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RESOURCES MANAGEMENT PLAN/ ENVIRONMENTAL ASSESSMENT

Richmond National Battlefield Park
Richmond, Virginia
March 27, 1984

Approved

Regional Director

6/14/84
Date

Superintendent

3-27-84
Date

ON MICROFILM

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I. Introduction

The Resources Management Plan provides specific direction for taking care of and protecting the resource base. The plan provides detailed guidance for on-going management of the resource base as well as defining proposed future management actions with a schedule for their implementation. It expands statements of policy and outlines actions to achieve the park's purposes and objectives as stated in enabling legislation, Master Plan, Statement for Management and other documents.

The purpose of Richmond National Battlefield Park as stated in the park's Statement for Management is "to preserve and interpret significant Civil War historic sites in the vicinity of Richmond, Virginia." Several major drives were launched to capture the city preoccupied both Northerners and Southerners almost constantly from 1861-65. Situated on the James River only 110 miles from Washington, D.C., Richmond was a symbol and a prime psychological objective for the North.

Besides being the political center of the Confederacy, it was a medical and manufacturing center, and the primary supply depot for troops operating on the confederacy's northeastern frontier. Two of the "On to Richmond" drives brought Union troops almost within sight of the Confederate capital -- McClellan's Peninsula Campaign of 1862, culminating in the Seven Days' Battles, and Grant's campaign at Cold Harbor in 1864.

The park comprises 769.43 acres in the west central section of Virginia's coastal plain region. The park's historical resources are included in ten units scattered in a rough semi-circle north, east and south of the city of Richmond. One unit (Chimborazo) is located within the city limits. Other units are located in Henrico County (Fort Harrison, Chickahominy Bluff and Malvern Hill), Hanover County (Beaver Dam Creek, Watt House, Cold Harbor and Garthright House) and Chesterfield County (Drewry's Bluff and Parker's Battery). Park units in adjacent counties range from as close as five miles from the city (Chickahominy Bluff) to as far as fifteen miles (Malvern Hill and Parker's Battery). Because of the scattered nature of the park's ten units the specific resource characteristics of each will be omitted in this plan. Descriptions can be found in the park's Statement for Management and other sources listed in the bibliography.

A nearly 100 mile driving tour over public roads is required to visit all units. There is no logical sequence of driving these roads except when following the Seven Days' Battlefield sites from Chickhominy Bluff to Malvern Hill over Routes 360 and 156. The other three units must be visited separately, often retracing routes. The general area in which park units are located is primarily gently rolling terrain with many forested areas, open fields, bluffs, numerous rivers and streams, and urbanized sections of residential areas, light industry and commercial development. Major changes that have occurred in the area since the Civil War include continuous urban growth which changed the scene from a primarily rural/agricultural atmosphere at all units except Malvern Hill.

The soils are primarily deep, well-drained, sandy loam surface strata with sandy clay subsoil. Uplands are sometimes gravely and low lying drainage may be

swampy, especially in spring. Soils are usually very strongly acid and low in organic matter and natural fertility.

In the vicinity of the Cold Harbor unit are the Garthright and Watt Houses. These structures were pressed into service as hospitals during the war and are now an important park of the historic scene. Park headquarters is located in Chimborazo Park, Richmond, Virginia, in an early 20th century building constructed on the site of the Confederate Chimborazo General Hospital.

The park contains one small stone monument at Parker's Battery which was placed in memory of the men who served at that location from 1864 to 1865. It is located along an unmaintained trail through the battery.

Several cast iron markers on concrete slabs are located throughout the park. These markers were placed by the Battlefield Markers Association in 1925 to identify key points on the battlefields around Richmond. A total of 69 markers were installed of which approximately eight are on park land. The remainder are scattered off park land throughout the Richmond area and are generally well preserved.

There are approximately 700 artifacts in the park museum collection consisting mostly of donated items, but also including several purchased military items and items recovered through excavation or restoration. Several artifacts are on display at the Chimborazo and Fort Harrison Visitor Centers.

The establishment of the park in ten small units widely separated from each other in an urban and suburban setting is the single most pervasive influence on management. As long as the surroundings remained agricultural, the small park units were thought sufficient to preserve historic resources. Today forest and field are rapidly giving way to housing developments, shopping centers, interstate highways and industrial developments. These changes have a serious detrimental effect on earthworks, historic landscapes and visitor use facilities and external encroachment is increasing rapidly.

Management Objectives as stated in the park's Statement for Management include:

Cultural Resource Protection

To identify, preserve and perpetuate the park's significant Civil War battlesites and historic resources in the vicinity of Richmond, Virginia, in a manner consistent with legislative and executive requirements and the Service's management policies.

To prevent deterioration of significant historic earthworks and other resources by using treatments that comply with cultural management policies.

To minimize, and where feasible eliminate, adverse effects on the park's cultural resources and historic setting resulting from incompatible and uncontrolled access, utility rights-of-way, vandalism and other conflicting uses and environmental intrusions.

Lands

To explore and facilitate feasible land acquisition opportunities that have the potential to provide buffer zone protection for vulnerable park units.

Development

To assure that park development is kept to a minimum necessary to provide for essential administration and visitor requirements, and to assure that facilities are located and designed to blend with the historic setting.

Visitor Use

To provide opportunities for day-use recreational activities that are compatible with the preservation of the park's historic resources.

Interpretation

To promote understanding and appreciation of the battles of Richmond which took place from 1862-65, especially McClellan's Peninsula Campaign of 1862 and Grant's campaign at Cold Harbor in 1864, and their significance in the Civil War.

To fully understand the trust of this document, it is important that the reviewer be familiar with the physical layout of Richmond National Battlefield Park and the impact that this circumstance has had on resources management. The establishment of this park in the form of ten widely scattered units is the single most pervasive influence of resource management planning. It directly affects and complicates all programs vital to the efficient operation of the park.

II. Natural Resource Management Program

A. Overview and Needs

Richmond National Battlefield Park was established to preserve and interpret significant Civil War historic sites in the vicinity of Richmond, Virginia. Enabling legislation specifically stated, "...set apart as a public park for the benefit and inspiration of the people..." At the time of the Civil War, most of the present park was deforested for agricultural and military reasons, and even after the war, trees that had grown up were harvested. Most of the current forest has grown up since the sites were set aside as a state park, before being transferred to the federal government. The present heavily wooded park units act as a barrier to visitor appreciation and understanding, while providing cover for illegal activities, which negatively affect the cultural and natural resource.

Also, the forested areas of the ark are heavily under stress by drought overtaking, root disease and infestation by the southern pine bark beetle and other types. Dead pines are prevalent parkwide; many park visitors and employees, buildings and cultural resources. Many trees, when they fall, damage the earthworks and trenches. Also, the dead and dying trees are a visual intrusion on the historic scene and serve as a host for infesting other trees.

