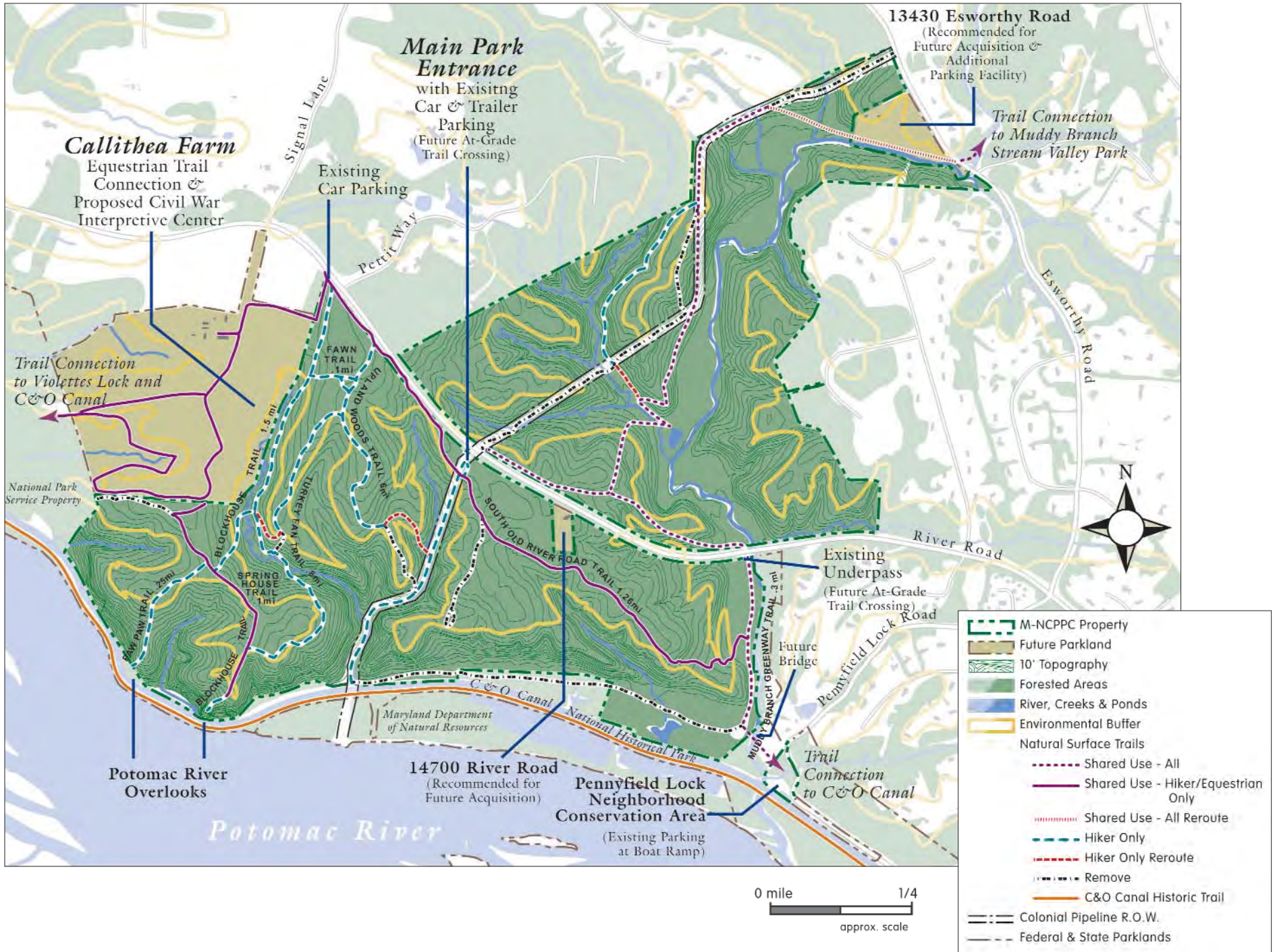
Interpret natural and cultural history.

Blockhouse Point Conservation Park is located at 14750 River Road, Darnestown, MD and encompasses approximately 630 acres (*fig. 1, page 2*). It lies between the C&O Canal to the south and Esworthy Road to the north and is bisected by MD Route 190, River Road. Muddy Branch stream valley defines the park's eastern boundary. Callithea Farm, a 97 acre, equestrian facility, lies adjacent to the park on its southwestern side. Pennyfield Lock Neighborhood Conservation Area, a 1.9 acre community-use park, lies just east of the C&O Canal National Historic Park on Blockhouse Point's southeastern corner. Pursuant to recommendations in the Potomac Master Plan (M-NCPPC, 2002), Callithea Farm is being acquired as public parkland.

The park contains a variety of exceptional resources. Natural features include mature upland forest, floodplain forest, palustrine wetlands, streams, river-rock outcrops, at least 9 species of threatened, endangered, or watchlist plants, a diversity of wildlife and grand views of the Potomac River and C&O Canal. In addition to its rich natural history, Blockhouse Point Conservation Park also contains some important remnants of American history. The 19th Regiment Massachusetts Volunteer Infantry built three blockhouses in 1862 to guard Violette's Lock and Pennyfield Lock on the C&O Canal. The earthen rampart remains of one of the blockhouses are located in the park. In fact, the original Greek Cross design of the blockhouse is discernable to the careful observer.

Based on the exceptionally high quality of its natural and cultural resources, its intrinsic natural beauty - especially the breath-taking views of the Potomac River, and its size, staff consider Blockhouse Point Conservation Park one of the top five conservation parks in the County Park System. Others include Rachel Carson, Hoyles Mill, the Potomac Serpentine Barrens, and the River Road Shale Barrens.

above: The changing seasons along the Potomac River
viewed from the Blockhouse Point Scenic Overlooks.

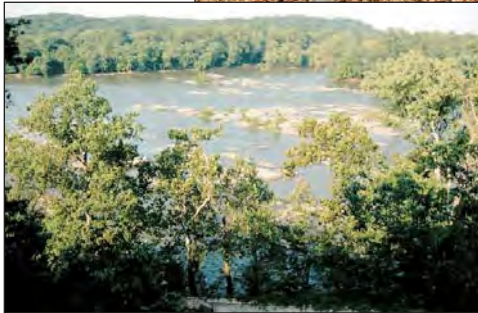


4 Figure 2. The Plan Map



Plan Concepts

- Protection of Natural & Cultural Resources -*
- Park Trails -*
- Interpretation -*
- Additional Park Acquisition -*



Protection of Natural & Cultural Resources

This master plan identifies those natural and cultural resources in Blockhouse Point Conservation Park needing special care, protection and management and provides recommendations to ensure that these resources are preserved for future generations. The biggest threats to these resources are:

- Impacts from non-native species including invasive plants & gypsy moths.*
- Overpopulation of white-tailed deer.*
- Vandalism and theft of valuable historical and archaeological artifacts.*
- Unauthorized trail construction and/or use.*

Park Trails

This master plan provides for public access to the park via a system of natural surface trails connecting with Muddy Branch Stream Valley Park to the north, the C&O Canal and Pennyfield Lock Neighborhood Conservation Area to the south, and Callithea Farm to the west. The majority of trails are proposed as “hiking only”. However, a few are designated for “hikers and equestrians” or “all users, e.g., hikers, equestrians, and bikes.”

Interpretation

This master plan recommends development of signage and thematic programs focusing on natural history, archaeology, and American history. Interpretive signs and programs will foster an appreciation for the park’s exceptional natural and cultural resources and promote stewardship.

Additional Park Acquisition

This master plan recommends acquisition of properties located at 14700 River Road and 1340 Esworthy Road. The former property includes high quality upland forest and is surrounded by parkland to the west, south and east and by River Road to the north. The latter property would provide important access to Blockhouse Point Conservation Park at its northern boundary and provides a sustainable trail connection to Muddy Branch Stream Valley Park.

top: A prime specimen beech tree.

bottom: The breath taking view from the north overlook.



Countywide Park Trails Plan

Adopted July 1998 & Amended February 2002

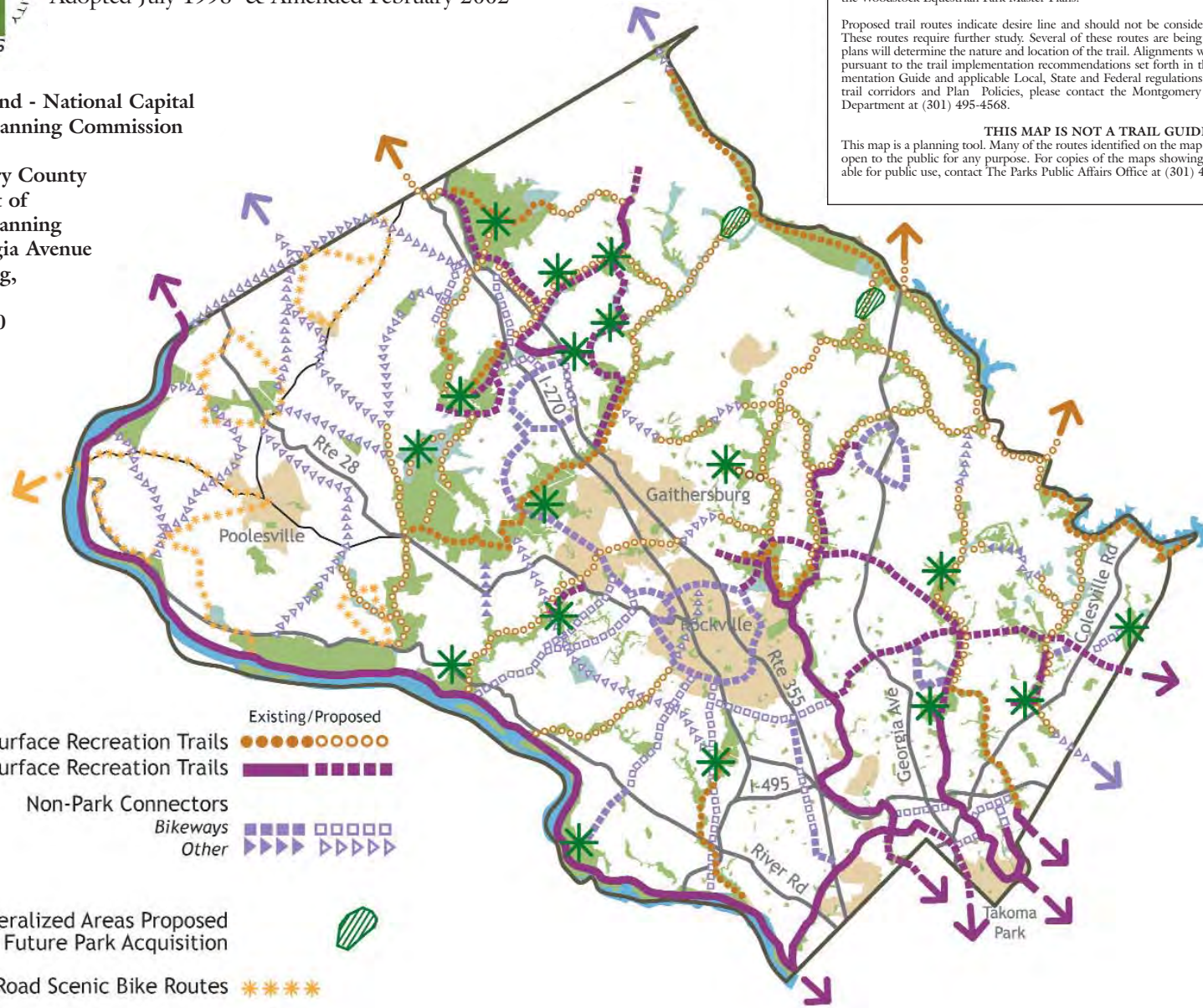
The Maryland - National Capital
Park and Planning Commission

Montgomery County
Department of
Park and Planning
8787 Georgia Avenue
Silver Spring,
Maryland
20910-3760

NOTE
This map was recently amended to reflect changes made by the Muddy Branch SVP Trail Plan and the Woodstock Equestrian Park Master Plans.

Proposed trail routes indicate desire line and should not be considered specific trail alignments. These routes require further study. Several of these routes are being studied and relevant master plans will determine the nature and location of the trail. Alignments will be selected and developed pursuant to the trail implementation recommendations set forth in the Plan text, the Plan implementation Guide and applicable Local, State and Federal regulations. For further information on trail corridors and Plan Policies, please contact the Montgomery County Park and Planning Department at (301) 495-4568.

THIS MAP IS NOT A TRAIL GUIDE
This map is a planning tool. Many of the routes identified on the map are simply proposed and not open to the public for any purpose. For copies of the maps showing existing trails that are available for public use, contact The Parks Public Affairs Office at (301) 495-2503.

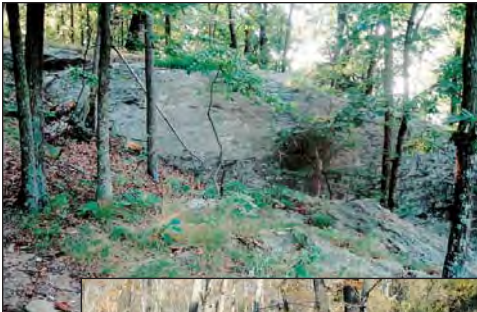


- Existing/Proposed
- Natural Surface Recreation Trails
- Hard Surface Recreation Trails
- Non-Park Connectors
- Bikeways
- Other
- Generalized Areas Proposed for Future Park Acquisition
- On Road Scenic Bike Routes
- Regional/Recreational Destinations



Relationship to Other Plans

- Park Recreation & Open Space Master Plan* -
- Countywide Park Trails Plan* -
- Potomac Master Plan* -
- Muddy Branch Stream Valley Park Trail Plan* -
- Trail Plan for Blockhouse Point Conservation Park* -



This Master Plan interfaces and relies on the varied planning documents below:

The Park Recreation & Open Space Master Plan (PROS) (M-NCPPC, 1998)

The PROS Plan describes conservation parks as: "Generally large areas that preserve specific natural, archaeological, or historical features; are typically located in upland areas; and are acquired specifically for environmental preservation purposes. Conservation parks may include outstanding examples of natural communities, self-sustaining populations of rare, threatened, or endangered plant and animal species, or unique archeological and historical resources. Given the sensitive nature of the resources in conservation parks, development is very limited and generally restricted to passive recreation areas and opportunities such as trails, fishing and picnic areas, and nature study."

The (CWPTP) Countywide Park Trails Plan (M-NCPPC, 1998)

The CWPTP (*fig. 3, page6*) originally proposed both a natural surface trail and hard surface trail paralleling Muddy Branch from the City of Gaithersburg to the C&O Canal through Blockhouse Point Conservation Park. However, the Plan noted that conflicting public policy existed as to the types of trails that should be in the Muddy Branch stream valley (including Blockhouse Point Conservation Park) and proposed that final decisions on trail surfaces should await the Potomac Master Plan Update.

Master Plan for the Potomac Subregion (M-NCPPC, 2001)

The Potomac Master Plan noted that the location of park trails are generally decided in the context of park and trail master plans rather than community master plans. For this reason, a separate trail plan, i.e., the Muddy Branch Stream Valley Park Trail Plan, was recommended for the Muddy Branch Stream Valley corridor between the City of Gaithersburg and the C&O Canal.

above: Rock outcrops and natural surface trails are among the very cherished features of Blockhouse Point Conservation Park.

The Muddy Branch Stream Valley Park Trail Plan (M-NCPPC, 2001)

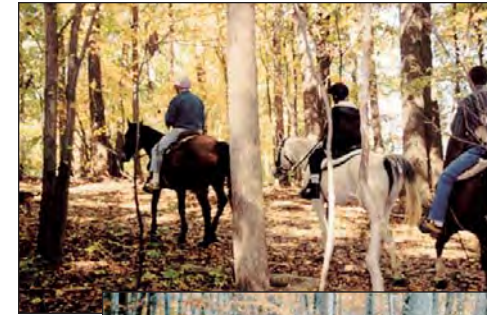
During the Planning Board’s January 2002 worksession on the muddy Branch Stream Valley Park Trail Plan, the Board agree to amend the Countywide Park Trails Plan to:

- 1) Remove the hard surfaces trail proposal from the Blockhouse Point Conservation Park and Muddy Branch Stream Valley Park Units 1 & 2 but retain the hard surface trail proposal for Muddy Branch Stream Valley Park Unit 3 (e.g., between Quince Orchard Road and MD Route 28); and
- 2) Recommend that a final decision as to whether or not to construct the hard surface trail await completion of a Facility Plan.

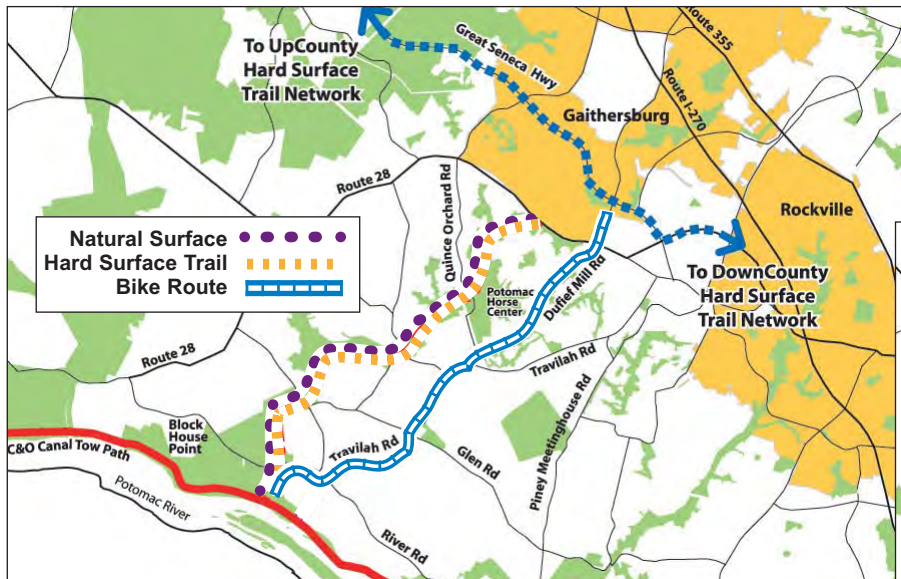
Note: The Facility Plan will address environmental issues listed in the Muddy Branch Stream Valley Park Trail Plan. Funding for the plan has not yet been provided in the Department’s CIP.

The Trail Plan for Blockhouse Point Conservation Park (M-NCPPC, 1989)

The plan established an "official" trail system, provided a trail connection to Callithea Farm, and designated trails as hiking only or joint-use hiking/equestrian.

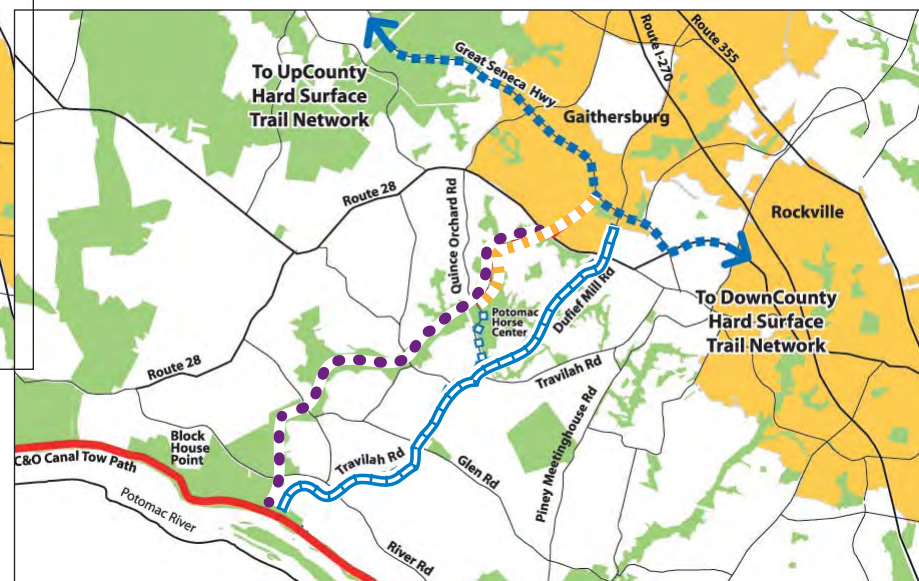


above: Park Trail Users.



ABOVE: The original trail proposal called for both a natural and a hard surface trail connection between Gaithersburg and the C&O Canal.

RIGHT: The most recent plan removes the hard surface trail from the Muddy Branch Stream Valley south of Quince Orchard Road and instead relies on "on-road" connections.



The Muddy Branch Stream Valley Park Trail Plan was recently updated to relocate the hard-surface portions of the trail outside the stream valley south of Quince Orchard Road.



Natural & Cultural Resources

*Inventory of Natural Resources -
Inventory of Cultural Resources -*



above: Civil War era fireplace hearth;
one of the Park's extra special cultural resources.

below: Rob Gibbs, M-NCPPC Natural Resource Manager,
measures the girth of one of the largest trees in the park.



Inventory of Natural Resources

Geology

From the high rock promontories on the southern edge of the park, one can view the Potomac River, cutting through the last major obstacle in its' journey from the Appalachians to the Atlantic. This is a zone of transition where the river leaves the Piedmont through a series of falls and ledges, the largest of which is Great Falls, and then enters the unconsolidated sands and gravels of the Coastal Plain below Little Falls. This "fall zone" swings in a wide arc from Trenton, New Jersey to Macon, Georgia.

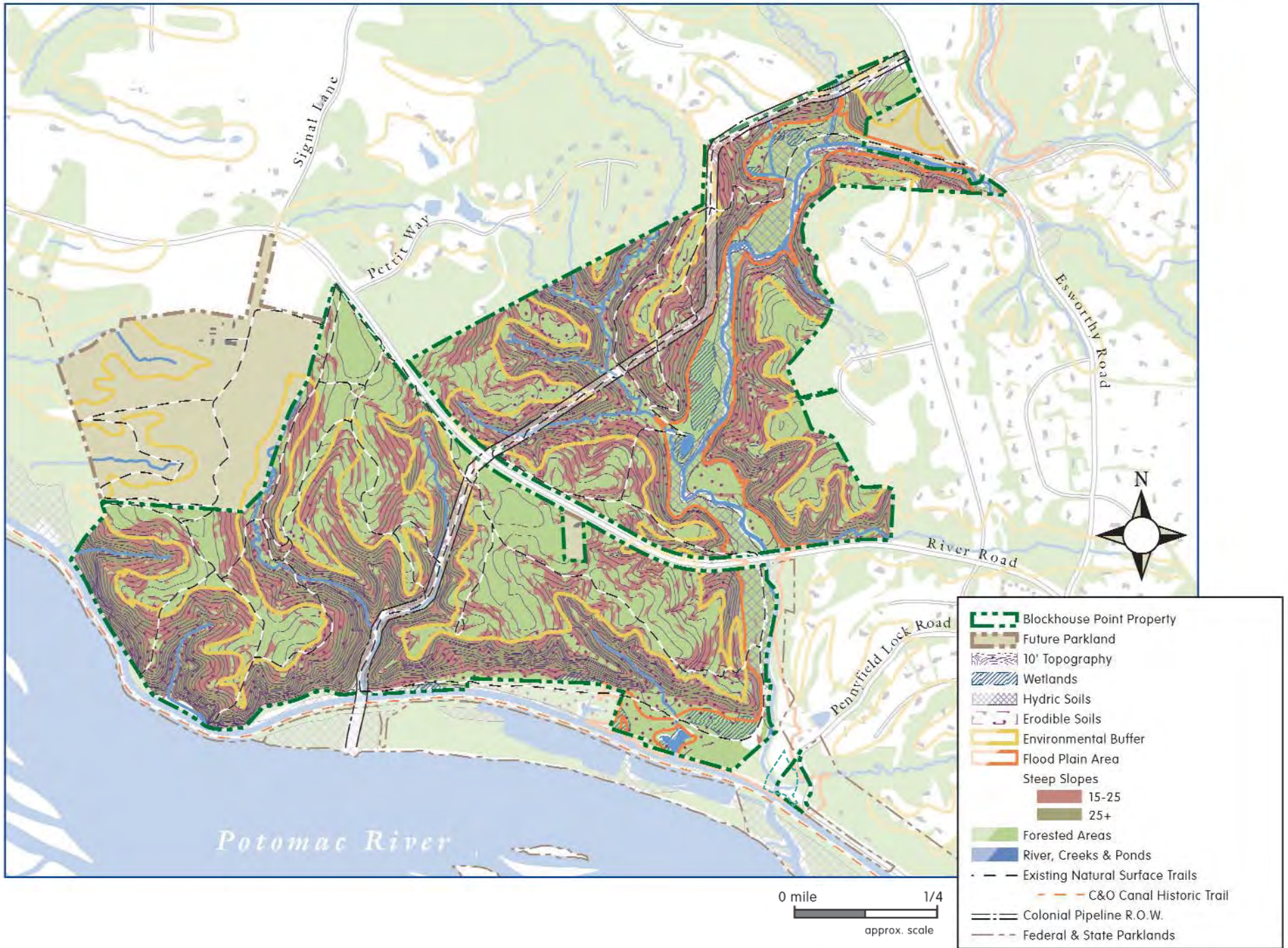
The bedrock underlying Blockhouse Point Conservation Park is made up of hard, crystalline, metamorphic formations of Wissahicon Schist. These formations began as marine sediments of mud and sand that were transformed over time into mudstones and shale. Under intense heat and pressure while buried deep within the earth, they were transformed into the rocks we see today. These rocks were brought to the surface by forces of uplift and the overlying rocks eroded to the west. As the erosion followed uplift, fractures formed in the cooling rocks allowing molten materials of other types to intrude the rocks. These fractures are in evidence in the form of quartz dikes, soapstone, serpentinite and other outcrops within the park. When standing on the overlooks in the park today, one stands on rocks that are over 500 million years old.

Topography is steep and hilly with elevations ranging from 180 to 395 feet. Just to the west of the park, from Seneca to Point of Rocks, the terrain is largely flat with gently rolling relief. This is the Frederick Valley and was formed from the softer, more erodable red sandstones deposited during the Triassic Period, about 200 million years ago.

Visitors to the park today, enjoying the spectacular views of the Potomac River and Valley are witness to over a half-billion years of geologic history. Listening to the rush of the water below reminds us that this is an ongoing process as the Potomac continues to cut through the ancient rocks.

Soils

Soils in the upland areas of BHPCP are dominated by the Blocktown channery silt loam series (116 C-E). Slopes range from 8 to 45%. These soils are shallow (10-20" to bedrock) with areas of rock outcrop especially on steep slopes. They are well drained with moderate permeability and very low available water capacity. The potential productivity for trees on this soil is moderately high though seedling mortality is a moderate hazard due to very low available water capacity. Hazard of erosion is low to moderate on slight slopes to severe on steep slopes. Rock outcrops dominate on steep slopes along the



10 - Figure 5. Natural Resource Inventory Map

Potomac River. The floodplain of Muddy Branch is dominated by Hatboro silt loam, with 0 to 3 percent slopes. These soils are very deep, poorly drained and prone to flooding. The water table is usually within 6 inches of the surface in late winter and early spring. Permeability is moderate and available water capacity is high. The potential productivity for water-tolerant trees is moderate. Both upland and floodplain soil types are susceptible to compaction by livestock during wet periods.

Slopes

Terrain of BHPCP is best described as rolling to steeply sloping. The steepest slopes (15% and greater) are hydraulically adjacent (within 200' of the stream bank) of the Muddy Branch or its tributaries. The flood plains are narrow along most of the tributaries, becoming broad along the main stem of Muddy Branch.

Hydrology

BHPCP is drained by Muddy Branch and several of its tributaries as well as by several streams which flow directly into the C&O Canal; Muddy Branch flows directly into the Potomac River. All of the streams within BHPCP are designated by the State of Maryland as Use I-P (suitable for water contact recreation and public water supply). According to the Countywide Stream Protection Strategy (CSPS; MCDEP, 1998), the portion of Muddy Branch within the park is in good biological condition and is designated as a watershed protection area (regular level). The streams that drain to the canal are in the area designated by the CSPS as Potomac Direct 6. The CSPS did not evaluate the biological condition of this area but did designate it as a watershed protection area (regular level).

Although Muddy Branch is entirely within parkland in BHPCP and the C&O Canal National Park, its headwaters are in the City of Gaithersburg and most tributaries originate outside of parkland. As Muddy Branch flows south through less densely developed areas the biological conditions improve. Some of the tributaries that flow directly into the canal originate within the park, but several originate outside of parkland and are impacted by land use.

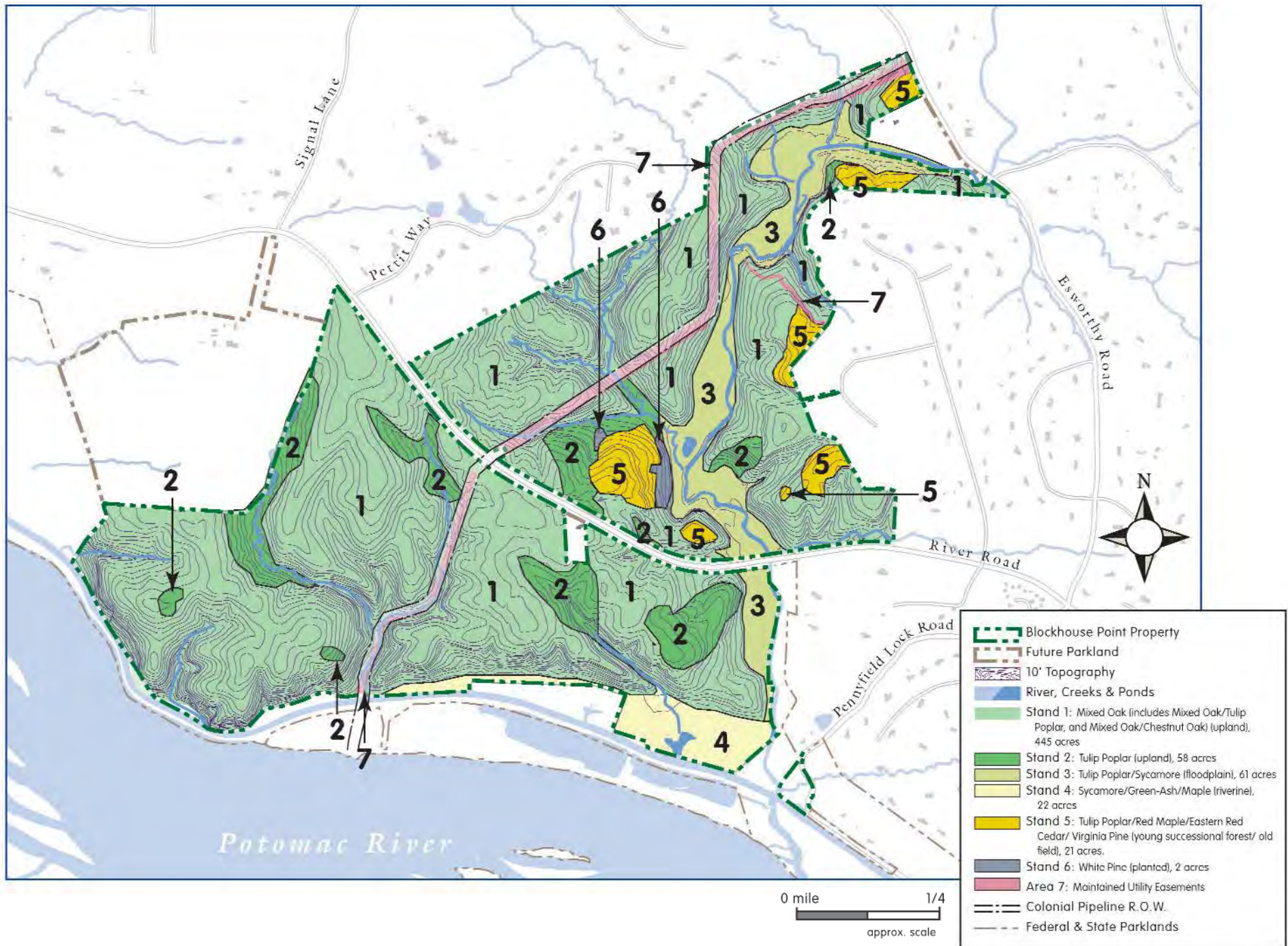
Vegetation Overview

The 630 acre Blockhouse Conservation Park represents one of the largest blocks of contiguous upland forest in Montgomery County. It is an exceptionally scenic area with high rocky bluffs above the Potomac River, expansive wetlands and floodplain forests along the river, high quality interior forest, steep-sided forested ravines, and a number of seep-spring areas. The park encompasses approximately 283 acres north and 347 acres south of River Road, and includes the lower Muddy Branch stream valley. A forest stand delineation map showing general forest types, stages and other habitats is included in the appendix.

The huge majority of Blockhouse Point Conservation Park is a diverse, maturing, second growth forest with good forest structure -- high canopy and well developed shrub levels, with very few Non-Native Invasive Species. Acreages of high quality mixed deciduous forest and oak/hickory-dominated forest extend in the uplands both north and south of River Road. Chestnut oak (*Quercus prinus*), white oak (*Q. alba*), red oak (*Q. rubra*), tulip poplar (*Liriodendron tulipifera*), mockernut hickory (*Carya tomentosa*), and pignut hickory (*C. glabra*) are common tree species in the upland stands, with dominant trees in the 18 to 25" dbh range. Scattered larger specimen are seen, with a number of chestnut and red oak, tulip poplar, and American beech measuring between 28 and 35" dbh. Large specimens of Virginia pine (*Pinus virginiana*), white ash (*Fraxinus Americana*), and American beech (*Fagus grandifolia*) are also commonly seen, as well as tupelo (*Nyssa sylvatica*), and red maple (*Acer rubrum*). Occasionally, black birch (*Betula lenta*) and shag-bark hickory (*Carya ovata*), both uncommon species in Montgomery County, are noted, as well as American chestnut (*Castanea dentata*) re-sprouted saplings.