Finally, a combination of the dead and dying trees, heavy understory growth and buildup of hazardous combustible fuels, has created a serious fire hazard, while greatly reducing visitor appreciation and understanding of the historic landscape.

1. Identification of Significant Problems

Priority Number	Ref. Number	Project Statement Title
3	RICH-N1	Prescribed Burning
1	RICH-N2	Remove Diseased and Infested trees - Cold Harbor
2	RICH-N3	Remove Diseased and Infested trees from other park units

2. Criteria for Determining Priorities

Proposed actions will more effectively deal with these issues and be in keeping with current management goals to preserve and interpret the park's cultural resources. The project statements address the need to reverse these current natural process trends that are negatively affecting the park's cultural resources and historic scene.

3. RICH-N1 Prescribed Burning

Heavy understory combined with hazardous fuel build-up is causing a serious, potential fire hazard; and acting as a barrier to visitor appreciation and understanding of the park's cultural resources and historic scene.

The potential for destructive wildfire is more serious than the southern pine park beetle tree problem. Prescribed burning will reduce southern pine bark beetle infestation and tree disease problems, make tree removal operations easier, have a more immediate positive effect on visitor appreciation and understanding of cultural resources historic scene and reduce the opportunity for illegal activities by opening up the overall view of the park. But in some areas dead and dying trees would have to be removed or a prescribed burn may develop into a wildfire.

Schedule of Accomplishments:

FY 1984

1) RESOURCES MANAGEMENT

ACTIONS	STAFFING	FUNDING($1000) P	NPS	Other
a. Prepare Natural Resource Management Plan(s)	.1	3	-	-
b. Prepare preliminary prescription burn plan for Hanover County units- Cold Harbor and Watt House	.1	3	2*	-
c. Prepare final prescription burn plan for Cold Harbor and Watt House				
d. Prepare and finalize memorandum of agreement with State Forestry				
e. Prepare for and conduct public involvement per item #IC	.1	5	-	-
f. Consult with State Forester - Henrico County				
2) MONITORING ACTIONS				
a. Survey understory, fuel build-up Hanover County	-	1	1*	-
3) RESEARCH ACTIONS				
a. Consult with Regional Office Resource Manager, et al.				
b. Consult with State Forestry	-	1	1*	-
c. Consult with USFS				
TOTAL	.3	13	4*	-

FY 1985

1)	RESOURCES MANAGEMENT				
a.	Conduct burn Cold Harbor (2x's)	.1	4	8*	4*
b.	Conduct burn Watt House (2x's)	-	2	4*	2*
c.	Public involvement follow-up Hanover County	-	1	-	-
d.	Prepare final burn plan for Henrico County	-	-	2*	-
e.	Public involvement program for Henrico County	.1	5	-	-
2)	MONITORING ACTIONS				
a.	Monitor vegetative regrowth after burns at Hanover County units	-	1	1*	-
3)	RESEARCH ACTIONS				
a.	Test prescription burn plan for Cold	-	1	1*	1*
b.	Evaluate burn effectiveness - Cold Harbor				
c.	Evaluate burn effectiveness - Watt House	-	1	1*	-
	TOTAL	.2	15	17*	7*

FY 1986

1)	RESOURCES MANAGEMENT				
a.	Conduct burn - Malvern Hill	-	2	5*	2*
b.	Conduct burn - Chickahominy Bluff	.1	1	3*	1*
c.	Conduct burn - Ft. Harrison	-	1	4*	1*
d.	Public involvement follow-up Henrico County	-	1	-	-
2)	MONITORING ACTIONS				
a.	Re-survey, monitor fuel build-up- Hanover County				
b.	Survey vegetative regrowth- Hanover County	.1	2	2*	-
c.	Survey vegetative regrowth- Henrico County				
3)	RESEARCH ACTIONS				
a.	Conduct test burn - Malvern Hill				
b.	Conduct test burn - Chickahominy				

	Bluff		.1	2	4*	2*
c.	Conduct test burn - Ft. Harrison					
d.	Evaluate burn effectiveness - Malvern Hill					
e.	Evaluate burn effectiveness - Chickahominy Bluff		-	1	1*	-
f.	Evaluate burn effectiveness - Ft. Harrison					
		TOTAL	.3	10	19*	6*

FY 1987

1)	RESOURCES MANAGEMENT					
a.	Reburn Hanover County units, as necessary		.1	1	7*	3*
b.	Public involvement follow-up - Hanover County		-	1	-	-
2)	MONITORING ACTIONS					
a.	Survey, monitor vegetative regrowth - Henrico County		.1	1	1*	-
b.	Survey vegetative regrowth-Hanover County					
3)	RESEARCH ACTIONS					
a.	Evaluate burn effectiveness - Hanover County		-	1	1*	-
		TOTAL	.2	4	9	3*

FY 1988

1)	RESOURCES MANAGEMENT					
a.	Reburn Henrico County units, as necessary		.1	2	6*	2*
b.	Public involvement follow-up Henrico County		-	1	-	-
2)	MONITORING ACTIONS					
a.	Survey, monitor vegetative regrowth Hanover County					
b.	Survey, monitor vegetative regrowth Henrico County		-	1	1*	-
3)	RESEARCH ACTIONS					

a. Evaluate burn effectiveness - Henrico County		-	-	1*	-
	TOTAL	.1	4	8*	2*

4. RICH-N2 Remove Diseased & Infested Trees from Cold Harbor

Forested areas of the Cold Harbor unit of the park are under stress by drought, overstocking competition (majority of the park unit) and have been heavily attacked by the southern pine bark beetle (SPB) and root disease. The only acceptable method of controlling this problem is positive action will mean further creation of serious visitor/employee safety and fire hazards, negative impact on neighboring community relations and further degradation of the cultural resources and historic scene.

This project is receiving higher priority than RICH-N3 and RICH-N1 because the infestation is more widespread, noticeable and over 30% of the park's earthworks are located in this one unit.

Schedule of Accomplishments:

FY 1984

1) RESOURCES MANAGEMENT

ACTIONS	STAFFING	FUNDING($1000) P	NPS	Other
a. Maintenance remove or drop hazardous trees	.1	4	-	-
b. Consult with USFS, VPI, State Forestry, Region and commercial logger	-	1	1*	-
c. Prepare recommendations for actions based on item 1b.	-	1	1*	-
2) MONITORING ACTIONS				
a. Continue marking of hazardous trees	-	1	-	-
b. Monitor spread of infestation	-	-	1*	-
3) RESEARCH ACTIONS				
a. USFS conduct biological survey	-	-	-	-
TOTAL	.1	7	3*	-

FY 1985

1) RESOURCE MANAGEMENT

a. Maintenance remove or drop hazardous trees		.1	3	-	-
b. Prepare contract for tree removal c. Award contract for tree removal d. Tree removal		.1	4	2*	30*
2) MONITORING ACTIONS					
a. Continue to mark hazardous trees b. Monitor infestation		-	-	-	-
3) RESEARCH ACTIONS					
None					
	TOTAL	.2	7	2*	30*

FY 1986

1) RESOURCES MANAGEMENT					
a. Remove hazardous trees		-	1	-	-
2) MONITORING ACTIONS					
a. Monitor effectiveness of program action of FY 85 b. Mark hazardous trees c. Monitor vegetative growth of earth-works and unit wide		-	2	1*	-
3) RESEARCH ACTIONS					
a. Follow-up USFS biological survey		-	-	-	-
	TOTAL	-	3	1*	-

FY 1987

1) RESOURCES MANAGEMENT					
a. Maintenance remove hazardous trees b. Award contract for tree removal, if necessary		.1	3	-	5*
2) MONITORING ACTIONS					
a. Continue monitoring infested and diseased trees b. Continue marking hazardous trees		-	1	1*	-

c. Monitor vegetative growth on earthworks and unit wide					
3) RESEARCH ACTIONS					
a. Follow-up USFS biological survey		-	-	-	-
	TOTAL	.1	4	1*	5*

FY 1988

1) RESOURCES MANAGEMENT					
a. Same as FY 86		-	1	-	-
2) MONITORING ACTIONS					
a. Same as FY 87		-	1	1*	-
3) RESEARCH ACTIONS					
a. Same as FY 87		-	-	-	-
	TOTAL	-	2	1*	-

5. RICH-N3 Remove Diseased & Infested Trees from other Park Units

Forested areas of the park units are under stress by drought, overstocking (majority of the units) and have been heavily attacked by the southern pine bark beetle (SPB) and root disease and other beetles (IPS, sawyer, etc.) The only acceptable method of controlling this problem is the removal of standing and downed infested trees. Failure to take positive action will mean further creation of serious visitor/employee safety and fire hazards, negative impact on neighboring community relations and further degradation of the cultural resources and historic scene.

This project is receiving lower priority than RICH-N2 because the infestation is more widespread, noticeable and over 30% of the park's earthworks are located at Cold Harbor.

Schedule of Accomplishments:

FY 1984

1) RESOURCES MANAGEMENT

ACTIONS	STAFFING	FUNDING($1000 P	NPS	OTHER
a. Maintenance remove or drop hazardous trees	.2	8	-	-

b. Consult with USFS, VPI, St. Forestry and commercial loggers		-	1	1*	1
c. Prepare recommendations for actions based on 1b.		-	1	1*	-
2) MONITORING ACTIONS					
a. Mark hazardous trees		-	1	-	-
b. Monitor spread of infestation and disease		-	-	1*	-
3) RESEARCH ACTIONS					
a. USFS conduct biological survey		-	-	-	-
	TOTAL	.2	11	3	-

FY 1985

1) RESOURCE MANAGEMENT					
a. Maintenance remove or drop hazardous trees		.2	8	-	-
b. Prepare contracts for tree removal/ sale		-	1	-	-
2) MONITORING ACTIONS					
a. Same as FY 84		-	1	1*	-
3) RESEARCH ACTIONS					
None		-	-	-	-
	TOTAL	.2	10	1*	-

FY 1986

1) RESOURCES MANAGEMENT

ACTION	STAFFING	FUNDING($1000) P	NPS	Other
a. Award contract for Malvern Hill				
b. Tree removal/sale Malvern Hill	.1	3	2*	15*
c. Maintenance remove/drop hazardous trees	.2	8	-	-
2) MONITORING ACTIONS				

a. Monitor effectiveness of program actions					
b. Mark hazardous trees					
c. Monitor vegetative growth		-	1	1*	-
3) RESEARCH ACTIONS					
a. Follow-up USFS biological survey		-	-	-	-
	TOTAL	.3	12	3*	15*

FY 1987

1) RESOURCES MANAGEMENT					
a. Maintenance remove/drop hazardous trees		.1	4	-	-
b. Award contract for removal/sale for Ft. Harrison					
c. Tree removal/sale for Ft. Harrison		.1	3	2*	15*
2) MONITORING ACTIONS					
a. Mark hazardous trees					
b. Monitor effectiveness of program actions		-	1	1*	-
c. Monitor vegetative regrowth on earth-works and unit wide					
3) RESEARCH ACTIONS					
a. USFS follow-up biological survey		-	-	-	-
	TOTAL	.2	8	3*	15*

FY 1988

1) RESOURCE MANAGEMENT

ACTIONS	STAFFING	FUNDING($1000) P	NPS	Other
a. Maintenance remove hazardous trees	.1	4	-	-
b. Award contract for tree removal/ sale from Malvern Hill and Ft. Harrison, if necessary	.1	3	2*	5*
2) MONITORING ACTIONS				
a. Continue marking hazardous trees				
b. Monitor diseased and infested trees	-	1	1*	-

c. Monitor vegetative regrowth on earthworks and unit wide					
3) RESEARCH ACTIONS					
a. Same as FY 86	-	-	-	-	
TOTAL	.2	8	3*	5*	

B. Natural Resources Project Statements

1.1 RICH-N1 Prescribed Burning

1.2 Statement of Problem or Issue

a. Statement of Condition

A combination of dead and dying trees, heavy understory and a build-up of hazardous combustible fuels has created a serious fire hazard, while greatly reducing visitor appreciation and understanding of the park's cultural resources and historic landscape. Downed trees and an increasing duff layer are obscuring the earthworks by filling in the trenches and gun emplacements. Also, the heavy understory acts as a cover for illegal activities, especially relic hunting (which is a highly destructive to the earthworks and trenches. Finally, the current condition of the forest has made it a prime target for infestation by the southern pine bark beetle (SPB), turpentine beetle, Fomes annosus (root rot) and other diseases. If these conditions continue, the unit faces not only a serious and destructive wildfire but more importantly, the earthworks and historic scene will be substantially if not totally lost. Taking more positive action will significantly reverse the above natural process trends that are impacting the natural and cultural resources. Also, it will be in keeping with the park's legislative mandate and current management goals to preserve and interpret the park's Civil War battlefield sites.

b. Current Management Actions

Present management activities have concentrated on removal of hazardous trees only from high visitor use areas. At the present time, management practices of clearing back low growing vegetation from some of the primary earthworks has made these structures more visible to the visiting public thus improving appreciation of the cultural resources. Some vista clearing has been done at Fort Harrison, Ft. Brady and Chickahominy Bluffs. Also, a limited amount of understory removal has been completed at Cold Harbor along the tour road and between the Union and Confederate earthworks.

c. Results of Current Action

The above management practices have been time consuming, expensive and only a few areas within the park have been so treated. Most vegetation that has been cut back returns within a year. With all the other demands on a limited park maintenance staff and even with the help of volunteers, the task is a never ending circle. Each area needs to be cut back annually but years are elapsing between treatments. The results have been insignificant in the long term.