Despite the obvious deer predation problem at Blockhouse Point, the understory is generally well developed and commonly includes sizable thickets of mountain laurel (*Kalmia latifolia*), low bush blueberry (*Vaccinium vacillans*), native azalea (*Rhododendron periclymenoides*), spicebush (*Lindera benzoin*), and some what surprisingly, enlarging patches of paw-paw (*Asimina triloba*), in the upland areas. Other noted small tree/shrub species include high-bush blueberry (*Vaccinium corymbosum*), witch hazel (*Hamamelis virginiana*), serviceberry (*Amelanchier canadensis*), musclemwood (*Carpinus caroliniana*), and dogwood (*Cornus florida*).

While the herbaceous layer in the upland forest at Blockhouse point is somewhat sparse, a number of ferns including Christmas fern (*Polystichum acrostichoides*), New York fern (*Thelypteris novaboracensis*), hay-scented



12 - Figure 6. Forest Stand Delineation Map

fern (*Dennstaedtia punctilobula*), broad beech fern (*Thelypteris hexagonoptera*), and ebony spleenwort (*Athyrium platyneuron*), along with a number of small flowering plants and vines including spotted wintergreen (*Chimaphila maculata*), partridgeberry (*Mitchella repens*), white wood aster (*Aster divaricatus*), wild licorice (*Galium circaezans*), club mosses (*Lycopodium flabelliforme*) and (*L. obscurum*), Virginia creeper (*Parthenocissus quinquefolia*), greenbriar (*Smilax rotundifolia*) and sweet cicely (*Claytonia longistylus*) were noted.

Gypsy moths did damage the Blockhouse Point forests during the late 1980's and as the cyclical population growth of gypsy moths is on the upswing again, care should be taken to prevent large amounts of defoliation in the future to this predominantly oak forest. As mentioned previously, the growing deer population is a real concern in Blockhouse Point Conservation Park. Regeneration of native woody species is basically at a standstill at this point due to deer predation. Non-native invasive plants are not absent from Blockhouse Point forests-Japanese honeysuckle (*Lonicera japonica*), Garlic mustard (*Alliaria petiolata*), Vietnamese stiltgrass (*Microstegium vimineum*), and Asiatic bitter-sweet (*Celastrus orbiculatus*) among others were all noted in the park. Currently, however, Blockhouse Point is one of the M-NCPPC parks least affected by non-native invasives.

Floodplain and stream buffer acreages in Blockhouse Point are dominated by tulip poplar (*Liriodendron tulipifera*), sycamore (*Platanus occidentalis*), silver maple (*Acer saccharinum*), and red maple (*A. rubrum*). Dominant trees are in the 18 to 25" dbh range. River birch (*Betula nigra*), mixed oaks- especially pin oak (*Quercus palustris*) and red oak (*Q. rubra*), slippery and American elm (*Ulmus rubra* and *U. americana*), black willow (*Salix nigra*), and hackberry (*Celtis occidentalis*) are also seen in the floodplain areas of Blockhouse Point Park. A few individual swamp white oak (*Quercus bicolor*), uncommon trees in Montgomery County parks, were noted in the floodplain areas.

Spicebush (*Lindera benzoin*) is the dominant shrub in under story floodplain communities. Also commonly noted were musclewood (*Carpinus caroliniana*), arrow wood (*Viburnum dentatum*), pawpaw (*Asimina triloba*), and poison ivy (*Rhus radicans*). As on many other MNCPPC park properties, the herbaceous layer is much fuller in the floodplain forest than in the upland forest of Blockhouse Point. Herbs and vines commonly seen include Jack-in-the-pulpit (*Arisaema triphyllum*), wingstem (*Actinomeris alternifolia*), stinging nettle (*Urtica dioica*), avens (*Geum* spp.), wild ginger (*Asarum canadense*), Indian cucumber (*Medeola virginiana*), sweet cicely (*Claytonia*

longistylus), enchanters nightshade (*Circaea quadrifida*), bloodroot (*Sanguinaria canadensis*), hog peanut (*Amphicarpa bracteata*), Virginia Knotweed (*Tovara virginiana*), Naked-flowered Tick Trefoil (*Desmodium nudiflorum*), greenbriar (*Smilax rotundifolia*), grape vine (*Vitis* spp.) among others. Fern species cover areas of floodplain including hayscented fern (*Dennstaedtia punctilobula*), sensitive fern (*Onoclea sensibilis*), Christmas fern (*Polystichum acrostichoides*), New York fern (*Thelypteris novaboracensis*).

Non-native species are more in evidence in the floodplain areas of Blockhouse Point Park than in the upland forests. While the amount of non-native coverage is still low here in comparison to all other MNCPPC properties, a number of non-native invasives including Japanese honeysuckle (*Lonicera japonica*), multiflora rose (*Rosa multiflora*), Vietnamese stiltgrass (*Microstegium vimineum*), and garlic mustard (*Alliaria petiolata*) are present.

Beyond a general description of the high quality contiguous forested areas of Blockhouse Point, a word should be said about other special habitats that exist in the park where a number of uncommon plant communities exist. Between 1992 and 1999, Maryland Department of Natural Resource Heritage Botanists conducted 3 separate surveys at Blockhouse Point and identified several significant habitats and communities, as well as a number of endangered, threatened and watchlist plants. Both along Muddy Branch and in the steeply sloped trib areas north of River Road, and south of River Road adjacent to the federally owned Canal National Historic Park are rock outcrop areas, which support locally less common plant communities. There are additionally several higher quality swamp areas in Blockhouse Point Park, especially south of River Road, where lizard's tail (*Saururus cernuus*), arrow arum (*Peltandra virginica*), crested wood fern (*Dryopteris cristata*), marsh fern (*Thelypteris palustris*), monkey flower (*Mimulus moschatus*), and large colonies of skunk cabbage (*Symplocarpus foetidus*) live.

Wildlife

The wildlife present in any location is dependant on the habitat that is available to support various species. BHPCP provides large areas of contiguous, mature, high-quality forest habitat totaling nearly 600 acres. The forest is divided into four tracts by River Road and the gas pipeline that intersect near the center of the park. Individual contiguous forested tracts are 185, 153, 70, and 185 acres in size. Large contiguous forest is a habitat that is becoming increasingly scarce in the county as development continually frag-

ments woodlands into smaller and smaller parcels. Forest interior dwelling (FID) species require large unbroken tracts of forest to successfully breed. Many FIDs, especially birds, have been declining dramatically in recent decades. Thus BHPCP is especially important for this group of species.

Other habitats in BHPCP include meadows that run along the gas pipeline, small areas of young successional forest growth, a small plantation of large white pines, a man-made pond, several small wetland seeps, the C&O Canal and adjacent wetlands, and Muddy Branch Stream. This mosaic of habitats provides for a wide variety of terrestrial wildlife.

Wildlife inventory work has been conducted in the park sporadically since 1985. Below is a summary of breeding birds, other terrestrial wildlife species and fish found in BHPCP. A species list is included in the appendix. Most of the species have been documented by Park staff through sightings, tracks, calls and trapping efforts. Additional species are sure to be added as inventory work continues in the future.

Birds

Birds are excellent indicator species for evaluating habitat quality and making inferences about habitat suitability for other species. Breeding bird surveys were conducted in the park in June 1995 as part of the Montgomery County Parks Breeding Bird Census and Mapping Project. Observations of birds were also recorded on other field visits. Over 38 species of birds were detected as breeding in the park. The list includes a number of forest interior species such as Kentucky warbler, Louisiana waterthrush, scarlet tanager, ovenbird, worm-eating warbler, pileated woodpecker, great horned owl and barred owl indicating a high quality forest.

Bald eagles have bred along the Potomac River near Great Falls, about 6 miles southeast of BHPCP, for the past fifteen years. Historically eagles nested along the Potomac as far upstream as Hancock, Maryland. BHPCP could provide a relatively secluded location for eagles to nest.

Other Terrestrial Wildlife

In addition to birds, BHPCP is home to an impressive diversity of other terrestrial wildlife species including at least 20 species of mammals, 7 reptiles, and 10 amphibians. Mammals include common species like white-tailed deer and gray squirrels as well as less common species like mink and river otters. Reptiles include most of the common species of the county as well as some that are less common including hognose snake, queen snake, and five-lined skinks. Vernal pools and wetlands provide breeding habitat for spotted salamanders, wood frogs, spring peepers and other amphibians.

Stream Fisheries

In 2001, fish were sampled on the mainstem of Muddy Branch and on a tributary to Muddy Branch. Both sampling sites are located upstream (north) of River Road. Fish were sampled on two small tributaries that flow into the canal. Both sites are south of River Road; the two streams that were sampled join together before flowing into the canal. Due to drought conditions, the smaller streams held few or no fish. Of the two streams that flow to the canal, one held only blacknose dace (*Rhinichthys atratulus*) and the other held no fish. Blacknose dace are very tolerant of a variety of stream conditions, including low flow. These two streams are likely to have limited fish populations even in good years, because the stream which they form at their confluence flows directly into the canal through a pipe and there is a significant drop between the end of the pipe and the normal water level in the canal, making it difficult for fish to enter the stream from the canal.

The tributary of Muddy Branch held only blacknose dace and creek chub (*Semotilus atromaculatus*). Creek chubs are similar to blacknose dace in their tolerance of adverse conditions. The mainstem of Muddy Branch, in contrast to the smaller streams, held 17 species of fish, including two species - mottled sculpin (*Cottus bairdi*) and northern hogsucker (*Hypentelium nigricans*) - which are considered to be intolerant of pollution.

A complete list of species found during the 2001 sampling in BHPCP is found in the Appendix.

Indices of biological integrity (IBIs) were calculated for three of the four sampling sites; an IBI cannot be calculated if no fish are found, but a site with no fish is rated as "poor". IBIs rate a site as poor, fair, good, or excellent, with excellent sites being comparable to the best quality sites in the county. The tributary that flows to the canal and the tributary of Muddy Branch both received scores of "poor", largely due to the small number of species and small total numbers of fish. However, the site on the mainstem of Muddy Branch received a score of "good".

This section of Muddy Branch contains sufficient numbers of small-mouth bass (*Micropterus dolomieu*) and several species of sunfish (*Lepomis* sp.) to provide a modest recreational fishery.

Inventory of Cultural Resources

Inventory of Archaeological & Historic Resources

BHPCP is rich in both prehistoric and historic cultural resources. A brief overview is provided below. A more in-depth discussion and chart of these important resources and accounts of the areas history ranging from early Indian cultures through the civil war are located in the Appendix.

Situated on Montgomery County's primary waterway, Blockhouse Point Conservation Park contains the highest number of archaeological sites of any park in the County. To date, 35 sites have been discovered in the Park, 33 prehistoric and two historical examples.

For now, the prehistory of Blockhouse Point begins with the Late Archaic, Hunting and Gathering Period (300 B.C. to 1000 B.C.). Based on projectile point types from sites #2 and #31, made in the Savannah River style, this Broadblade tradition is based exploitation of riverine environments. An Early Woodland era (agricultural period) occupation (Kawecki III) is present in the shape of a small, notched Calvert Point (1000 B.C. to A.D. 300). These camps are, probably, dry season short-term varieties occupied in the fall and winter for hunting game or during the anadromous fish runs through March and June.

The earliest historical site in the Park is the Wheeler/Didenhover Mill and race on Muddy Branch (18MO390), offered for sale in 1782 and operated down into the early nineteenth century when William Didenhover placed an add for his failing and dying business in the Frederick Town Herald in 1815. At the time of the Civil War, it was owned by William and Sarah Reading.

Known as the Camp at Muddy Branch (18MO542), the blockhouse at Blockhouse Point was built in January and February of 1862 by the officers (Captain James Russell and Lieutenant Samuel Baxter) and men of the Nineteenth Regiment Massachusetts Volunteer Infantry.

On July 11, 1864, Confederate Colonel John Singleton Mosby of the 1st Virginia Partisan Rangers, which included a number of recruits from Montgomery County, crossed the Potomac River to support General Jubal Early's strike at Washington, D.C. At Blockhouse Point, they found the deserted camp of the 8th Illinois Cavalry, which they burned.

The camp at Blockhouse Point is the only example of such a Civil War campsite left undisturbed in the entire Washington Metropolitan area. Still visible on the site are the ground works of the blockhouses, tent structures and hearths. Archaeologically, it has tremendous interpretative interest for

the general public in yielding information, not only about little known aspects of the Civil War in Montgomery County, but also about the unrecorded lifeways of the everyday soldier. At Blockhouse Point, we have an opportunity to add to our scant knowledge of blockhouse and bivouac construction techniques, everyday camplife and guard duties. The blockhouse, itself, was built in the form of a "Greek cross". Here, we can unravel the interaction between armies and civilian populations. Here, we can interweave camps, farms, roads, canals and waterways to uncover the impacts and effects of the War on a local environment and region.

Blockhouse Point remained in the Reading family until sold to Randell and Roselyn Patten in 1947. It was acquired by the Maryland-National Capitol Park and Planning Commission in 1970 (See appendix for additional historical information).



above: A 1937 aerial view of the Blockhouse Point Conservation Park area.



The Park Today



above: The parking lot & trailhead at the main entrance to the park.

below: Citizens meeting with M-NCPPC staff for a tour of the park and its valuable resources.



- Acquisition -*
- Existing Facilities and Structures -*
- Current Park Use -*
- Adjacent Land Use & Zoning -*
- Trends -*
- Future Potential Users -*

Acquisition

The first acquisition of property that is now included in BHPCP was made in 1967 as part of the Muddy Branch Stream Valley Park. Acquisition south of River Road specifically for a conservation park began in 1970. In the late 1980s the area north of River Road, formally part of the Muddy Branch Stream Valley Park, was renamed and added to BHPCP. The most recent purchase was 36 acres bought in 1980. A portion of the funds (\$1,205,865) came from grant money - \$646,000 from the Department of Interior's Land & Water Conservation Fund and \$560,000 from the State of Maryland's Program Open Space. In total 628.89 acres have been purchased to date at a cost of \$3,522,645.

Existing Facilities and Structures

Park staff currently maintains two gravel parking lots at BHPCP. Both are located along the south side of River Road. The larger lot, located in the center of the park where a gas line right-of-way crosses River Road, allows parking for approximately 25 cars and space for two to three horse trailers to access the lot and turn around. There is a park sign at the lot entrance and a kiosk located at the front of the lot with a map of the park's trails. A second, much smaller lot is located at the western edge of the park with parking for only a few cars. It also has a sign identifying BHPCP. Park users access both lots regularly. The only other maintained structure in the park is a wooden bridge along the main trail that leads from the small parking lot south of River Road.

There are approximately 7.2 miles of natural surface trails within BHPCP. Most trails are concentrated south of River Road.

Current Park Use

County residents use the park trails for enjoyment of nature including birdwatching, wildlife viewing, hiking and horseback riding. Many people visit the park for its magnificent views of the Potomac River. Informal feedback from public meetings and discussions with identified user groups indicate that the park is best known to local residents, equestrians who board horses at the adjacent Callithea

Farm boarding facility, and nature and hiking enthusiasts. The park is mentioned in several regional guidebooks on natural areas in the Greater Washington Area. Most use is concentrated south of River Road. The most popular destination for hikers seems to be the overlooks of the Potomac River. One trail, used primarily by equestrians, extends from River Road north to Esworthy Rd.

Use by the adjacent equestrian community has been taking place for several decades. More recently, as mountain biking has increased in popularity, one or more organized groups have periodically conducted biking trips in the park. Biking in BHPCP is currently prohibited.

Adjacent Land Use & Zoning

Large lot single family homes, the Callithea Equestrian Center, and the C&O Canal National Historic Park are existing adjacent land uses. There is one single family home that extends into the park. Adjacent zoning is RC and RE-2.

Trends

The 1994-95 National Recreation Survey showed that participation in outdoor recreation activities is increasing. The fastest growing activities were birdwatching (155% increase in past decade), hiking (94% increase), and walking (43% increase). For comparative purposes golf increased by 29%, and bicycling increased by 2%. The Park, Recreation, and Open Space Survey for Montgomery County (May 1997) demonstrated clearly the importance of trails to citizens using the county park system. Fifty-eight percent of respondents indicated that they had used unpaved park trails. Of these users, the majority used trails for walking and/or observing nature.

Other trends that will likely effect use of BHPCP include:

1) County residents, since 1990, have been working longer hours and making less money. With less time and money for vacations, residents will likely be looking to parks to provide more of their weekday and weekend entertainment. Demand for local recreation will likely increase.

2) County population continues to grow and with it demands on park resources and park use.

3) The county's population is becoming older but also remaining more active.

Future Potential Users

As a conservation park, BHPCP serves a county-wide function in preserving exemplary natural and cultural resources and provide high quality recreational opportunities associated with these resources - e.g., nature study, bird watching, wildflower viewing and photography. Given the trends listed above, it seems likely that as BHPCP becomes more well known, there will be a significant increase in the number of hikers, birdwatchers, and others seeking nature study opportunities. Equestrian use will likely increase slightly, although this tight-knit community is already familiar with the park.

The completion of the Muddy Branch Stream Valley Park Trail will provide additional access for park users that choose to utilize the connections between the City of Gaithersburg and the C&O Canal as well as points in between.



Plan Elements & Recommendations

- Protection of Natural & Cultural Resources -*
- Trails & Public Access -*
- Interpretation -*
- Increase Park Police Presence -*
- Additional Park Acquisition -*
- Callithea Farm & Civil War Interpretive Center -*



top : A tiger swallowtail butterfly enjoys stopping to feed at a thistle plant.

bottom: Members of the M-NCPPC Resource Analysis Staff study the fish population as a gauge of stream health.