1.3 Alternative Actions and Probable Impacts

B. Natural Resources Project Statements

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1.3 Alternative Actions and Probable Impacts

a. Alternative A - Continue Current Action

If current practices are continued, little change can be expected over the present situation. To clear just Cold Harbor of the understory would take 1.5 MY's and by the time the work has been completed, understory that had been removed earlier would have grown back up. One section of earthworks at Ft. Harrison was cleared one year and by the following growing season, all the vegetation had grown back up. The final results would be a costly, losing battle to win over mother nature that would only limited benefit to the resource and visitor appreciation. There would be minimal effect on illegal activities and no effect on the insect and disease problems. Current staffing is insufficient to correct the problems.

b. Alternative B - Stop Current Action

The only benefit that would be gained under this alternative would be a savings in cost. With time, the cultural resources and historic scene would be totally lost.

c. Alternative C

An increase in the amount of staff, budget, combined with the purchase of power equipment could have a more substantial benefit on the understory and vegetative growth problems. Visitor appreciation would increase and fire danger decrease and there would be less cover for illegal activities. but, cost would become prohibitive and other park functions would suffer seriously. Furthermore, it is doubtful that the backlog of work could be accomplished before the understory had returned. Finally, there would be not affect on the insect and disease problems.

d. Alternative D

The use of herbicides and insecticides would have a major effect on reducing understory vegetation, insect and disease problems while increasing visitor appreciation. However, a combination of the probable environmental harm, prohibitive cost and current NPS policy would make this alternative impractical.

e. Alternative E

The awarding of a contract to correct the above problems would have the added benefit of freeing up park staff time to devote to other projects and generally would have a positive effect. However, the cost would be prohibitive and without adequate supervision may damage the cultural resources.

f. Alternative F

The use of volunteers would be the least costly method to accomplish the above objectives but like Alternative C it would be a losing battle. In

some areas of the park (Ft. Harrison earthworks) volunteers may be the only practical solution. There would be not decrease in the insect and disease problems and would still require park coordination and supervision.

g. Alternative G

Conducting prescribed burns would substantially eliminate or reduce all the problems enumerated above. Except for the initial start-up cost it should prove to be the least costly method except for the use of volunteers. Both the USFS and State Forestry feel this is the most effective means of dealing with the problems and is in keeping with the USFS "Guide to Prescribed Fire in Southern Forest". It would have the added benefits of meeting many of the objectives of the park's cultural resource management plans dealing with historic landscape management. It would enhance the efforts in earthwork preservation and tree removal activities. The chance of a wildfire developing during a prescribed burn in a Souther Forest is very remote. The only foreseeable problem is a temporary reduction in the air quality by the smoke generated by the fire.

1.4 Recommended Course of Action

a. Resources Management Actions

The recommended course of action would be a series of prescribed burns in selected areas of the park. This would greatly reduce the above problems and only have to be repeated every three years. it might be followed up by the use of volunteers and park staff to keep emerging vegetation down and would be the most cost effective means.

b. Monitoring Actions

Continue USFS and NPS biological monitoring would be conducted on the effects of the prescribed burns and recommendations prepared suggesting changes in the prescription of courses of action.

c. Research Actions

In 1983 USFS conducted a basic vegetative management analysis providing base data and very general recommendations further detailed study and recommendations by park units are needed from the USFS.

2.1 RICH-N2 Diseased and Infested Trees from Cold Harbor

2.2 Statement of Problem or Issue

a. Statement of Condition

The forested area of the Cold Harbor unit of the park is being heavily infested by the souther pine bark beetle (SBP) and root disease and other beetles (IPS, sawyer, etc.). Dead pines are prevalent throughout the unit; many are still standing. The infested trees are:

1. A serious safety hazard to park visitors, employees buildings and cultural resources.
2. Creating a serious fire hazard as the amount of forest litter increases.
3. Negatively impacting on neighboring community relations.
4. Serve as a host for infesting other trees.
5. Act as a cover for illegal activities especially relic hunting.
6. Are a significant visual intrusion on the historic scene.
7. Many of the dead trees damage earthworks and trenches when they fall.

At the time of the Civil War most of the present park was deforested for agricultural and military reasons, and even after the war, trees that had grown up were harvested. Most of the current forest has grown up in the last 50-60 years.

The continued growth into a climax forest directly conflicts with the purpose of the park and combined with the above problems only serves to further degrade the cultural resources and historic scene while acting as a barrier to fuller visitor appreciation and understanding. Taking more positive action will help to reverse the above natural process trends that are impacting on the natural and cultural resources.

b. Current Management Actions

Present practices consist of hazardous tree marking and removal by maintenance or under contract from visitor use areas, e.g. trails, roads, buildings, earthworks. Some tree permits are issued to individuals for removal of trees already cut down at Ft. Harrison and Cold Harbor. Also, in forest studies conducted by the U.S. and State Forestry at the park since 1970, removal of infested trees has been the recommended course of action.

c. Results of Current Action

Current actions have done nothing to reverse the SPB infestation. (In 1980 some 450 trees were removed from Ft. Harrison and in 1981-83 well over 200 trees have been removed.) In most cases only the most hazardous trees have been removed. (The above numbers represent only a minority of newly infested trees.)

2.3 Alternative Actions and Probable Impacts

a. Alternative A - Continue Current Action

If current practices are continued, the trends and impacts as outlined above will remain with far more serious results that are now happening at Cold Harbor.

b. Alternative B - Stop Current Action

If no actions are taken, serious loss of property, cultural resources and possible life can be expected with negative impact on neighbor relations and many tort claims.

c. Alternative C - Removal

The method that has proven most successful in impeding the spread of SPB infestation and already diseased trees is the removal of standing and downed trees that are infested along with a buffer zone combined with close monitoring. If action is taken during the early stages of infestation, an added benefit is gained in the ability to sell the trees for a profit versus waiting until they are of no value and having to pay to have them removed. In the case of Cold Harbor, initial removal will be costly since the trees are beyond a marketable stage. This method remains the best control tactic for treating large, rapidly growing infestations as found at Cold Harbor. Removal will have a positive impact on the unit as outlined above.

d. Alternative D - Cut and Leave

Is only useful as spot treatment for small to medium sized infestations (less than 100 active trees) where salvage is not possible. The infestation at Cold Harbor has spread well beyond 100 active trees. In the case of Cold Harbor, it is necessary the downed trees be removed.

e. Alternative E - Insecticides

Because of the high cost and current National Park Service policy regarding insecticides, use is not feasible. The need to drop and spray all surfaces of infested trees, safety precautions, cost and toxicity to nontarget organisms would limit the use of insecticides.

f. Alternative F - Pile and Burn

Is one of the earliest methods of controlling SPB but has been largely abandoned because of the labor involved. Also, the burning of downed

trees is difficult if not impossible and dry areas procedures increase the chance of wildfires.

2.4 Recommended Course of Action

a. All Categories

It is recommended that Alternative C by implemented by conducting a current USFS biological survey (planned for September 1984) combined with consultations with USFS, State Forestry, VPI & SU School of Forestry and commercial loggers to come up with the most economical means of removing the trees without damaging the cultural resources. This action will reverse the current negative trends and have the added benefit of enhancing the park's efforts in maintaining the historical landscape and earthwork preservation activities. It would be in keeping with current management goals and the park's legislative mandate to preserve and interpret the significant Civil War battlefield sites in the vicinity of Richmond, Virginia.

trees is difficult if not impossible and dry areas procedures increase the chance of wildfires.

2.4 Recommended Course of Action

a. All Categories

It is recommended that Alternative C by implemented by conducting a current USFS biological survey (planned for September 1984) combined with consultations with USFS, State Forestry, VPI & SU School of Forestry and commercial loggers to come up with the most economical means of removing the trees without damaging the cultural resources. This action will reverse the current negative trends and have the added benefit of enhancing the park's efforts in maintaining the historical landscape and earthwork preservation activities. It would be in keeping with current management goals and the park's legislative mandate to preserve and interpret the significant Civil War battlefield sites in the vicinity of Richmond, Virginia.

RESOURCES MANAGEMENT PLAN

Richmond NBP (Park) MAR (Region) VA (State) | X Natural | Cultural | 3/84 (Date) | Page 1 of

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Priority	Project Statement Code	Action Title	Funding Type	Action Type	84 FY 19-- (Year 1) NPS M.Y.	84 Cost/ $1000	85 FY 19-- (Year 2) NPS M.Y.	85 Cost/ $1000	86 FY 19-- (Year 3) NPS M.Y.	86 Cost/ $1000	87 FY 19-- (Year 4) NPS M.Y.	87 Cost $1000	88 FY 19-- (Year 5 NPS M.Y.	88 Cos $1
1	N3	Survey/mark SPB et al. Hazardous trees other units		M	-	2(1*)	-	2(1*)	-	2(1*)	-	2(1*)	-	2(1
2	N2	Survey/mark SPB et. al. Hazardous trees Cold Harbor		M	-	2(1*)	-	-	-	3(1*)	-	2(1*)	-	2(1
3	N1	Consultations on Prescribed burn		R	-	2(1*)	.1	5(3*)	.1	10(7*)	-	2(1*)	-	(1
4	N2,N3	Biological Survey		R	-	-	-	-	-	-	-	-	-	-
5	N1	Survey understory/ fuel build-up		M	-	2(1*)	-	2(1*)	.1	4(2*)	.1	2(1*)	-	2(1
6	N3	Remove hazardous trees		RM	.2	12(2*)	.2	9	.3	28(17*)	.2	24(17*)	.2	14(
7	N2	Remove hazardous trees		RM	.1	8(2*)	.2	39(32*)	-	1	.1	8(5*)	-	1
8	N1	Prepare/implement prescribed burn plan		RM	.3	13(2*)	.2	32(20*)	.1	12(16*)	.1	12(10*)	.1	11(
					.6	41(10*)	.7	89(57*)	.6	69(44*)	.5	52(36*)	.3	33(

Priorities will change in FY 1985 etc.

3.1 RICH-N3 Remove Infested Trees from other Park Units

3.2

3.3 See RICH-N2 and Overview and Needs Section

3.4

III. Cultural Resources Management Program

A. Overview and Needs

This overview presents a priority listing of the four cultural resource management problems discussed in Project Statements.

1. Identification of Significant Problems

Priority Number	Ref. Number	Project Statement Title
1	RICH-C1	Earthwork Preservation
2	RICH-C2	External Encroachment
3	RICH-C3	Visitor Use Facilities
4	RICH-C4	Historic Landscape Management

2. Criteria for Determining Priorities

Only the most significant Project Statement is discussed in the Annual Program of Proposed Actions. Priorities were established by considering the threats that precipitated the need for Project Statements. Criteria included the degree of current damage and the potential for immediate future damage to the park's most important cultural resources.

3. RICH-C1 Earthwork Preservation

The project statement itself provides the priority justification for this being the most significant cultural resource management need. There is an immediate threat to survival of the remaining historic structures that the park is mandated by legislation to preserve. Also, human impact and environmental threat are expanding rapidly causing further damage to earthworks that have already experienced over 100 years of weathering.

Schedule of Accomplishments

FY 1984

1) RESOURCES MANAGEMENT

ACTIONS	STAFFING	FUNDING ($1000)
a. Remove trees - earthworks	.1	3

2) MONITORING ACTIONS

None

3) RESEARCH ACTIONS

a.	Initiate Earthwork Study	.3	3
	TOTAL	.4	9

FY 1985

1) RESOURCES MANAGEMENT

ACTIONS		STAFFING	FUNDING ($1000)
a.	Remove trees - earthworks	.1	3

2) MONITORING ACTIONS

None

3) RESEARCH ACTIONS

a.	Continue Earthwork Study	.1	5
	TOTAL	.3	8

FY 1986

1) RESOURCES MANAGEMENT

a.	Remove trees - earthworks	.2	5
b.	Develop earthwork preservation/ maintenance guide	.1	3

2) MONITORING ACTIONS

None

3) RESEARCH ACTIONS

None

	TOTAL	.3	8

FY 1987

1) RESOURCES MANAGEMENT

a.	Remove trees - earthworks	.3	7
2)	MONITORING ACTIONS		
	None		
3)	RESEARCH ACTIONS		
	None		
	TOTAL	.3	7

FY 1988

1) RESOURCES MANAGEMENT

ACTIONS		STAFFING	FUNDING($1000)
a.	Remove trees - earthworks	.2	5
2)	MONITORING ACTIONS		
	None		
3)	RESEARCH ACTIONS		
	None		
	TOTAL	.2	5

B. Cultural Resources Management Project Statements

1.1 RICH-C1 Earthwork Preservation

1.2 Statement of Problem of Issue

a. Statement of Condition

Preservation of earthworks is one of the park's major concerns. Historic zones within the park include many forts, battery positions and rifle trenches. Most earthworks are densely overgrown and obscured by trees, briers, ivy, vines, etc. These resources are easily damaged by large trees when they are uprooted during severe weather conditions. Also, as tree roots expand the earthworks are damaged and water erosion is encouraged. Many areas, for example, Cold Harbor, Chickahominy Bluff, Watt House, etc., are so inundated by trees that it is virtually impossible for a visitor to appreciate the historic earthworks which remain from any specific battle. Due to the nature and accessibility of earthworks, visitors have worn paths up steep slopes and have created bare trails on top. These bare areas are vulnerable to heavy rain which produces gullies resulting in damaged historic resources.