Blockhouse Point Conservation Park contains a variety of exceptional natural and cultural resources. As a conservation park, development will be limited to: a natural surface trail system; signage; and gravel parking areas. The master plan map (*figure 2, page 4*) illustrates the concept development plan.

Protection of Natural & Cultural Resources

Natural Resource Protection

The following recommendations are related to the implementation of the the park master plan and help to ensure the right balance between stewardship of natural and cultural resources and recreation in Blockhouse Point Conservation Park.

Recommendations:

- 1) Park improvements (e.g., trails, kiosks, signage, and parking areas) should avoid and/or minimize impacts to sensitive areas. Sensitive areas include: streams; stream buffers; steep slopes; highly erodible soils; 100-year floodplains; wetlands; wetland buffers; habitats of rare, threatened, endangered and watch-list species; archaeological resources; and historic sites.
- 2) Unnecessary fragmentation of the park’s forest should be avoided.
- 3) Use of the park should not significantly impact natural and cultural features.
- 4) Existing trails (as shown in *figure 2, page 4*) should be realigned as necessary to eliminate erosion problems.
- 5) Duplicative and dead-end trails should be closed and the immediate area restored to facilitate maintenance of high quality forest.
- 6) This park master plan formalizes the location of two sites overlooking the Potomac River and C&O Canal. The passage to these overlooks is environmentally sensitive and additional maintenance is required to monitor and maintain this corridor on a regular basis as well as to minimize impacts to highly erodible soils, native plants, river rock outcrops, and cultural resources.

Access to the overlooks has traditionally been by hikers only. On a trial basis, the *Callithea Trail* and a section of the *Blockhouse Trail* will be opened for equestrian and hiking use starting January 1, 2006. This will specifically link horseback riders from Callithea Farm to the southeastern bluff overlooking

the river. Commission Staff will conduct monitoring and data collection studies to assess impacts associated with the new usage and monitor the additional impact on the trail. After approximately one year, Staff will report the findings of the studies to the Planning Board and a decision will be made as to whether access to the bluff by equestrians will be allowed to continue.

7) A program for the regular and routine monitoring and maintenance of trails should be established. The program should be supervised by staff and primarily manned by volunteers. The program should promote stewardship of the park's natural and cultural resources.

8) Recognized trail impacts should be mitigated. Mitigation may include structural repairs or improvements, seasonal or weather dependent trail closures, or adjustment in user groups.

9) Interpretation of the park's natural and cultural resources should become a priority.

10) Ongoing inventory and monitoring of the park's natural and cultural resources should continue.

Natural Resource Management

Blockhouse Point conservation Park contains a variety of exceptional natural resources. Natural features include upland forest, floodplain forest, palustrine wetlands, streams, river-rock outcrops, species of rare, threatened, endangered and watch-list plants, a wide variety of wildlife -- especially forest interior birds, large unbroken blocks of relatively undisturbed upland forest, and grand views of the Potomac River. Based on the exceptionally high quality of its natural and cultural resources, its intrinsic natural and cultural resources, its intrinsic natural beauty -- especially the breath-taking views of the Potomac River and C&O Canal, and it's large size, staff considers Blockhouse Point Conservation Park one of the top five conservation parks in the County park system.

Recommendations:

1) Develop a comprehensive natural resources management plan for Blockhouse Point Conservation Park. The Plan should include goals, objective, implementation strategies, costs, and schedules for the best management of natural resources in aquatic and terrestrial environments. Special attention should be paid to the large, unbroken blocks of upland and floodplain forest; wetlands; habitats of rare, threatened, endangered and watch-list species; and river-rock outcrops overlooking the Potomac River and C&O Canal.

2) Routinely monitor forest stands to qualify and quantify the impacts of white-tailed deer, gypsy moths, non-native invasive plant species, and trail users.

3) Investigate a cooperative agreement with Colonial Pipeline Company to jointly manage the pipeline right-of-way (*figure 2, page 4*) to improve wildlife habitat diversity and protect forested areas from non-native invasive species.

4) Design and construct a stormwater management facility on the east side of Callithea Farm. This facility would mitigate erosive storm flows coming off of the hayfields and pastures and significantly lessen stream bank erosion in a tributary to Muddy Branch.

5) Continue on-going stream monitoring efforts in support of the *Countywide Stream Protection Strategy*.



If maintained properly, this open field space along the Colonial Pipeline gas line right-of-way can significantly help protect forested areas from non-native invasive species.

above: The view along the northern portion of the gas line.

below: The perspective along the southern portion of the gas line right-of-way.





above: Wetlands provide unique habitat for many species of flora and fauna.

below : A State of Maryland endangered fern, Pinnatifid spleenwort (*Asplenium pinnatifidum*), still has a home in the park.



6) Continue maintenance of the pond north of River Road in accordance with Maryland Dam Safety Regulations.

7) Conduct comprehensive inventories of wildlife using vernal pools and non-tidal palustrine wetlands in the Muddy Branch Stream Valley and along the C&O Canal and Potomac River. Incorporate this information into the decision-making process related to use and maintenance of natural surface trails.

8) Identify concentrations of non-native invasive plants. Implement management in accordance with the *Management Plan for Non-Native Invasive Plants in Montgomery County Parks* (M-NCPPC, 2003).

9) Continue cooperative efforts with State and Local Governments to manage gypsy moths. Encourage utilization of least toxic methods in order to minimize impacts to non-target species of butterflies, moths, and aquatic insects.

10) Continue on-going management of white-tailed deer. Efforts were initiated in December, 2002 as part of the comprehensive management plan for white-tailed deer in Montgomery County.

Archaeological & Historical Resource Protection

BHPCP is one of the most important Archaeological sites in the County. Recent publicity in forensic anthropology has made the public aware that removing evidence from a crime scene hinders and prevents researchers from reconstructing and solving the crime. Because archaeological investigations share similar principles and techniques as forensic anthropology, "pot hunters" and unsupervised users of metal-detecting devices steal publicly owned artifacts and destroy any information that archaeological methods can tease from the ground.

Civil War sites have high visibility, contain valuable artifacts and, thus, are particularly vulnerable to looting. The Park Police should step-up monitoring of BHPCP for illegal removal and disturbance of archaeological artifacts and park regulations and fines should be adjusted as described in the following section under "*Increase Police Presence*".

Recommendations:

1) Continue archaeological surveys to further document the cultural history protected within the park.

2) Work with local historic groups and organizations to establish a volunteer base and constituency for the park to facilitate protection and interpretation of cultural resources.

3) Work to establish a cultural learning visitor center at the Callithea Farm to interpret and possibly reconstruct, through living history exhibits, the civil war encampments and fortifications found on the site.

4) Work through park police to prevent theft and damage to cultural resources - see "*Increase Park Police Presence*" below.

Trails & Public Access

Trails

Natural Surface Trails provide the primary opportunity for people to experience Blockhouse Point Park and enjoy its natural areas. They are therefore a major focus of this Master Plan. In developing the trail system, the Master Plan Committee first identified the key destination points within the park (e.g. the Potomac River overlooks, unique natural communities, and cultural sites) and connections to other trail systems. The current trail system was evaluated in terms of connectivity to these sites and trail condition. Next, potential trail use impacts and assigned trail user designations were evaluated as one way of minimizing impacts. Staff is committed to provide safe and enjoyable access for a variety of trail users while maintaining the environmental health and protection of the special resources of Blockhouse Point Conservation Park.

Currently, most of the existing trail use is within the parkland south of River Road. Here, most of the informal, natural surface trail system is in good condition requiring only minor repairs and realignments and replacement of one small bridge. The park trail map (*figure 2, page 4*) shows park points of interest, connecting trails coded to user groups, trail connections to areas outside of the park, parking areas and other park amenities.

Almost half of Blockhouse Point extends north of River Road to its boundary at Esworthy Road. With the exception of a wide gasline corridor and a WSSC pipeline there is little evidence of current human presence.

The Muddy Branch Stream Valley Park Trail Plan proposes a multi-use natural surface trail for hikers, equestrians and bikers that extends through Blockhouse Point Conservation Park to the C&O Canal. The challenge is to avoid steep slopes along the gasline, minimize impacts to interior forest habitat, minimize erosion, and maintain sensitive populations of rare, threatened, endangered or watch-list plants. This plan supports the construction of this trail with the understanding that despite our best efforts to design and build a trail that minimizes impacts to the environment, some negative impacts will occur. Efforts must be made to monitor and mitigate any adverse impacts and take appropriate remedial actions to protect park resources.

Trail Connections to the C & O Canal. Through a questionnaire distributed to patrons of Callithea Farm, the horse boarding facility adjacent to the park, and in a subsequent meeting held at the farm in Spring of 2002,

two important destination points outside the Park were identified. A system of informal trails has been used for many years to create a loop through BHPCP to Violets lock on the C&O Canal, down the Canal to Pennyfield lock and Pennyfield Lock Neighborhood Conservation Area and back into BHPCP. It is recommended that this loop trail be formalized.

Both of the Canal connections require approval and cooperation from the National Park Service (NPS) as short sections cross their property. Initial discussions with NPS representatives indicate a willingness to cooperate in making these connections. Maintenance of the trail on NPS land is to be by M-NCPPC park manager assisted by volunteer groups from Callithea Farm, etc.

In addition to creating the loop trail, establishing a formal trail connection to Pennyfield Lock and Pennyfield Lock Neighborhood Conservation Area is critical to completion of the Muddy Branch Stream Valley Trail System connecting Gaithersburg to the Canal, already approved by the Planning Board. The trail will require the construction of a bridge across Muddy Branch to eliminate the current informal path on NPS property along the Canal berm, which is a cultural resource.

To complete the loop it will be necessary to provide a trail through Callithea Farm. Establishing appropriate stream buffers and relocating some fence lines could accomplish this once the park acquisition of Callithea Farm is finalized.

Trail Maintenance. The long-term maintenance of park trails is the responsibility of the park manager. In order to ensure that trails remain in good condition and do not become subject to over-use that could negatively impact park resources, regular inspections should be conducted. Such inspections should be conducted by staff and/or members of volunteer groups. One option might be biannual trail walk/ inspections that include park staff and interested citizens. These evaluations will provide information to be used by the park manager in making decisions on trail maintenance or, if deemed necessary, temporary or permanent trail closures.

Recent years have seen a greater emphasis placed on natural surface trails and recognition that construction and maintenance of these trails requires specialized techniques and expertise. The development of a specialized regional trail crew that would receive special training in order to fill this need is an idea that has been suggested. The BHPCP Master Plan Committee highly recommends the development of such a crew.

Trail Related Recommendations:

- 1) Plan, design and construct a natural surface trail system that provides safe public access to Blockhouse Point.
- 2) Provide a natural surface trail connection available for trail users on foot, horseback, or bike from Muddy Branch Stream Valley Park Unit 1 through Blockhouse Point Conservation Park to the C&O Canal and Pennyfield Lock Neighborhood Conservation Area. This connection will provide a continuous shared-use natural surface trail, via the Muddy Branch Stream Valley, from the City of Gaithersburg to the Potomac River. South of River Road, the trail will utilize an existing WSSC access road to the C&O Canal towpath.
- 3) Provide hiker only access to natural surface trails in the most environmentally sensitive and/or culturally sensitive portions of the park. The majority of trails in Blockhouse Point Conservation Park are recommended for hiking only.
- 4) In keeping with the intent of the Planning Board approved Trail Plan for Blockhouse Point Conservation Park (M-NCPPC, 1989), provide joint hiking/equestrian use natural surface trails oriented to Callithea Farm. Continue planning efforts with the the National Park Service to formalize a 5.5 mile “loop trail” for equestrians by linking the equestrian trail in Blockhouse Point Conservation Park to the C&O Canal Towpath at Pennyfield and Violette’s Locks and trails in Callithea Farm.
- 5) Establish a volunteer-based program to help with monitoring and maintenance of park trails.
- 6) After purchase of Callithea Farm, establish stream buffers as outlined in the Environmental Guidelines. Relocate fencing to allow for a trail to be established around the perimeter of the property to allow access to future connections to C&O Canal.
- 7) Establish trail use as follows: the Muddy Branch Trail connection from Esworthy Road to the C&O Canal will be open to hikers, horses and bikes; the trail from the northeast portion of Callithea farm running east, parallel to River Road and connecting to the Muddy Branch Trail will be open to hikers and horses; all other trails are designated for hiking only.
- 8) Develop and implement a trail marking system and publish a trail map to improve user access and clearly identify user groups for each trail.
- 9) Develop an educational program on trail etiquette (county-wide effort).
- 10) Establish a specialized trail crew that would receive special training and develop expertise in construction and maintenance of natural surface trails. This crew would help reduce the increased burden that has

been put on regional staff to maintain our quickly growing trail system (region-wide effort).

Public Access & Parking

The current parking lots in Blockhouse Point Conservation Park are well located and should provide adequate parking for the foreseeable future with no changes or upgrading. Extensive parking and a boat launch facility are also available at Pennyfield Lock Neighborhood Conservation Park. In addition, the on-going acquisition of the Callithea Farm will provide the potential for additional future parking as well as access to park trails. Proposed acquisition of land on Esworthy Road will allow for a small parking facility to allow access to the Muddy Branch shared-use natural surface trail.

Recommendations:

- 1) Maintain current parking until such time as additional acquisitions recommended in this plan are made. At that time re-evaluate parking needs along with any development that takes place at Callithea Farm and establish small parking area on Esworthy Road.
- 2) At such time as use of the area warrants it, install port-a-john at main parking area.

Interpretation

Blockhouse Point Conservation park is an area rich in the natural and cultural history of the Potomac Valley. It holds numerous prehistoric archeological sites, historic Civil War ruins of national significance, major geologic formations, mature upland forests and views of the Potomac Valley not equaled elsewhere in Montgomery County. With no interpretation currently on site these unique features are largely unrecognized or enjoyed by current visitors. The preservation of the natural and historical character of this park is dependent on passive and educated use. This provides a key opportunity for interpretation to assist in controlled management and promoting better stewardship by park users. Key topics for interpretation include:

Important Natural Ecosystems - i.e. River Rock Outcrops, Upland Forest, Stream Valley, Potomac River Floodplain

Views of River - Geology; emphasizing the transition between the Piedmont and the Coastal Plain as dramatically seen at BHPCP.

Archaeology - Evidence of man's prehistoric past on the land.

Civil War Ruins - Tell the story of the complete complex including the Civil War Camp and the roads that served the camp spread out along the Canal from Violettes to Pennyfield Locks.

Many of the existing trails in BHPCP are part of the historic Civil War complex for which the park is named. They are in fact, a vestige of the transportation system that furnished material and supplies to the men who were stationed there. These historic routes have been used for more than 140 years, whether for military or purely aesthetic reasons. If abandoned, or permanently closed, they will be lost to history. Each one needs to be looked at on a case-by-case basis to determine its historical context to the park and what if any use should continue.

Recommendations:

1) The Park Manager, Interpretive Staff, Natural Resource Specialists and History/Archaeology Staff should work in conjunction with the exhibit shop to develop a comprehensive interpretive plan for BHPCP.

2) Permanent interpretive signs should be installed to inform and educate the casual park visitor about the unique natural and cultural features of BHPCP. Information should also stress the importance of staying on designated trails, not trampling vegetation or cultural areas.

3) Due to the fragile nature of park features, interpretation should be limited to kiosks located at trailheads and parking areas until such time as funding is available for a visitor center. Kiosk interpretation would only discuss the park history in a general manner and not lead people directly to important sites.

4) After the purchase of the Callithea Farm a visitor center with associated parking should be developed on the Farm to serve as a focal point for the park's interpretation - see next section.

5) Continue research to determine which of the current trails and abandoned roads were actually used during the Civil War. Those that were extant should be considered as part of the overall complex and afforded some degree of maintenance to preserve their footprint on the land. Methods of maintaining the footprint of these roads, without them being used regularly as trails will need to be investigated.

Increase Park Police Presence

As use of BHPCP increases there will be a greater need to patrol the park and enforce regulations designed to protect park users and resources. There is a particular concern for illegal scavenging of historic and archaeological sites. Civil War sites have high visibility, contain valuable artifacts and, thus, are particularly vulnerable to looting. Evidence of looting has been observed on various occasions at Blockhouse Point. Enforcement is also needed to ensure appropriate trail use and protection of natural resources.

In addition to professional police staff, the Park Police currently manage a very successful program that trains and utilizes volunteers to patrol parks and park trail systems. Volunteers notify park police of any park violations or safety problems.

Recommendations:

1) Increase Park Police presence in the park. Officers should patrol access points and trails to prevent illegal use of the area with particular attention paid to illegal removal and disturbance of archaeological artifacts, wildlife, plants and other natural materials.

2) Expand the Park Police's volunteer patrols in BHPCP. Volunteers should follow trail use designations, e.g. volunteers on bikes or horses should only travel on trails designated for those uses.

3) County laws on "pot hunting" should be reviewed and penalties for stealing archaeological artifacts from public County lands be made more consistent with State and Federal standards, which can require such penalties as confiscation of equipment, etc.