The Drewry's Bluff unit contains the best preserved earthen fort in the entire park. The unit is perched on an eroding clay-gravel bluff ninety feet above the James River and eight miles from Capital Square in Richmond. It contains an earthen fort designed and built in 1862 for the purpose of denying the James River as a route to Richmond for Union forces. The fortifications are threatened by continuing concave erosion of the river bluff. Part of the fortification has already fallen into the river. Wind damage to large trees threatens more extensive damage.

b. Current Management Actions

A continuing program of gradual removal of large trees from earthworks was begun in 1977, mostly in the Ft. Harrison unit. Small trees and shrubs are removed annually from earthworks in the same area. Some minor clearing was done on Cold Harbor earthworks in 1981. Other protective measures include covering worn areas with brush or fallen tree limbs, roping off the area and signing. In 1977, a new approach to revegetate bare spots on earthworks was initiated. This practice consists of covering bare ground with biodegradable jute netting and sowing grass seed and fertilizer into the netting. When ideal water conditions exist, the grass covers the area treated and begins to blend in with the other vegetation. A study of the erosion problem at Drewry's Bluff resulted in solutions that are economically unrealistic.

c. Results of Current Action

Recent removal of growth from these structures has made them more visible, thus improving public appreciation of the historic resource.

Revegetation of selected areas has had success. This usually discourages further visitor use of these areas and allows them to recover. Since this project is time consuming and expensive, only a few areas at Drewry's Bluff and Ft. Harrison have been treated. Historic preservation guides do not exist for any structures or earthworks.

1.3 Alternative Actions and Probable Impacts

a. Alternative A - Continue Current Action

A gradual program of removal of trees from earthworks to prevent damage from uprooted trees has been initiated. This action will help restore the areas around the works to the historic appearance. Removal of trees and other vegetation such as briers, ivy, vines, etc. has made these structures more visible to the visiting public, thus improving their appreciation of the historic resource. This practice should be continued in several other areas in the park. Tree removal contracts where vendors remove trees from earthworks and from inside forts could be continued in many other areas. Although clearing the growth may help restore the historic appearance and prevent earthwork damage from uprooted trees, the action will have the reverse effect of exposing the earthworks to more damage from weather and human impact. A ground cover of native vegetation has a positive effect on erosion control.

b. Alternative B - Stop Current Action

If not action is taken to control erosion, human impact and reforestation, all earthworks will lose their interpretive value and will eventually lose all historic significance. The NPS is mandated to protect all historic resources using the best preservation techniques appropriate to this situation.

c. Alternative C - Restrict Earthwork Accessibility

A program to prevent visitors from having physical contact with earthworks would eliminate many current problems. By letting trees, briers, vines, etc. continue to grow on earthworks, the structures would be concealed from view in many areas. Barricades around earthworks would restrict visitor movement over earthworks, especially by horse, bicycle and motor bike. Interpretive facilities could be moved a greater distance from earthworks to keep visitors off them since most visitors are reluctant to leave their automobiles. Although these actions may help preserve earthworks, they would detract from visitor appreciation and understanding of the resource.

d. Alternative D - Develop Earthwork Stabilization Program

A historic structures preservation guide should be developed for all major earthworks in the park. Like the maintenance schedule recommended in RICH-C4 Historic Landscape Management, the earthwork pre-

servation guide and maintenance schedule would provide a detailed program of preservation maintenance activities for all earthworks. A definitive study of park earthworks including information on design, construction, armament and changes made by CCC is needed. A plan could then be prepared by the park staff with assistance from Regional Office staff, effective technique descriptions from other park areas and printed material currently available.

1.4 Recommended Course of Action

Alternatives 2 and 3 are not recommended for the reasons stated. Tree removal described in Alternative 1 is a significant activity to prevent root damage in earthworks. Pine trees are easily uprooted due to lack of an extensive root system. Hardwoods are less likely to overturn but when they do, more extensive damage results. Trees should be removed while small to eliminate the problem when large roots decay leaving erosion causing voids inside earthworks. Removal of all vegetation as proposed in Alternative 1 should not be attempted since that action will increase both weathering and visitor caused erosion.

Alternative D is the recommended treatment.

a. Resources Management Actions

Develop a systematic guideline for preservation maintenance activities. It will permit using positive actions recommended in Alternative 1 as described above plus procedures for erosion control as appropriate.

b. Monitoring Actions

After a study results in an implemented plan, monitoring will be necessary to determine effectiveness of earthwork preservation activities on a continuing basis.

c. Research Actions

It is difficult to recommend the same treatment for all areas since different impacts are encountered in different locations. A definitive study of park earthworks including information on design, construction, armament and changes made by the CCC would provide information needed to develop adequate treatment for earthworks.

2.1 RICH-C2 External Encroachment

2.2 Statement of Problem or Issue

a. Statement of Condition

Richmond National Battlefield Park consists of ten widely scattered units located in four governmental jurisdictions. These units are under varying degrees of use pressure from neighboring communities, private individuals and commercial organizations. The units are linked by a tour route that was once a leisurely drive through a predominantly rural setting. The National Park Service owns neither the tour road nor sufficient adjoining land to retain the rural flavor. As long as the surroundings remained agricultural, park boundaries were of relatively little importance, and visitors could gain some understanding of the principal battlefields by following a somewhat sequential tour. Today forest and field are rapidly giving way to housing developments, shopping centers, interstate highways and industrial developments which are destroying the continuity of the tour and the scenic integrity of the park.

The region's population, largely, urban, surpassed 630,000 persons in 1980. The significant change is occurring in the counties that surround the city. For example, Chesterfield County is growing at a rate of almost 8% a year, other counties 2-3%. The City of Richmond is declining by approximately 1.5%. The combined Richmond Metropolitan Area is growing at the rate of 1.4% annually.

Richmond metropolitan population is increasing at the rate of over 10,000 per year. Richmond National Battlefield Park is in a crisis as a result of the impact of population explosion and a growing demand for land near or adjacent to park units.

Although all park units are impacted by external development, several units are experiencing immediate threats to the park's historic and scenic integrity.

Fort Harrison - The Ft. Harrison unit has the configuration of a parkway, being very narrow along most of the designated right of way. Intended to follow and display a segment of the outer defense line around Richmond, Battlefield Park and Hoke Brady roads have visitor parking areas at intervals, embracing larger parcels of land where strong points on the Union and Confederate lines occurred. Ft. Maury, a Confederate fortification, is located at the southern terminus of Battlefield Park Road and is virtually useless as an interpretive or visitor use resource.

A significant management problem in the Ft. Harrison unit results form the multiplicity of legal, private accesses onto Battlefield Park and Hoke Brady roads. In many instances driveways twenty feet wide have been constructed by cutting through the earthworks thereby diminishing their historical and visual appearance. We can safely assume

that as other legal accesses are activated, the process will be repeated again and again. It is a fact that these accesses, and the resultant property development prevent attainment of most of the desirable characteristics of a parkway or scenic drive, and strongly negate historical preservation. There is also the possibility of encroachment onto private land by Battlefield Park Road at two locations. Land use by private individuals has been to develop adjoining properties in the manner that would prevail on any suburban avenue. Short driveways lead from Battlefield Park Road and Hoke Brady Road directly into the front or side yards of unscreened private dwellings representing a wide spectrum of economic levels. Many are less than a hundred feet away from the park right-of-way. Mailboxes, newspaper racks and reflectorized markers adorn Battlefield Park and Hoke Brady Roads. The presence of these objects tends to further impose on the historical integrity of the Ft. Harrison unit.