Additional Park Acquisition

Two parcels of privately owned land are nearly enclosed by BHPCP and the purchase of this land would greatly benefit trail connectivity and the protection of resources within the park. The parcel located at 14700 River Road contains high quality forest and is completely surrounded by BHPCP. Addition of this property is important to maintaining the resource quality within the park. The parcel at 13430 Esworthy Road is critical for making the Muddy Branch trail connection, providing access to the north section of the park and protecting the Muddy Branch stream (this is the only section of the stream not within parkland).

Recommendation: M-NCPPC should purchase, for inclusion in BHPCP, the two properties located at 14700 River Road and 13430 Esworthy Road at such time as they become available.

Callithea Farm & Civil War Interpretive Center

The Callithea Farm is a 97-acre, commercial, equestrian facility that lies adjacent to BHPCP on its western side. The Planning Board recommended in the Potomac Master Plan that Callithea Farm be acquired as public parkland. Purchase of the property was initiated in July of 2003 and will be completed in five installments with the final acquisition being completed in 2006. While the primary purpose for the acquisition is to preserve and maintain the farm as an equestrian facility, it will also provide the opportunity to develop an interpretive center that would focus on the role of Montgomery County in the Civil War. Building such a center in BHPCP proper would not be compatible with the approved uses of a conservation park as noted in the Park Recreation and Open Space (PROS) Master Plan.

Recommendation: A separate plan for Callithea Farm should be prepared at some future date. The plan should focus on maintaining the property as a publicly owned horse farm (*M-NCPPC, 2001, page 21*) and consider the possibility of developing and interpretive center that would focus on the role of Montgomery County in the Civil War. Planning for this future facility should be guided by the following principles: 1) the viewshed of the farm should be protected; 2) the proposed facility should compliment the existing equestrian enterprise and vice versa; 3) the size (i.e., square footage) of the proposed visitor center should be consistent with existing buildings on the site; and 4) the facility should reinforce the rural character of the area.

Implementation & Costs



- This section will be available at the time of Planning Board work sessions.

Technical Appendix



Appendix I - *The Planning Process & Public Input*

The planning process for the development of BHPCP followed the following schedule. It allowed for public input at several points during the process.

Schedule	Activities
July – November 2001	Data collection
October 2001	<p>Public meeting to accept public comment and input on the development of a master plan for Blockhouse Point Conservation Park.</p> <ul style="list-style-type: none"> • Use workstation format to present important characteristics of the site to the public. • Ask for public comments on staff's analysis to date. • Ask for public input on issues, site improvements, etc. to be addressed in the plan.
November 2001-April 2003	<p>Develop Staff Draft Park Master Plan</p> <ul style="list-style-type: none"> • Conduct field visits with interested groups and general public to gather additional input on plan • Complete field evaluations; develop and refine park concept; develop park layout • Develop text, maps, and graphics for publication
August 2003	Publish Staff Draft Master Plan
September 2003	Public meeting to solicit public comment and input on the Staff Draft Master Plan
September 2003	Develop Public Hearing Draft
October 2003	Publish Public Hearing Draft
December 2003 or January 2004	Public Hearing held with Planning Board at 8787 Georgia Ave. Silver Spring
Winter 2004	Review Public Hearing testimony at work-sessions with Planning Board
Spring 2004	Planning Board approval of Master Plan
Summer 2004	Brief PHED Committee of County Council
Summer 2004	Publish final Approved Master Plan for BHPCP

Appendix II - *Forest Stand Delineation*

A Forest Stand Delineation of the Block House Point Conservation Park was done in order to determine priority areas for forest and tree retention before any possible development, and to aid in defining areas necessary for reforestation and/or restoration once the Master Plan process has been completed. The approximately 630 acre property, located at 14750 River Road in Darnestown, Maryland, extends about 283 acres north and 348 acres south of River Road (MD Route 190), and includes the lower Muddy Branch stream valley. It is bordered by Esworthy Road to the northeast, the C&O National Historic Park to the south, and private property to the east and west.

Vegetation studies have been conducted over a 10 year period by the M-NCPPC Natural Resources Management Staff (1995 to present) and the Maryland DNR Heritage Staff (1993, 1997, 1999). A thorough "walk-through" was completed and species lists for woody and herbaceous plants were compiled. Information on dominant and co-dominant species, size class, uncommon species and special habitats, and general health of the stands was recorded.

If a single, general label were to be given to the existing forest type in the uplands and on the hillsides and ravines of Blockhouse Point, the designation of "mesic mixed hardwood forest" could be made for 95% of the park. While most of the canopy trees in the park are oaks, tulip poplar, hickories, American beech, and sycamore, the possible number of associations/combinations that could be assigned when designating individual stands are many. In an effort to create a clear but comprehensive picture of the forested acreage at Blockhouse Point, Six forest stands were identified and are labeled on the Forest Stand Delineation map (*figure 6, page 12*) including:

Stand 1: Mixed Oak (includes Mixed Oak/Tulip Poplar, and Mixed Oak/Chestnut Oak) (upland), 445 acres

Stand 2: Tulip Poplar (upland), 58 acres

Stand 3: Tulip Poplar/Sycamore (floodplain), 61 acres

Stand 4: Sycamore/Green-Ash/Maple (riverine), 22 acres

Stand 5: Tulip Poplar/Red Maple/Eastern Red Cedar/ Virginia Pine (young successional forest/ old field), 21 acres.

Stand 6: White Pine (planted), 2 acres

Area 7: Maintained Utility Easements

Individual Forest Stand Descriptions include approximate stand acreage, species noted, retention priority, and comments on the stand's overall structure and condition. Additionally, utility line right-of-ways which are mowed or kept in a "maintained field" condition cover approximately 19 acres of Block House Point Conservation Park and are noted on the map. Finally, there are two pond communities noted on the map; one pond is a former home-site pond in the Muddy Branch floodplain north of River Road. The other is in the Potomac River floodplain and is connected to the C&O canal.

Before the more detailed Forest Stand Narratives are presented, a brief vegetation overview and a few comments about the park's overall vegetational condition are in order. The huge majority of Blockhouse Point Conservation Park acreage is a diverse, maturing, second growth forest with good forest structure -- high canopy and well developed shrub levels, with very few non-native invasive species. It is an exceptionally scenic area with high rocky bluffs above the Potomac River, expansive wetlands and floodplain forests along the river, high quality interior forest, steep-sided forested ravines, and a number of seep-spring areas.

Acreages of high quality mixed deciduous forest and oak/hickory-dominated forest extend in the uplands both north and south of River Road. Chestnut oak, white oak, red oak, tulip poplar, mockernut hickory, and pignut hickory are common tree species in the upland stands, with dominant trees in the 18 to 25" dbh range. Scattered larger specimen are often seen, with a number of oak, tulip poplar, and American beech measuring between 28 and 35" dbh. Large specimen of Virginia pine, white ash, tupelo, and red maple are also seen. Occasionally, black birch and shagbark hickory, both uncommon species in Montgomery County, are noted, as well as American chestnut re-sprouted saplings.

Despite the obvious deer predation problem at Blockhouse Point, the understory is generally well developed and commonly includes sizable thickets of mountain laurel in the uplands, and some what surprisingly, enlarging patches of paw-paw. Other noted understory upland tree/shrub species include low bush blueberry, native azalea, high-bush blueberry, witch hazel, serviceberry, musclewood, and dogwood.

While the herbaceous layer in the upland forest at Blockhouse point is somewhat sparse, a number of ferns including Christmas fern, New York fern, hay-scented fern, broad beech fern, and ebony spleenwort, along with a number of small flowering plants and vines including spotted wintergreen, partridgeberry, white wood aster, wild licorice, ground pines, Virginia creeper, greenbriar, and sweet cicely were noted.

Stream and river buffer and floodplain acreages in Blockhouse Point are dominated by tulip poplar, sycamore, silver maple, and red maple. Dominant trees are in the 18 to 25" dbh range. River birch, mixed oaks-especially pin oak and red oak, slippery and American elm, black willow, and hackberry are also seen in the floodplain areas of Blockhouse Point Park. A few individual swamp white oak and swamp chestnut oak, both uncommon trees in Montgomery County parks, were noted in the floodplain areas.

Spicebush is the dominant shrub in understory floodplain communities. Also commonly noted were musclewood, arrow-wood, pawpaw, and poison ivy. As on most other MNCPPC park properties, the herbaceous layer is much fuller in the floodplain forest than in the upland forest. Herbs and vines commonly seen include Jack-in-the-pulpit, wingstem, stinging nettle, avens, wild ginger, Indian cucumber, sweet cicely, enchanters nightshade, bloodroot, hog peanut, Virginia knotweed, naked-flowered tick trefoil, greenbriar, and grape vine, among others. Fern species cover large areas of floodplain including hay-scented fern, sensitive fern, Christmas fern, and New York fern.

Gypsy moths did damage the Blockhouse Point forests during the late 1980's and as the cyclical population growth of gypsy moths is on the upswing again, care should be taken to prevent large amounts of future defoliation to this predominantly oak forest. As mentioned previously, the growing deer population is a serious concern in the Blockhouse Point Conservation Park. Regeneration of native woody species is basically at a standstill at this point due to deer predation. Non-native invasive plants are not absent from Blockhouse Point forests. Japanese honeysuckle (*Lonicera japonica*), Garlic mustard (*Alliaria petiolata*), Vietnamese stiltgrass (*Microstegium vimineum*), and Asiatic bittersweet (*Celastrus orbiculatus*) among others were all noted in the park, especially in the Muddy Branch and Potomac River floodplains. Currently, however, Blockhouse Point is one of the M-NCPPC parks least affected by non-native invasive species.

Beyond a general description of the high quality contiguous forested areas of Blockhouse Point, a word should be said about other special habitats in the park which support a number of uncommon plant communities. Between 1992 and 1999, Maryland Department of Natural Resource Heritage Botanists conducted 3 separate surveys at Blockhouse Point and identified several significant habitats and communities, as well as a number of endangered, threatened and watchlist plants. Both along Muddy Branch

and in the steeply sloped tributary areas north of River Road, and south of River Road adjacent to the federally owned Canal National Historic Park are rock outcrop areas, which support locally less common plant communities, and a few State Listed plants. There are additionally several higher quality swamp areas in Blockhouse Point Park, especially south of River Road, where lizard's tail, arrow arum, crested wood fern, marsh fern, monkey flower, and large colonies of skunk cabbage live.

Stand Narratives:

Stand 1. Forests dominated by mixed oak species, or by a combination of mixed oak/chestnut oak or mixed oak/tulip poplar, comprise the largest stand acreage by far in Block house Point Conservation Park. Approximately 445 acres of upland forest in Blockhouse Point are dominated by mixed oaks, including chestnut (*Quercus prinus*), white (*Q.alba*), southern red (*Q.falcata*), black (*Q.velutina*), and northern red oak (*Q.rubra*), or by a combination of mixed oaks with an especially large number chestnut oak or tulip poplar (*Liriodendron tulipifera*). Though size class does differ somewhat over the 630 acre park, the overwhelming majority of dominant trees in Stand 1 fit into the 15 to 25" dbh range. Other tree species typically found in Blockhouse Point's mixed oak woods include black gum (*Nyssa sylvatica*), mockernut (*Carya tomentosa*), pignut (*C.glabra*), American beech (*Fagus grandifolia*), red maple (*Acer rubrum*), and white ash (*Fraxinus Americana*). Some sections of predominantly oak forest have varying amounts of black cherry (*Prunus serotina*), Virginia pine (*Pinus virginiana*), and Eastern red cedar (*Juniperus virginiana*).

Understory tree and shrub specimen found in Block house Point's mixed oak woods include large thickets of mountain laurel (*Kalmia latifolia*), which extend for acres on hillsides, hilltops and ridgelines both north and south of River Road, as well as several large colonies of pawpaw (*Asimina triloba*). Flowering dogwood (*Cornus florida*), serviceberry (*Amelanchier arborea*), low-bush blueberry (*Vaccinium vacillans*), highbush blueberry (*V.atrococum*), deer-berry (*V.stamineum*), pinxster-flower azalea (*Rhododendron periclymenoides*), maple-leaf viburnum (*Viburnum acerifolium*), blackhaw (*V.prunifolium*), arrow-wood (*V.dentatum*), spicebush (*Lindera benzoin*), American chestnut (*Castanea dentata*), chinquapin (*C.pumila*), witch-hazel (*Hamamelis virginiana*) and wild hydrangea (*Hydrangea arborescens*) were also noted.

Herbaceous and vining species observed in Blockhouse Point's Stand 1 include wild grape (*Vitis* spp.), bellwort (*Uvularia sessifolia* and *U. perfoliata*), spring beauty (*Claytonia virginica*), wild yam (*Dioscoria villosa*), jack-in-the-pulpit (*Arisaema triphyllum*), mayapple (*Podophyllum peltatum*), striped wintergreen (*Chimaphila maculata*), violet wood sorrel (*Oxalis violaceae*), ground-cedars (*Lycopodium flabelliforme*, *L. obscurum*), cranes-fly orchis (*Tipularia discolor*), partridgeberry (*Mitchella repens*), greenbriar (*Smilax rotundifolia*), Virginia creeper (*Parthenocissus quinquefolia*), brambles (*Rubus* spp.), white wood aster (*Aster divaricatus*), poison ivy (*Rhus toxicodendron*), black cohosh (*Cimicifuga racemosa*), violets (*Viola* sp.), and rattlesnake plantain (*Goodyera pubescens*).

Some fern species noted include Christmas fern (*Polystichum acrostichoides*), New York fern (*Thelypteris noveboracensis*), sensitive fern (*Onoclea sensibilis*), lady fern (*Athyrium filix-femina*), and hay-scented fern (*Dennstaedtia punctilobula*). Throughout Stand 1 are areas where mosses, especially pincushion moss, are evident.

While the density of the herbaceous coverage varies from the relatively lush areas bordering the tulip poplar/sycamore dominated Stands to the hill-tops in the mixed oak/chestnut oak woods where the dominant ground cover is leaf litter and downed branches, the level of exotic invasive coverage remains minimal throughout Stand 1. Exotic invasives including Japanese honeysuckle (*Lonicera japonica*), Asiatic bittersweet (*Celastrus orbiculatus*), and Vietnamese stiltgrass (*Microstegium vimineum*) generally occur only along trails, paths, and forest edges in Blockhouse Point's mixed oak, mixed oak/tulip poplar stands.

Though the large majority of the mixed oak acreage in Blockhouse Point is of extremely high quality (good structure and species diversity, few exotic invasives, etc.), a few acres of oak forest have been affected by gypsy moth damage. Deer browse is also evident throughout Stand 1. It will be very important to both monitor for gypsy moth egg masses and to maintain the managed hunt program in the future.

It's hard to pinpoint the location of the highest quality mixed oak woods in Blockhouse Point Conservation Park. In comparison with other M-NCPPC park properties of equal or larger size, Blockhouse Point undoubtedly has the largest solid blocks of high quality oak forest in the park system. Though the exact species mix does change somewhat due to elevation, proximity to streams, soil composition, etc., over the property, proportion of chestnut oaks, hickory, white oaks, tulip poplar in the mix), the general high quality character of the mixed oak woods remains.

The rock outcrops which support different fern, lichen, moss, herbaceous and woody communities, including some State Listed plants, are located in or on the edge of Stand 1 forests.

Stand 1 has been given priority "1-High" status. In this large stand there are areas with steep slopes and areas within the environmental buffers for floodplains, but even where the land is considered by definition to be buildable, Stand 1 contains many specimen trees and represents high quality contiguous forest that connects the largest undeveloped or most vegetated tracts of land within and adjacent to the site.

Stand 2. Approximately 58 acres of Blockhouse Point Conservation Park are dominated by *Liriodendron tulipifera*. The majority of the dominant tulip poplar in Stand 2 range from 16 to 30" dbh, with scattered 30 to 40" specimen. The forest sections designated as Stand 2 are very similar in overall general forest composition to those designated as Stand 1, with the difference in Stand designation being in the number of oak present. In Stand 1, there are areas where oak and tulip poplar are both important; In Stand 2, tulip poplar is the dominant tree.

Acer rubrum, *Nyssa sylvatica*, *Platanus occidentalis*, *Fraxinus pennsylvanica*, *Fagus grandifolia*, *Ulmus americana*, *Juglans nigra*, *Prunus serotina*, and assorted *Quercus* species, were other tree species noted in Stand 2. A population of *Betula lenta*, uncommon to rare in the Maryland Piedmont, lives in one section of Stand 2 south of River Road, near what might be called a grove of relatively large *Ilex opaca* (another uncommon plant for the piedmont).

Lindera benzoin dominates the understory, with *Carpinus caroliniana*, *Ilex opaca*, *I. verticillata*, *Rhododendron periclymenoides*, *Smilax rotundifolia*, *Viburnum prunifolium*, *V. dentatum*, *Hamamelis virginiana*, *Vaccinium vacillans* and very much deer browsed *Euonymus Americana* also noted.