One rural landowner has a total of seven legal accesses, six of them on a single half mile stretch of park road. This type of intrusion and nonconforming use is most acute between the north end of Battlefield Park Road and Ft. Johnson; on the east side of Battlefield park Road from Battery White to half mile south of Ft. Hoke; and on the east side of Hoke Brady from Kingsland Road to Ft. Brady. These accesses were legalized by an alternation of deeds accomplished, on petition from the State of Virginia, twenty years after the park was established.

Garthright House - Recent urban development near the Garthright House has the potential to destroy the historic scene in that area. The 2.1 acres upon which this building is located are not adequate and a boundary change for protection of the resource may be necessary to insure the historic integrity of the area from urban encroachment. The western boundary, once a panoramic rural scene not unlike that during the Civil War, is now a new housing development. Future visitor enjoyment and appreciation of the resource will be restricted by the expanding urban development adjacent to the house. The house has been adaptively restored to create an exterior exhibit while providing employee quarters.

Drewry's Bluff - There are numerous visual and audible intrusions upon Drewry's Bluff which lessen visitor appreciation. Along the northern boundary is an Exxon Oil Company asphalt plant. Across the entrance area (western boundary) is the Richmond-Petersburg Turnpike. Bisecting the western boundary is a VEPCO power transmission line, under deeded easement. All surrounding land is zoned for industry.

Parker's Battery - Situated on the military trenchwork system known as the Howlett Line, Parker's Battery is about five miles south of Drewry's Bluff and about 0.6 miles east of the intersection of Interstate 95 and Virginia Route 10. At the park's establishment, Parker's Battery contained only 3.25 acres. In 1956, after almost ten years of negotiation, an additional 6.57 acres was acquired in a three-cornered exchange by which the donor of record was reimbursed

by Virginia Electrical and Power Company, which received from the National Park Service a perpetual high-voltage power line right-of-way across (almost parallel to) the west boundary of the park. This exchange brought the site to its present 9.32 acres and further intrudes on the historic scene.

Wedged on three sides by a railroad, a power transmission line and a public roadway, respectively, and located in an area of rapid industrial development, the future of this small tract as park land appears uncertain.

Beaver Dam Creek, Chickahominy Bluff - Proposed residential and commercial development will negatively impact visually on the historic scene. Also, development has the potential for accelerated deterioration of the cultural resource from inappropriate human activities and damage to the watershed vegetative cover with accompanying soil erosion, flooding, etc.

b. Current Management Actions

Since the park has not legal authority over developments outside park boundaries or deeded rights-of-way in original land acquisitions, the amount of direct control park management can exert over external encroachment is minimal. Management's effort have been to work cooperatively with public agencies and private land owners to encourage compatible land use adjoining park boundaries and to deny additional access right-of-way.

Parker's Battery and Ft. Maury have little visitor attraction and have been relegated to mothball status.

Presently visitors are permitted to drive or walk up to the front of the Garthright House.

c. Results of Current Actions

Impacts of external encroachment continue to exert undesirable impacts on park resources.

2.3 Alternative Actions and Probable Impacts

a. Alternative A - Continue Current Action

Under this alternative the identified problem would continue to increase as nearby urban development and on-site visitor use expands until the park area becomes unidentifiable as a historic resource.

b. Alternative B - Stop Current Action

Under this alternative positive effects of current actions would be lost as problems identified accelerate.

c. Alternative C - Protect Additional Setting

Visitor appreciation and understanding of the area, preservation of the historic scene and site integrity are all important reasons why the setting of the park units must be protected. Opportunities to protect 22 acres of undeveloped land along the east boundary of Ft. Harrison and an undeveloped tract adjacent to the west boundary of the Garthright House unit remain.

A thorough land protection study of the entire park, and particularly the Ft. Harrison and Garthright House units would be undertaken as a highest priority to identify ways of preserving the existing character of adjacent lands.

d. Alternative D - Establish Vegetative Screening

Plant tall, densely foliated trees and shrubs along selected boundaries to screen units from nearby housing developments to eliminate some of the visual impacts. Although this alternative would provide some immediate success, it would not restrict urban encroachment, eliminate noise or maintain the historic scene. As housing and commercial developments approach the units, it would be necessary to increase the heights of hedgerows to block buildings from view.

e. Alternative E - Control or Restrict Accesses/Rights-of-way

Each access currently in use and those that will be activated in the future present the park with two major problems: 1) increased local traffic on Battlefield Park Road and Hoke Brady Road, 2) new construction or land use activities that seriously dilute the historic scene and/or visitor impression of the park. There is a need therefore to resolve in an orderly and legal fashion access concerns that for years have plagued resources management planning for the Ft. Harrison unit. There can be no fixed schedule for achieving a resolution to the problem primarily because of the legal aspects of the situation. There needs to be a continuing effort at the park level to deal with access problems on a case by case basis. Park operations are not unduly interrupted by this circumstance; however, the long range impact of not effectively dealing with this situation could be potentially disasterous because of the noncompatible use of the accesses for distracting commercial or private developments.

f. Alternative F - Deauthorization/Exchange of Land

Parker's Battery in Chesterfield County and Ft. Maury in Henrico County have always presented the park with special protection, interpretation and visitor use problems because of their isolated locations, survival potential and questionable historical significance. These problems, in addition to continuing encroachment activities, would deem it logical at this time to explore deauthorization and/or equitable land exchange alternatives with the State of Virginia or local county governments.

2.4 Recommended Course of Action

Alternatives A & B are not recommended for the reasons stated in the previous discussion. Alternatives C, D, E, F are recommended.

a. Resources Management Actions

Alternative C would require a land base study to describe essential land acquisition needs. It would also require legislative action. Current management restraints on land acquisition and constraints on purchase of additional lands in the parks establishing legislation (Act of March 2, 1936, 49 Stat. 1155) severely restricts the park in providing the necessary buffer zone. Only by donation or by use of donated funds can the park acquire additional land. This severely restricts the park in its efforts to buffer park lands from encroaching urban sprawl and in providing for the purchase of additional historic lands adjoining or near present units. The park was included in the 1973 Civil War areas boundary study conducted by the NPS. The basic intent of the study was to identify additional historical and natural areas that had the potential to be included in future requests for legislative action to preserve or protect the park. These additional lands would help buffer the park against adjacent development and encroachments.

Critical research necessary to accomplish this project is on file and can be retrieved when a coordinated effort to initiate new congressional action is scheduled between the park and the appropriate regional staff.

The park should continue efforts to resolve in an orderly and legal fashion the demands for access to private lands from Battlefield Park Road as recommended in Alternative E.