As in Stand 1, the herbaceous layer in Blockhouse Point Stand 2 is relatively sparse, with the exception of the area areas directly surrounding a seep or trib. Herbaceous and vining species noted include *Podophyllum peltatum*, *Uvularia sessifolia*, *U. perfoliata*, *Arisaema triphyllum*, *Rubus* sp., *Viola* spp., *Agrimonia parviflora*, *Gallium circaeans*, *Cimicifuga racemosa*, *Osmorhiza claytoni*, *Sanguinaria canadensis*, *Medeola virginiana*, *Dioscorea quaternata*, *Lycopodium flabelliforme*, *Vitis* spp., *Tussilago farfara*, and *Claytonia virginica*.

Several species of fern were observed, including *Polystichum acrostichoides*, *Botrychium virginianum*, *Adiantum pedatum*, *Athyrium filix-femina*, *Onoclea sensibilis*, *Thelypteris noveboracensis*, and *Dennstaedtia punctilobula*. In the wetter areas near the seeps, patches of *Osmunda cinnamomea* live.

As with the mixed oak forests of Stand 1, it is hard to pinpoint where the highest quality tulip poplar forests of Stand 2 are in Blockhouse Point. With a few exceptions, Stand 2 forests are usually found surrounding seeps, in ravines, and along the hillsides above tributaries to Muddy Branch and the Potomac. Tulip poplar also dominate a few scattered, relatively flat sections of forest where perhaps a clearing occurred in the more recent (+/-50 years) past. As with the mixed oak forest in Stand 1, most of the maturing, second growth tulip poplar forests are of high quality, with good structural and species diversity. The dbh of dominant trees is consistently over 20", with a number of specimen trees. There are far fewer exotic invasive species in Stand 2 than are commonly found on most M-NCPPC properties. Unfortunately, exotics including *Lonicera japonica*, *Celastrus orbiculatus*, *Microstegium vimineum*, *Rosa multiflora*, and *Alliaria petiolata* do appear along the paths and in clearings caused by openings in the canopy of Stand 2. Deer damage is obvious throughout Stand 2 forests. There has also been a sizable amount of damage done by horses to the tulip poplar trees along the property boundary line with Calathea Farms (horses have gnawed the bark off many trees along the trib).

Stand 2 has been given the priority of "1-High". A great deal of Stand 2 is associated with intermittent or perennial streams and their buffers, steep slopes, and/or specimen trees. Even the technically buildable areas of Stand 2 represent high quality contiguous forest that connects the largest undeveloped or most vegetated tracts of land within and adjacent to the site.

Stand 3. Approximately 61 acres of Blockhouse Point Conservation Park are dominated by *Liriodendron tulipifera* and *Platanus occidentalis*, with *Acer rubrum* and *Betula nigra* also figuring prominently in the Stand composition. The majority of the dominant tulip poplar and sycamore in Stand 3 range from 20 to 30" dbh, with scattered 30 to 40" specimen. Red maple and river birch generally fall within the 12 to 20" dbh range, with scattered larger (~24"dbh) trees noted. The forest sections designated as Stand 3 are entirely associated with the Muddy Branch stream valley floodplain in Blockhouse Point Conservation Park.

Many additional tree species were noted in Stand 3 including *Acer negundo*, *A.saccharinum*, *Nyssa sylvatica*, *Fraxinus pennsylvanica*, *Fagus grandifolia*, *Ulmus Americana* and *U.rubra*, *Juglans nigra*, *Prunus serotina*, *Salix nigra*, *Celtis occidentalis*, and assorted *Quercus* species, including *Quercus palustris*, *Q.bicolor*, *Q.alba*, *Q.rubra*, *Q.imbricaria*. The Muddy Branch floodplain forest is a rich woods with scattered pin oaks measured 20 to 25" dbh and the uncommon (in Montgomery County) swamp white oak noted occasionally.

Lindera benzoin and *Asimina triloba* are common in the tree and shrub understory, with *Carpinus caroliniana*, *Ilex verticillata*, *I.opaca*, *Viburnum prunifolium*, *V.dentatum*, *Hamamelis virginiana* also noted.

The herbaceous level is richer and more diverse in Stand 3 than in Stand 1 or 2 of Blockhouse Point Conservation Park. Herbaceous and vining species noted include *Podophyllum peltatum*, *Polygonatum biflorum*, *Symplocarpus foetidus*, *Arisaema triphyllum*, *Rubus hispidus*, *Rubus* sp., *Viola* spp., *Circaea quadrisulcata*, *Actinomeris alternifolia*, *Urtica dioica*, *Asarum canadense*, *Geum virginianum*, *Dentaria laciniata*, *Agrimonia parviflora*, *Saururus cernuus*, *Gallium circaeans*, *Osmorhiza claytoni*, *Medeola virginiana*, *Dioscorea villosa*, *Claytonia virginica*, *Impatiens capensis*, *Collinsonia canadensis*, *Geranium maculatum*, *Smilax rotundifolia* and *Toxiodendron radicans*.

Numerous species of fern, sometimes forming a lush groundcover, were observed including *Polystichum acrostichoides*, *Onoclea sensibilis*, *Osmunda cinnamomea*, *Thelypteris noveboracensis*, *T.hexagonoptera*, *Adiantum pedatum*, *Dennstaedtia punctilobula*, and *Dryopteris intermedia*.

Stand 3 basically encompasses the Muddy Branch stream valley floodplain, and while the dbh of dominant trees is consistently over 20", with many significant and specimen trees, there are also large, relatively open areas along the stream where herbaceous plants provide the dominant cover. From mid July through the October, the 4 to 6 foot tall wingstem blankets some open floodplain areas.

Just south of River Road in Stand 3, several uncommon plants have been noted in a large wetland community which includes *Saururus cernuus*, *Peltandra virginica*, *Dryopteris cristata*, *Thelypteris palustris*, *Mimulus moschatus*, and large colonies of *Symplocarpus foetidus*. Unfortunately, exotics including *Lonicera japonica*, *Celastrus orbiculatus*, *Microstegium vimineum*, *Rosa multiflora*, and *Alliaria petiolata* do appear along the paths and in clearings and have a much bigger presence in Stand 3 than in Stand

1 or 2. They are encroaching into higher quality areas like the wetland noted above. Over the past five years, Vietnamese stiltgrass in particular has become established in several sizable areas of floodplain from the very northern edge of the park at Esworthy Rd. down to the Potomac River. A sizable wetland just north of River Road once filled with lizards tail has now been almost entirely over-run by Vietnamese stiltgrass.

Stand 3 has been given the priority of "I-High". All of Stand 3 is associated with a perennial stream and stream buffers, has nontidal wetlands/seeps, has scattered specimen trees, and represents contiguous forest connecting vegetated tracts of land.

Stand 4. Stand 4 (approximately 22 acres) is dominated by *Platanus occidentalis*, *Fraxinus pennsylvanica*, and *Acer saccharinum* with dominant trees in the 20 to 30" dbh range. The numerous other common tree species in this riverine association include *Acer rubrum* and *A. negundo*, *Celtis occidentalis*, *Liriodendron tulipifera*, *Ulmus rubra* and *U. americana*, *Salix nigra*, *Juglans nigra*, *Robinia pseudo-acacia*, mixed oaks-especially *Quercus palustris*, *Q. rubra*, *Q. alba*, and a few *Q. bicolor* and *Q. michauxii*.

Lindera benzoin is the dominant shrub, and *Asimina triloba* is a very common understory tree in the Stand 4 understory communities. Also noted were *Carpinus caroliniana*, *Toxiodendron radicans*, *Ilex verticillata*, *Viburnum prunifolium*, *V. dentatum*, and *Staphylea trifolia*.

As in Stand 3, the herbaceous and vining layer in Stand 4 is much fuller in the river floodplain forest than it is in the upland forest at Blockhouse Point. Herbs and vines commonly seen include *Arisaema triphyllum*, *Actinomeris alternifolia*, *Urtica dioica*, *Asarum canadense*, *Medeola virginiana*, *Claytonia virginica*, *Circaea quadrisulcata*, *Sanguinaria canadensis*, *Amphicarpa bracteata*, *Tovara virginiana*, *Desmodium nudiflorum*, *Smilax rotundifolia*, *Vitis* spp., *Podophyllum peltatum*, *Polygonatum biflorum*, *Symplocarpus foetidus*, *Rubus hispidus*, *Rubus* sp., *Viola* spp., *Geum* spp., *Geum virginianum*, *Dentaria laciniata*, *Agrimonia parviflora*, *Saururus cernuus*, *Gallium circaezans*, *Osmorhiza claytoni*, *Dioscorea quaternata*, *Impatiens capensis*, *Collinsonia canadensis*, *Geranium maculatum*, and *Smilax rotundifolia*. Fern species noted in the river floodplain include *Dennstaedtia punctilobula*, *Onoclea sensibilis*, *Polystichum acrostichoides*, *Asplenium platyneuron*, and *Thelypteris novaboracensis*.

In addition to the typical river floodplain forest of Stand 4, there is a large ponded wetland area that empties into the C&O canal close to the

southeastern corner of Blockhouse Point Conservation Park property. The wetland community that surrounds the pond is very diverse and includes many sedges, rushes and grasses as well as *Cephalanthus occidentalis*, *Typha* sp., *Saururus cernuus*, *Scutellaria lateriflora*, and the showy flowered *Lobelia cardinalis*, and *Hibiscus moscheutos*.

Unfortunately, as in Stand 3, non-native invasives have taken over large portions of the riverine forest, especially in the more open canopy areas and where a path cuts through the forest. *Rosa multiflora*, *Alliaria petiolata*, *Lonicera japonica*, *Lonicera tartarica*, *Celastrus orbiculatus*, *Perilla frutescens*, were all noted, with *Microstegium vimineum* again a major concern across the floodplain.

Deer are as much a problem in Stand 4 as they are in the rest of the park. Three very uncommon *Platanthera lacera* were noted near the trib feeding into the ponded wetland. Two of these orchids had been cropped by deer so there would be no bloom/seeds that season.

Stand 4 has been given the priority of "I-High". All of Stand 4 is associated with a river and river buffers, has nontidal wetlands/seeps, has scattered specimen trees, and represents contiguous forest connecting vegetated tracts of land.

Stand 5. Approximately 21 acres of Blockhouse Point Conservation Park are designated as Stand 5, "young successional forest/old field". These areas of somewhat weedy forest range in age from about 10 to 25 years. Though the exact composition of these woods varies somewhat from one location to another, *Liriodendron tulipifera*, *Acer rubrum*, *Pinus virginiana*, and *Juniperus virginiana* are the four dominant species throughout. Commonly observed additional trees include *Prunus serotina*, *Quercus* species, including *Q. alba*, *Q. rubra*, *Q. imbricaria*, *Q. falcata*, *Sassafras albidum*, *Robinia pseudoacacia*, and *Platanus occidentalis*. Dbh readings of dominant trees range from 3 to 10" with scattered larger trees, especially along old fence lines.

All of the sections designated as Stand 5 occur north of River Road. The majority of the areas are located at the top (or close to the top) of a hill where a clearing or home-site was made not too far in the distant past. The areas to the west of Muddy Branch and closest to River Road are younger and weedier than the areas east of Muddy Branch which are closer to housing developments and fields off Maidens Bower Dr. and Gorky Dr. An area planted

in white pine located between one of the early succession Stands and a former home-site pond north of River Road has been included in the Stand 5 acreage.

Understories in these young forests are usually full of shrubs and vines including *Rhus radicans*, *R.typhina*, *R.copallina*, *Smilax rotundifolia*, *Viburnum prunifolium*, *Parthenocissus quinquefolia*, *Desmodium* spp., and a number of exotic invasives, including *Rosa multiflora*, *Elaeagnus angustifolia*, *Lonicera japonica*, *L.morrowi*, *L.tatarica*, and *Celastrus orbiculatus*.

The herbaceous level varies from section to section in Stand 5, with observed species including *Gallium aparine*, *Asplenium platyneuron*, *Aster divaricatus*, *A.pilosus*, *Glechoma hederaceae*, *Achillea millefolium*, *Agrimonia parviflora*, *Duchesnea indica*, *Daucus carota*, *Clematis virginiana*, *Verbascum thapsus*, *Gnaphalium obtusifolium*, *Solidago* spp. including *S.nemoralis* and *S.graminifolia*, *Dianthus armeria*, *Asclepias syriaca*, *Apocynum cannabinum*, *Lespedeza* spp., *Antennaria plataginifolia*, *Pycnanthemum* sp., and *Cirsium* sp.

In addition to the presence of non-native invasives, deer browse is a very obvious problem in much of Stand 5. These early succession areas seem to be favored by deer for bedding areas and the browse line is very obvious. In one early succession forest dominated by 4 to 10"dbh tulip poplar, a population of about 8 *Galearis spectabilis* had been browsed down to the ground by deer.

Assigning a priority rating to Stand 5 is not as straight forward a matter as it is for Stand 1,2,3, or 4. The rating of "3-low" might be assigned because the woods are young and have poor structural quality with exotics present. However, the rating of "2-moderate" has been given because the forests do represent a portion of wooded property within a large contiguous forest, and if preserved and allowed to grow, will develop into a higher quality forest in time.

Stand 6. Approximately 2 acres of Blockhouse Point Conservation Park are covered by white pines (*Pinus strobus*) which were planted near a former dwelling area. Though a few species typically native to the Maryland piedmont have grown up among the planted pines, including black cherry and tulip poplar, this area is still dominated by pines in the 10 to 18"dbh range. The understory is rather sparse except for some poison ivy and Japanese honeysuckle. This is a pine plantation rather than a native forest stand, does not have good structural diversity, and does not have any

streams, wetlands, floodplains associated with it. The rating of 2 "Moderate" is still given because it represents part of an area of contiguous forest in a conservation park.

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Appendix III - *Archaeology Resources*

Prehistoric Cultural Resources

Because there is an increasing statistical ratio between the frequency of Indian camps and their distance to water sources, an above average number of our County's prehistoric sites have been protected within our Parks's stream valley system. This is most true for Blockhouse Point Conservation Park situated on a primary waterway, the Potomac River. The Park contains the highest number of prehistoric archaeological sites of any other Park in the County. To date, 32 such sites have been identified and each walkover uncovers more.

Prehistorically, Montgomery County is part of the Eastern Woodland cultural complex. Conventionally, the prehistory of the Eastern Woodlands is divided into three major cultural periods: Paleo-Indian (10000 B.C. to 7000 B.C.), Archaic (7000 B.C. to 1000 B.C.) and Woodland (1000 B.C. to European Contact about A.D. 1600). Today, we can add Pre-Paleo-Indian (30000 B.C. to 10000 B.C.). Traditionally, Paleo-Indian culture was thought to center on hunting mega fauna (big game), while Archaic bands depended upon gathering more modern plant varieties and hunting smaller Holocene species, especially deer. The Woodland Period begins with the appearance of agriculture and concomitant tribal organization.

As a gateway to our County, the prehistoric Potomac River channeled numerous migrations into our region beginning as far back as 18000 B.C. While late Ice Age sites dating to 10000 B.C. have been identified just upriver of Blockhouse Point, the earliest known site within the Park boundaries is about 3000 B.C. Since only one Park site has been test excavated (Blockhouse Point # 5), it is not surprising that the majority of the prehistoric sites remain undated. No diagnostic artifacts were recovered from the large campsite at #5.

Prehistoric Archaic Occupation - 3000 B.C. to 1000 B.C.

For now, the prehistory of Blockhouse Point begins in the Late Archaic Period (3000 B.C. to 1000 B.C.). Based on projectile point types from Blockhouse Point #2 and, especially, # 31 made in the "Savannah River" style, we know this kind of spearpoint first appeared in the Southeast with subsequent diffusion up the Atlantic coast. The Savannah River or Broadblade tradition is associated with anadromous fish and shellfish harvesting encouraged by increased wetland and estuary development. During this Late Archaic Period, more people began to occupy semi-permanent camps in areas of high resource potential. These are the dry season macro- or multi-band base camps in stream valleys that are then linked to smaller, short-term occupations in upland locations.

While the larger, semi-permanent base camps would be located near the Fall Line between Montgomery and Prince Georges Counties, Blockhouse Point Conservation Park would have been ideal for the short-term resource camps, making use of the Potomac's linear riverine environment. Here, small bands would have engaged in: quarrying local stone, making tools and spearpoints, hunting, butchering, hide preparation, nut and seed gathering and fishing.

Major Late Archaic faunal species that were available included: deer, elk, woodland bison, black bear, turkey, squirrel, rabbit, beaver, otter, muskrat, duck, geese and water and upland (quail) fowl. These would have been hunted most successively during the fall and winter. Aquatic resources would have included: Coastal Plain marine shellfish (oysters, clams and crabs), freshwater clams and mussels and anadromous fish (shad, herring, rockfish and sturgeon). Anadromous fish runs usually occurred between March and June.

Plant remains can be ordered by prehistoric dietetic importance:

- 1) Nuts - acorn, hickory, walnut and chestnut (harvested from October through January).
- 2) Fruits and vegetables - various berries, gourds and squash (available late summer, July, and early autumn, October).
- 3) Roots and tubers - Indian potato and tuckahoe (most common in freshwater swamps from October to April).
- 4) Grains and edible seeds - goosefoot/lambsquarter, sump weed/marsh elder, sunflower, little barley, ragweed and knotweed (common in freshwater marshes, floodplains and terraced fields from July through September).

The husbandry of wild plant remains, suitable to growing on trash heaps, can be confirmed between 2000 B.C. and 1000 B.C. It is thought that some Late Archaic groups cleared dense floodplains to encourage pioneer species and burned hillsides to increase nut production.

The Late Archaic sites in Blockhouse Point Conservation Park also reflect that culture's preference for more localized lithic material. Quartz, quartzite and salicified sandstone are readily available in the Park, and within the Broadblade tradition, quartzite is often the cobble of choice. Steatite (soapstone) outcrops have also been found within the Park, and the most notable addition to Late Archaic artifacts is hollowing out shallow, lug-handled soapstone vessels for cooking.

Prehistoric Woodland Occupation - 1000 B.C. to A.D. 300

An Early Woodland era occupation (1000 B.C. to A.D. 300) has also been identified in the Park (Kawecki III Site). This comes in the shape of a smaller, notched and stemmed "Calvert" spearpoint, a descendant of the Savannah River projectile tradition. While no prehistoric ceramics have been found in the Park, this era ushers in a true, terra cotta container revolution, spread north from Mexico. The pottery of the time is known as steatite-tempered "Marcy Creek Plain" and a local, Montgomery County coiled variety, named "Selden Island" ware after the nearby Walker Village (18MO20), the County's only prehistoric site listed on the National Register of Historic Places. During this period, the transition to true village sedentism and agriculture develop.

The nearby Selden Island village is the first evidence in Montgomery County of true, year-round settled lifeways. Village features include small round huts, subsurface storage pits and garden cultivation.

Bruce Smith of the Smithsonian Institution has confirmed that eastern North America was the fourth independent center for plant domestication, along with the Near east, China and Mezoamerica. Located on adjacent islands and upriver floodplains, local prehistoric inhabitants would have grown; Chenopodium (lambsquarter/goosefoot), Iva Annuua (marshelder/goosefoot), and Helianthus Annuls (sunflower). These would have been the typical domesticated crops for over 1,000 years before corn was introduced from the Mississippi Valley via Mexico about A.D. 800.

The Early Woodland sites at Blockhouse Point Conservation Park represent a continuum of the hunting/subsistence strategies of the Late Archaic Period. They would have been small, outlying support camps for the near-

by, upstream floodplain villages. These Early Woodland peoples seem to have disappeared by the Middle Woodland Period (A.D. 300 to A.D.900). Too distant to be identified by tribal or linguistic groupings, their disappearance is a prehistoric mystery that waits to be investigated. Montgomery County was not resettled until the Late Woodland Period when the "Montgomery Focus" people established their towns between A.D. 900 and circa A.D.1300. These villagers were replaced by Ohio-based westerners of the Keyser Complex (Monongehela Culture) who abandoned their eastern settlements by about A.D. 1500. When John Smith sailed up the Potomac River into Montgomery County in 1609, the region was a no-mans-land, separating the southern Maryland Algonquian-speaking Piscataways from northern Iroquois and western Souian/Shanee groups.

Historical Cultural Resources

Although named for the Civil War feature of the same type, Blockhouse Point Conservation Park also contains an eighteenth century mill complex and was used as a wood lot by nineteenth century owners William and Sarah Reading. Part of a military complex called the "Camp at Muddy Branch", the blockhouse not only guarded that reach of the Potomac River but also local fording places and the adjacent Chesapeake and Ohio Canal.

Eighteenth/Early Nineteenth Century Occupation

Wheeler/Didenhover Mill -18MO390. The first evidence of an historical use of the Park comes from the November 7, 1782 issue of the Maryland Gazette. C. Wheeler of Loudoun County, Virginia, offered for sale a mill and mill seat on a 243-acre plantation at the Mouth of Muddy Branch. It continued in operation, at least, until the beginning of the nineteenth century when, on October 14, 1815, miller William Didenhover placed an add in the Frederick Town Herald announcing his fulling and dying business:

Cloth will be received in Frederick Town, by Mr. Valentine Bruner, at his store in Market-Street, near the Market-Square: and also at Buckey's Town, by Mr. George Buckey, at his store: and at Mr. Samuel Lanham and Nicol's Store, on the manor, where he will send every two weeks to receive such cloths as may be left at said store; which shall be dressed and returned in two weeks from the time received.

William and Sarah Reading Ownership. In 1856, William and Sarah Capner Reading from Hunterdon County, New Jersey, acquired 1100 acres of land in Montgomery County around Blockhouse Point with the intention of using its woodland for charcoal, which could be hauled to Georgetown, D.C. by canal boats.

Civil War Occupation

Not surprisingly, although a slaveholder, William Reading was an ardent Northern supporter as revealed in the following letter to the Montgomery County Sentinel, February, 6, 1861:

Address to the People of the South

To my fellow citizens of the South,

Although, but a humble farmer of Maryland, and unaccustomed to writing, I am accustomed to thinking when circumstances require it; and I, doubt not but all-well-meaning men will agree with me that..... when our country is upon the verge of ruin, it demands all our thoughts and efforts for preservation. Several States have already seceded from the Union, and are urging others to follow their example, until all the slave states have withdrawn. While I am a slaveholder, and have all the interests of the South at heart, and feel that our rights have been attacked and gravely insulted by some of the people of the North, I am altogether opposed to secession from the Constitution of the United States and the Union as a means of redress and safety.....Come then, and let us at once do away with this wicked, foolish, and suicidal notion of disunion and secession, and rally around our country, with the Star Spangled Banner floating over us; and let Hail Columbia ring under the arches of our God, whose frown is upon us, but who is willing to smile again upon us, if we are willing to return to our duties, and to Him who has hitherto blessed us as no nation was ever blessed.

Wm. Reading - Summitbridge, Maryland, Jan. 30, 1861

In March of 1861, Reading elected to write another letter to the Sentinel refuting charges that he was a "Northern man".

William Reading's land must have been appropriated by the government before January of 1862, because it was after the Battle of Ball's Bluff on October 21, 1861, that the Nineteenth Regiment, Massachusetts Volunteer Infantry was ordered "to Seneca" at a place called "Muddy Branch", where it relieved some of General Bank's command. Its duties were to guard 13 miles of the Potomac River from Seneca to Great Falls.

It also was instructed to build three defensive blockhouses, 48 feet each way, of the shape of a Greek Cross, four feet thick, twelve feet high, with loopholes for infantry arms, roofed with logs three feet thick and covered with three feet of earth. Two hundred twenty five officers and men were engaged in this work. The blockhouses were constructed between January and February of 1862, with Captain James D. Russell of Company D building the defensive blockhouse between Muddy Branch and Seneca with Lieutenant Samuel Baxter helping.

In building the camp, the regiment's first work was the procuring of logs from the camps that had been abandoned by General Banks' Division. Digging out a round hole about 10 feet across and four feet deep, the men took the logs and built them up about three feet from the ground, stopping the cracks with sticks and mud. On top of the logs the tents (Sibley) were made fast, and fireplaces were built into one side with a barrel or box for a chimney. The officers' quarters had slate firebacks. The 19th Massachusetts regimental history adds that a few of the more industrious built their chimneys of sticks, log house style, and plastered the insides with mud. "In the same way were the houses of the poor whites and Negroes provided with the means to let the smoke escape." Ovens were constructed out of doors in which to bake bread.

On March 12, 1862, the 19th Massachusetts regiment was ordered to join General Sedgwick's Division under the command of General N. J. T. Dana at Harper's Ferry, which was on its way to reinforce Generals Banks and Shields in the Shenandoah Valley. The regiment was loaded on canal boats at Edward's Ferry and were "...lazily drawn along by mules...with hills and mountains making on the opposite side a background beautiful and picturesque...a scene long to be remembered".

Actually, the 19th Massachusetts was still in Sedgwick's Division at the battle of Antietam in September of 1862, where they sustained 50% losses. Thus, many of the Blockhouse's builders had only a few months to live!

More research will fill in the gaps of the camp's occupations. In 1863, a history of the 10th Vermont Regiment mentions that the right wing, under Lieutenant Colonel Edson, was picketed between Edward's Ferry and Muddy Branch.

On July 11, 1864, Confederate Colonel John Singleton Mosby of the 1st Virginia Partisan Rangers, which included a number of Montgomery County men, crossed the Potomac River at Conrad's Ferry to support General Jubal Early's strike at Washington, D.C. On the 12 of July, they went to Seneca Mills and thence to Muddy Branch where they found a "...deserted camp of the 8th Illinois Cavalry, from which the forces had hastily departed, leaving tents standing, with bales of hay, bags of oats, saddles, bridles and everything lying about. These we burned together with a large blockhouse and frame building connected with the camp. We also captured 30 head of cattle left behind by the enemy and also several wagons full of flour, and then re-crossed the river".

Post Bellum/Modern Occupation

Blockhouse Point remained in the Reading family for 91 years until it was sold to Randell and Roselyn Patten in 1947. For all of those years, the Park remained relatively undisturbed, being used only for logging in the twentieth century. The Maryland-National Capitol Park and Planning Commission acquired the property from the Pattens in 1970.

Heritage Tourism Potential

Civil War archaeology has missed a point by focusing too much and too long on just battles and leaders. Rather than study purely military actions, the "Camp at Muddy Branch" can reveal the effects of war on the cultural landscape. At Blockhouse Point Conservation Park, we have an opportunity to add to our scant knowledge of blockhouse and bivouac construction techniques, everyday camp life and guard duties. The blockhouse, itself, was built in the form of a "Greek cross". Here, we can unravel the interaction between armies and civilian populations. Here, we can interweave camps, farms, roads, canals and waterways to uncover the impacts and effects of the War on a local environment and region.

Archaeologically, Blockhouse Point has tremendous interpretative interest for the general public in yielding information, not only about little known aspects of the Civil War in Montgomery County, but also about the unrecorded lifeways of the everyday soldier. This is a unique opportunity

because the camp at Blockhouse Point is the only example of such a Civil War campsite left undisturbed in the entire Washington Metropolitan area, just as Battery Bailey, in Westmoreland Hills Local Park, is the only undisturbed remnant left in Montgomery County of the wartime fortifications encircling the Capitol. Thus, both Park sites are uniquely suited to be eligible for the National Register of Historic Places.

Our Parks' military sites are ideally suited to enhance public interest and to contribute a Civil War focus to current initiatives in Heritage Tourism. However, any such public interpretive initiative should be compatible with the conservation focus of the Park as well.

Upgrading Laws to Better Protect Cultural Resources on Parkland

Recent publicity in forensic anthropology has made the public aware that removing evidence from a crime scene hinders and prevents researchers from reconstructing and solving the crime. Because archaeological investigations share similar principles and techniques as forensic anthropology, "pot hunters" and unsupervised users of metal-detecting devices pocket the past and destroy any information that archaeological methods can tease from the ground.

Because Civil War sites have high visibility, contain valuable artifacts and, thus, are particularly vulnerable to looting, it is recommended that County laws on "pot hunting" be reviewed and that penalties for stealing archaeological artifacts from public County lands be made more consistent with State and Federal standards, which can require such penalties as confiscation of equipment, etc. Such legal action is necessary to protect Blockhouse Point, since evidence of looting has been observed on various occasions at the campsite and, even concerned, non-park personnel (the National Chairman of the Sons of Confederate Veterans) have interrupted out-of-state groups in their attempted retrieval of valuable Park artifacts. Stealing from our Parkland is stealing from the public trust.

Lists



These lists are preliminary and based on limited fieldwork and knowledge of available habitat, species and archeological findings known to the surrounding area. It is likely that these lists will expand as additional fieldwork is conducted on this new park.

Appendix IV - *Aquatic Survey Results*

Blockhouse Point Conservation Park 2001 Fish Sampling

Monitoring Site Fish Collected

PDD6 101	Minnnows (Cyprinidae)	
	Blacknose dace	13
PDD6 102	No fish (station was dry)	
MBMB 201	Minnnows (Cyprinidae)	
	Blacknose dace	14
	Creek chub	1
MBMB 313	Minnnows (Cyprinidae)	
	Central stoneroller	20
	Blacknose dace	6
	Longnose dace	33
	Spotfin shiner	15
	Bluntnose minnow	48
	Silverjaw minnow	15
	Suckers (Catostomidae)	
	White sucker	1
	Northern hog sucker	5
	Catfish (Ictaluridae)	
	Yellow bullhead	3
	Sculpins (Cottidae)	
	Mottled sculpin	4
	Potomac sculpin	5
	Sunfish (Centrarchidae)	
	Smallmouth bass	2
	Green sunfish	1
	Bluegill	8
	Redbreast sunfish	12
	Darters (Percidae)	
	Greenside darter	13
	Fantail darter	10

Appendix V - Wildlife & Breeding Bird Inventory

Butterflies

Common Name	Genus species
Zebra Swallowtail	<i>Eurytides Marcellus</i>
Black Swallowtail	<i>Papilio polyxenes</i>
Eastern Tiger Swallowtail	<i>Papilio glaucus</i>
Spicebush Swallowtail	<i>Papilio troilus</i>
Cabbage White	<i>Pieris rapae</i>
Clouded Sulphur	<i>Colias philodice</i>
Harvester	<i>Feniseca tarquinius</i>
Eastern Tailed Blue	<i>Everes comyntas</i>
Pearl Crescent	<i>Phyciodes tharos</i>
Red-spotted Purple	<i>Limenitis arthemis</i>
Monarch	<i>Danaus plexippus</i>
Silver-spotted Skipper	<i>Epargyreus clarus</i>

Amphibians

Common Name	Genus species
Spotted Salamander	<i>Ambystoma maculatum</i>
Northern Dusky Salamander	<i>Desmognathus fuscus</i>
Two-Lined Salamander	<i>Eurycea bislineata</i>
Red-Backed Salamander	<i>Plethodon cinereus</i>
American Toad	<i>Bufo americanus</i>
Spring Peeper	<i>Pseudacris crucifer</i>
Gray Treefrog	<i>Hyla versicolor</i>
Bullfrog	<i>Rana catesbeiana</i>
Green Frog	<i>Rana clamitans</i>
Pickerel Frog	<i>Rana palustris</i>
Wood Frog	<i>Rana sylvatica</i>

Reptiles

Common Name	Genus species
Painted Turtle	<i>Chrysemys picta</i>
Spotted Turtle	<i>Clemmys guttata</i>
Eastern Box Turtle	<i>Terrapene carolina</i>
Five-lined Skink	<i>Eumeces fasciatus</i>
Eastern Hognose Snake	<i>Heterodon platyrhinos</i>
Northern Water Snake	<i>Nerodia sipedon</i>
Rough Green Snake	<i>Opheodrys aestivus</i>
Queen Snake	<i>Regina septembittata</i>
Eastern Garter Snake	<i>Thamnophis sirtalis</i>

Birds

Common Name	Genus species
Black Vulture	<i>Coragyps atratus</i>
Turkey Vulture	<i>Cathartes aura</i>
Canada Goose*	<i>Branta canadensis</i>

Bald Eagle	<i>Haliaeetus leucocephalus</i>
Sharp-shinned Hawk	<i>Accipiter striatus</i>
Red-shouldered Hawk*	<i>Buteo lineatus</i>
Red-tailed Hawk*	<i>Buteo jamaicensis</i>
Wild Turkey*	<i>Meleagris gallopavo</i>
Killdeer	<i>Charadrius vociferus</i>
Mourning Dove*	<i>Zenaidura macroura</i>
Yellow-billed Cuckoo*	<i>Coccyzus americanus</i>
Eastern Screech-owl*	<i>Otus asio</i>
Great Horned Owl*	<i>Bubo virginianus</i>
Barred Owl**	<i>Strix varia</i>
Chimney Swift	<i>Chaetura pelagica</i>
Ruby-throated Hummingbird*	<i>Archilochus colubris</i>
Belted Kingfisher	<i>Ceryle alcyon</i>
Red-bellied Woodpecker*	<i>Melanerpes carolinus</i>
Yellow-bellied Sapsucker	<i>Sphyrapicus varius</i>
Downy Woodpecker*	<i>Picoides pubescens</i>
Hairy Woodpecker**	<i>Picoides villosus</i>
Northern Flicker*	<i>Colaptes auratus</i>
Pileated woodpecker**	<i>Dryocopus pileatus</i>
Eastern Wood-pewee*	<i>Contopus virens</i>
Acadian Flycatcher**	<i>Empidonax virescens</i>
Eastern Phoebe*	<i>Sayornis phoebe</i>
Great Crested Flycatcher*	<i>Myiarchus crinitus</i>
Yellow-throated Vireo*	<i>Vireo flavifrons</i>
Blue-headed Vireo	<i>Vireo solitarius</i>
Red-eyed Vireo**	<i>Vireo olivaceus</i>
Blue Jay*	<i>Cyanocitta cristata</i>
American Crow*	<i>Corvus brachyrhynchos</i>
Carolina Chickadee*	<i>Poecile carolinensis</i>
Tufted Titmouse*	<i>Baeolophus bicolor</i>
White-breasted Nuthatch*	<i>Sitta carolinensis</i>
Brown Creeper	<i>Certhia americana</i>
Carolina Wren*	<i>Thryothorus ludovicianus</i>
House Wren*	<i>Troglodytes aedon</i>
Winter Wren	<i>Troglodytes troglodytes</i>
Blue-gray Gnatcatcher*	<i>Polioptila caerulea</i>
Eastern Bluebird*	<i>Sialia sialis</i>
Veery*	<i>Catharus fuscescens</i>
Wood Thrush*	<i>Catharus mustelinus</i>
American Robin*	<i>Turdus migratorius</i>
Gray Catbird*	<i>Dumetella carolinensis</i>
European Starling*	<i>Sturnus vulgaris</i>
Cedar Waxwing*	<i>Bombicilla cedrorum</i>
Northern Parula*	<i>Parula americana</i>
Yellow-throated Warbler*	<i>Dendroica dominica</i>
American Redstart**	<i>Setophaga ruticilla</i>

Prothonotary Warbler*	<i>Protonotaria citrea</i>
Worm-eating Warbler**	<i>Helminthos vermivorus</i>
Ovenbird**	<i>Seiurus aurocapillus</i>
Louisiana Waterthrush**	<i>Seiurus motacilla</i>
Kentucky Warbler**	<i>Oporornis formosus</i>
Common Yellowthroat*	<i>Geothlypis trichas</i>
Scarlet Tanager**	<i>Piranga olivacea</i>
Eastern Towhee*	<i>Pipilo erythrophthalmus</i>
Song Sparrow*	<i>Melospiza melodia</i>
White-throated Sparrow	<i>Zonotrichia albicollis</i>
Dark-eyed Junco	<i>Junco hyemalis</i>
Northern Cardinal*	<i>Cardinalis cardinalis</i>
Indigo Bunting*	<i>Passerina cyanea</i>
Common Grackle*	<i>Quiscalus quiscula</i>
Brown-headed Cowbird*	<i>Molothrus ater</i>
Baltimore Oriole*	<i>Icterus galbula</i>
House Finch*	<i>Carpodacus mexicanus</i>
American Goldfinch*	<i>Carduelis tristis</i>

Mammals

Common Name	Genus species
Opossum	<i>Didelphis virginianus</i>
Maryland Shrew	<i>Sorex fontinalis</i>
Short-tailed Shrew	<i>Blarina brevicauda</i>
Eastern Mole	<i>Scalopus aquaticus</i>
Red Bat	<i>Lasiurus borealis</i>
Eastern Cottontail	<i>Sylvilagus floridanus</i>
Eastern Chipmunk	<i>Tamias striatus</i>
Groundhog	<i>Marmota monax</i>
Gray Squirrel	<i>Sciurus carolinensis</i>
Southern Flying Squirrel	<i>Glaucomys volans</i>
Beaver	<i>Castor canadensis</i>
White-footed Mouse	<i>Peromyscus leucopus</i>
Meadow Vole	<i>Microtus pensylvanicus</i>
Muskrat	<i>Ondatra zibethicus</i>
Red Fox	<i>Vulpes vulpes</i>
Gray Fox	<i>Urocyon cinereoagenteus</i>
Black Bear	<i>Ursus americanus</i>
Raccoon	<i>Procyon lotor</i>
Mink	<i>Mustela vison</i>
River Otter	<i>Lutra canadensis</i>
White-tailed Deer	<i>Odocoileus virginianus</i>

* Birds that breed in the park

** Forest interior birds that breed in the park

Appendix IV - Plant Species List

Trees

Species	Common name
<i>Acer negundo</i>	box elder
<i>Acer rubrum</i>	red maple
<i>Amelanchier canadensis</i>	serviceberry
<i>Asimina triloba</i>	pawpaw
<i>Betula lenta</i>	black birch
<i>Betula nigra</i>	river birch
<i>Carpinus caroliniana</i>	musclewood
<i>Carya glabra</i>	pignut hickory
<i>Carya ovata</i>	shagbark hickory
<i>Carya tomentosa</i>	mockernut hickory
<i>Castanea dentata</i>	American chestnut
<i>Castanea pumila</i>	Allegheny chinkapin
<i>Celtis occidentalis</i>	hackberry
<i>Cercis canadensis</i>	eastern redbud
<i>Chionanthus virginicus</i>	fringetree
<i>Cornus florida</i>	flowering dogwood
<i>Diospyros virginiana</i>	persimmon
<i>Fagus grandifolia</i>	American beech
<i>Fraxinus pennsylvanica</i>	green ash
<i>Ilex opaca</i>	American holly
<i>Ilex verticillata</i>	winterberry
<i>Juglans nigra</i>	black walnut
<i>Juniperus virginiana</i>	eastern red cedar
<i>Liriodendron tulipifera</i>	tulip tree
<i>Morus alba</i>	white mulberry
<i>Morus rubra</i>	red mulberry
<i>Nyssa sylvatica</i>	black gum
<i>Ostrya virginiana</i>	ironwood
<i>Pinus virginiana</i>	Virginia pine
<i>Platanus occidentalis</i>	American sycamore
<i>Populus deltoides</i>	eastern cottonwood
<i>Prunus americana</i>	American wild plum
<i>Prunus serotina</i>	black cherry
<i>Quercus alba</i>	white oak
<i>Quercus coccinea</i>	scarlet oak
<i>Quercus falcata</i>	southern red oak
<i>Quercus imbricaria</i>	shingle oak
<i>Quercus marilandica</i>	blackjack oak
<i>Quercus palustris</i>	pin oak
<i>Quercus prinus</i>	chestnut oak
<i>Quercus rubra</i>	red oak
<i>Quercus velutina</i>	black oak
<i>Sassafras albidum</i>	sassafras
<i>Ulmus americana</i>	American elm
<i>Ulmus rubra</i>	slippery elm

Shrubs

Species	Common name
<i>Cephalanthus occidentalis</i>	buttonbush
<i>Gaylussacia spp.</i>	huckleberry
<i>Hamamelis virginiana</i>	witch-hazel
<i>Hydrangea aborescens</i>	wild hydrangea
<i>Kalmia latifolia</i>	mountain laurel
<i>Lindera benzoin</i>	spicebush
<i>Lonicera spp.</i>	bush honeysuckle

<i>Rhododendron maximum</i>	shrub rhododendron
<i>Rhododendron nudiflorum</i>	pink azalea
<i>Rhododendron</i>	pinxter azalea
<i>Rhus glabra</i>	smooth sumac
<i>Rhus typhina</i>	staghorn sumac
<i>Rosa multiflora</i>	multiflora rose
<i>Salix humilis</i>	upland willow
<i>Sambucus canadensis</i>	elderberry
<i>Vaccinium corymbosum</i>	highbush blueberry
<i>Vaccinium spp.</i>	blueberry
<i>Vaccinium stamineum</i>	deerberry
<i>Vaccinium vacillans</i>	lowbush blueberry
<i>Viburnum acerifolium</i>	mapleleaf viburnum
<i>Viburnum dentatum</i>	arrowwood viburnum
<i>Viburnum prunifolium</i>	black haw viburnum

Vines

Species	Common name
<i>Campsis radicans</i>	trumpet vine
<i>Clematis viorna</i>	leatherflower
<i>Lonicera japonica</i>	Japanese honeysuckle
<i>Mitchella repens</i>	partridge berry
<i>Parthenocissus quinquefolia</i>	Virginia creeper
<i>Rubus hispida</i>	dewberry
<i>Smilax rotundifolia</i>	roundleaf greenbrier
<i>Smilax spp.</i>	greenbrier
<i>Vitis spp.</i>	wild grape

Herbs

Species	Common name
<i>Actinomeris alternifolia</i>	wingstem
<i>Agrimonia parviflora</i>	small-flowered agrimony
<i>Agrimonia rostellata</i>	woodland/beaked agrimony
<i>Alisma spp.</i>	water plantain
<i>Alliaria petiolata</i>	garlic mustard
<i>Amphicarpa bracteata</i>	hog peanut
<i>Apocynum cannabinum</i>	dogbane
<i>Arisaema dracontium</i>	green dragon
<i>Arisaema triphyllum</i>	jack-in-the-pulpit
<i>Aristolochia serpentaria</i>	Virginia snakeroot
<i>Asclepias incarnata</i>	swamp milkweed
<i>Aster divaricatus</i>	white wood aster
<i>Boehmeria cylindrica</i>	false nettle
<i>Chelone glabra</i>	turtlehead
<i>Chimaphila maculata</i>	spotted wintergreen
<i>Chrysanthemum</i>	ox-eye daisy
<i>Cimicifuga racemosa</i>	black snakeroot
<i>Cinna arundinacea</i>	stout woodreed
<i>Circaea quadrisulcata</i>	enchanter's nightshade
<i>Desmodium nudiflorum</i>	naked-flowered tick trefoil
<i>Desmodium rotundifolium</i>	prostrate tick trefoil
<i>Desmodium spp.</i>	tick trefoil
<i>Dioscorea villosa</i>	wild yam
<i>Duchesnea indica</i>	Indian false strawberry
<i>Ellisia nyctelea</i>	ellisia
<i>Epifagus virginiana</i>	beech drops
<i>Epigaea repens</i>	trailing arbutus
<i>Erigeron annuus</i>	daisy fleabane
<i>Eupatorium perfoliatum</i>	boneset
<i>Galium circaezeans</i>	wild licorice
<i>Geum vernum</i>	spring avens

<i>Glechoma hederacea</i>	ground ivy
<i>Goodyera pubescens</i>	downy rattlesnake plantain
<i>Hemerocallis fulva</i>	daylily
<i>Hepatica americana</i>	round-lobed heptacia
<i>Heuchera spp.</i>	coral bells
<i>Heuchera americana</i>	coral bells
<i>Heuchera villosa</i>	upland willow
<i>Hieracium venosum</i>	rattlesnake weed
<i>Krigia dandelion</i>	potato dandelion
<i>Lobelia inflata</i>	Indian tobacco
<i>Lycopus virginicus</i>	Virginia bugleweed
<i>Lysimachia ciliata</i>	fringed loosestrife
<i>Medeola virginiana</i>	Indian cucumber root
<i>Menispermum canadense</i>	moonseed
<i>Polygonatum biflorum</i>	Solomon's seal
<i>Polygonum arifolium</i>	halberd-leaved tearthumb
<i>Polygonum sagittatum</i>	arrow-leaved tearthumb
<i>Polygonum spp.</i>	tearthumb
<i>Rumex acetosella</i>	sheep sorrel
<i>Sagittaria latifolia</i>	common arrowhead
<i>Sanguinaria canadensis</i>	bloodroot
<i>Saururus cernuus</i>	lizard's tail
<i>Scutellaria lateriflora</i>	mad-dog skullcap
<i>Senecio aureus</i>	golden ragwort
<i>Smilacina racemosa</i>	false Solomon's seal
<i>Solanum dulcamara</i>	bittersweet nightshade
<i>Symplocarpus foetidus</i>	skunk cabbage
<i>Tovara virginiana</i>	Virginia knotweed
<i>Uvularia perfoliata</i>	perfoliate bellwort
<i>Uvularia sessilifolia</i>	sessile-leaved bellwort
<i>Verbesnia alternifolia</i>	yellow ironweed
<i>Viola spp.</i>	violet

Grasses / Sedges / Rushes

Species	Common name
<i>Carex frankii</i>	Frank's sedge
<i>Carex lurida</i>	(yellow-green) sedge
<i>Carex spp.</i>	sedge
<i>Dulichium arundinaceum</i>	three-way sedge
<i>Eragrostis spp.</i>	love grass
<i>Melica mutica</i>	two-flowered melic
<i>Microstegium vimineum</i>	Vietnamese stiltgrass
<i>Scirpus polyphyllus</i>	many leaved bulrush

Ferns/Mosses/Liverworts

Species	Common name
<i>Asplenium pinnatifidum</i>	lobed spleenwort
<i>Athyrium filix-femina</i>	lady fern
<i>Demstaedia punctilobula</i>	hay-scented fern
<i>Dryopteris cretata</i>	crested wood fern
<i>Equisetum arvense</i>	field horsetail
<i>Lycopodium flabelliforme</i>	ground cedar
<i>Onoclea sensibilis</i>	sensitive fern
<i>Polystichum acrostichoides</i>	christmas fern
<i>Thelypteris hexagonoptera</i>	broad beech fern
<i>Thelypteris noveboracensis</i>	New York fern

Appendix VII - *Archeological Data Chart*

Site Name	Size	Topo	Type	Ethnic	Dist	Order	Flows To	Names	Quad	P I	Occ	Notes
Camp at Muddy Branch	L	Hill Bluff	Mil Camp	AngloAm	400	Prim	PotomacRv	Y	Senec	H	A	Civil War Blockhouse
Wheeler/Diddenhover Mill	L	Fld Plain	Mill	AngloAm	200	Ord1	MuddyBr	Y	Senec	H	A	John Milner and Assoc report
Blockhouse Point #2	S	Hill Bluff	Lithic Scat	NativeAm	100	Ord1	PotomacRv	N	Senec	P	A	
Blockhouse Point #3	S	Terrace	Lithic Scat	NativeAm	200	Ord1	PotomacRv	N	Senec	P	A	
Blockhouse Point #4	S	Hill Bluff	Lithic Scat	NativeAm	600	Ord1	PotomacRv	N	Senec	P	A	
Blockhouse Point #5	S	Hill Bluff	Lithic Scat	NativeAm	600	Prim	PotomacRv	Y	Senec	P	A	
Blockhouse Point #6	S	Hill Bluff	Lithic Scat	NativeAm	500	Ord1	PotomacRv	N	Senec	P	A	
Blockhouse Point #7	S	Hill Bluff	Lithic Scat	NativeAm	400	Ord1	PotomacRv	N	Senec	P	A	
Blockhouse Point #8	S	Hill Bluff	Lithic Scat	NativeAm	400	Ord1	PotomacRv	N	Senec	P	A	
Blockhouse Point #9	S	Hill Bluff	Lithic Scat	Native Am	800	Ord1	MuddyBr	Y	Senec	P	A	
Blockhouse Point #10	S	Hill Bluff	Lithic Scat	NativeAm	300	Ord1	MuddyBr	Y	Senec	P	A	
Blockhouse Point #11	S	Hill Bluff	Lithic Scat	NativeAm	25	Ord1	MuddyBr	Y	Senec	P	A	
Blockhouse Point #12	S	Fld Plain	Lithic Scat	NativeAm	25	Ord1	MuddyBr	Y	Senec	P	A	
Blockhouse Point #13	S	Hill Bluff	Lithic Scat	NativeAm	200	Ord1	PotomacRv	N	Senec	P	A	
Blockhouse Point #14	S	Hill Bluff	Lithic Scat	NativeAm	400	Ord1	PotomacRv	N	Senec	P	A	
Blockhouse Point #15	S	Hill Bluff	Lithic Scat	NativeAm	400	Ord1	PotomacRv	N	Senec	P	A	
Blockhouse Point #16	S	Hill Bluff	Lithic Scat	NativeAm	400	Ord1	PotomacRv	N	Senec	P	A	
Blockhouse Point #17	S	Hill Bluff	Lithic Scat	NativeAm	300	Ord1	PotomacRv	N	Senec	P	A	
Blockhouse Point #18	S	Hill Bluff	Lithic Scat	NativeAm	200	Ord1	PotomacRv	N	Senec	P	A	
Blockhouse Point #19	S	HillBluff	Lithic Scat	NativeAm	400	Prim	PotomacRv	Y	Senec	P	A	
Blockhouse Point #20	S	HillBluff	Lithic Scat	NativeAm	400	Ord1	PotomacRv	N	Senec	P	A	
Blockhouse Point #21	S	HillBluff	Lithic Scat	NativeAm	600	Ord1	PotomacRv	N	Senec	P	A	
Blockhouse Point #22	S	HillBluff	Lithic Scat	NativeAm	250	Ord1	PotomacRv	N	Senec	P	A	
Blockhouse Point #23	S	HillBluff	Lithic Scat	NativeAm	600	Ord1	PotomacRv	N	Senec	P	A	
Blockhouse Point #24	S	HillBluff	Lithic Scat	NativeAm	600	Ord1	PotomacRv	N	Senec	P	A	
Blockhouse Point #25	S	HillBluff	Lithic Scat	NativeAm	100	Ord1	PotomacRv	N	Senec	P	A	
Blockhouse Point #26	S	HillBluff	Lithic Scat	NativeAm	400	Prim	PotomacRv	Y	Senec	P	A	
Blockhouse Point #27	S	Hill Bluff	Lithic Scat	NativeAm	500	Ord1	PotomacRv	N	Senec	P	A	
Blockhouse point #28	S	Low Terr	Lithic Scat	NativeAm	600	Ord1	PotomacRv	N	Senec	P	A	
Blockhouse Point #29	S	Int Flat	Lithic Scat	NativeAm	300	Ord1	MuddyBr	Y	Senec	P	A	
Blockhouse Point#30	S	Int Flat	Lithic Scat	NativeAm	600	Ord2	MuddyBr	N	Senec	P	A	
Blockhouse Point #31	S	Int Flat	Lithic Scat	NativeAm	600	Ord1	PotomacRv	N	Senec	P	A	Quartzite Savannah River point, quartz scatter
Blockhouse Point#32	L	Hill Bluff	Lithic Scat	NativeAm	800	Prim	PotomacRv	Y	Senec	P	A	quartz quarry
Gorky Road#1	S	High Terr	Lithic Scat	NativeAm		Ord2	MuddyBr	N	Senec	P	A	quartz
Kawecki III	S	Int Flat	Lithic Scat	NativeAm	400	Ord1	PotomacRv	N	Senec	P	A	Calvert Point,quartz

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