Explore deauthorization and/or equitable land exchange for Parker's Battery and Ft. Maury.

b. Monitoring Actions

Continue observing and recording data on 1) increased local travel on Battlefield Park Road and Hoke Brady Road and 2) new construction and land use activities that impact the historic integrity of park resources.

c. Research Actions

None

3.1 RICH-C3 Visitor Use Facilities

3.2 Statement of Issue or Problem

a. Statement of Condition

Problems encountered with existing interpretive facilities include vandalism of signs/exhibits, lack of detailed battle information for special interest visitors and visitor confusion caused by including both 1862 and 1864 battle sites on one tour route.

Recent basic research by park staff has reemphasized the need for significant in-depth research that will shed new light on the very important role of the black (U.S. Colored Troops) regiments in the battles around Richmond.

Walking trail improvement is needed to correct deficiencies in trail quality and location. Some trails are routed across or along the crest of earthwork remains. This creates a problem in enforcing the "Keep Off the Earthworks" rule because visitors are allowed to walk on earthworks with paved trails but not on earthworks without pavement.

Nearly all roads in the park are nonhistoric with the exception of part of the paved road leading up to the Watt House and an unpaved road through Parker's Battery. Several unpaved road cuts through earthworks at Ft. Harrison, Drewry's Bluff and Cold Harbor are historic. They are used by park personnel and by adjacent landowners for access into forts or to adjacent landowner's property.

Ft. Darling River Trail, completed by Boy Scouts in 1977, has not been maintained but is still in use. This trail will be shown on proposed wayside exhibit maps and will require more intense maintenance management in the future. An obstacle course trail system created by the park sponsored SUM-FUN program before 1975 has received minimal use since 1979 and is no longer maintained. Other trails in the park receive various visitor use intensities. Several are in need of maintenance, surfacing, filling and installation of water breaks, etc.

Deficiencies have been identified in present curatorial management practices. The Park Ranger responsible for the museum collection has received no formal training in curatorial methods. Most catalog cards need more detail in description sections and all artifacts should be photographed for identification.

Special problems exist at Drewry's Bluff, at historic buildings Garthright House and Watt House and Cold Harbor and at Ft. Harrison developed areas.

Drewry's Bluff - This park unit is a 30 minute drive from present park headquarters--12.5 miles through parts of three densely popu-

lated communities (Richmond, Bensley and Bellwood). There are; however, no homes in the immediate vicinity of the park unit. The degree of isolation and vulnerability makes effective protection nearly impossible. Vandalism and nonconforming use are continuing serious problems with accompanying increased maintenance cost. The unit lacks basic visitor facilities such as toilets, water and adequate parking spaces.

The Watt House, Garthright House, Chimborazo Visitor Center, the Log Cabin, Beaver Dam Creek millrace/impoundment and all earthworks and forts are included on the List of Classified Structures. A building folder is maintained on all historic buildings, i.e. Watt House and Garthright House, Chimborazo and Log Cabin. Information about contracts for work performed on these buildings is maintained in these files. The Watt House and Garthright House have been restored to provide exterior exhibits for visitor use. The interiors of both have been adapted for use as employee quarters and are not open to the public. The "H" section of the main park files contains specific information and research on the history of both the Watt and Garthright Houses. The 2.1 acres upon which the Garthright House sits is inadequate in size and location to maintain the historic scene desirable for park purposes. Interpretive facilities are inadequate to protect and interpret the unit. All historic buildings and park developed zones need improved maintenance guidelines to direct day to day maintenance activities.

Restroom facilities at Chimborazo visitor center is inaccessible to the physically impaired. The Garthright House water system suffers from high level iron concentration plus periodic coliform contamination.

b. Current Management Actions

Problems encountered with interpretive facilities are currently being addressed by Wayside Exhibit Plan (package #133) to produce 50 interpretively effective vandal resistent exhibits for all major park units.

Park road shoulders in Ft. Harrison unit are treated through a five year cyclic program. A six year cyclic program is scheduled for 2.5 miles of chip and seal treatment. Planned trails and unauthorized trails interlace several units. Some are paved with small pea gravel and/or asphalt. They are located in some instances on top of historic earthworks.

Cyclic maintenance programs require repainting Watt and Garthright Houses every three years. Routine maintenance on both structures is conducted as needed. The use of pesticides and herbicides has been used for employee health and safety, ornamental and shrub protection and structure preservation. Use has been very limited and governed by NPS directives, memos and procedures. All uses have had an approved Pest Control Program report. In the past two years pesti-

cide uses have been performed by certified contractors only. Pesticides used have been directed towards the elimination of termites, mice, powder post beetles, old house bores, warp etc. and have included the use of D-Con wasp/hornet spray, Orkil 2X Chlorophepton (termites), lindane and Ficom-W. At present, the only approved use is Whitmire Wasp Freeze. No other pesticides and herbicides are approved of being used. The only identified problems are termites, anoboid beetles in the Ft. Harrison log cabin and maintenance building. An Intergrated Pest Management Plan has been completed, but not implemented due to lack of funding. Use is highly restricted with absolute minimum impact.

c. Results of Current Action

Buildings are adequately maintained but effectiveness of maintenance activities would be improved if better preservation maintenance guidelines were available. Current actions are inadequate to respond to increasing impacts on visitor facilities.

3.3 Alternative Actions and Probable Impacts

a. Alternative A - Contine Current Action

Under this alternative, park facilities would continue to be operated at current levels. Buildings would be maintained without detailed preservation maintenance guidelines. Foot trails would continue to be maintained at inappropriate locations, i.e. on earthworks. Interpretive exhibits that are outdated, inefficient and intrusive would continue to require extensive maintenance. As visitor use increases due to population expansion adjacent to park units, current problems identified would magnify rather than be reduced.

b. Alternative B - Stop Current Action

Adoption of this alternative would result in immediate deterioration and eventual loss of all visitor use facilities.

c. Alternative C - Develop Plans to Improve Existing Facility Operations

Historic maintenance/preservation guides for the Watt and Garthright Houses are needed to direct long range maintenance and development. Guides can also provide detailed day to day maintenance activities to preserve other historic structures.

In keeping with the high tradition of the Service to be as accurate as possible with regards to interpretation of historic places and events, it is most urgent that a historic report be prepared with reference to the black troops that participated in the actions at Ft. Gilmer and Ft. Harrison. Such a report could then be used as a basis to redesign interpretive signs and aid oral interpretation for the park visitor. Also needed is a history of Ellersons Mill (Beaver Dam

Creek) and a compilation of research on Ft. Harrison, Cold Harbor and Drewry's Bluff into a usable reference format.

Federal public health officials advise that additional treatment is needed at Ft. Harrison and Garthright House. Failure to correct will accelerate maintenance deficiencies including shortening the life of the equipment and require a higher level of regular maintenance. Proposal should be developed to install needed equipment.

d. Alternative D - New Facility Development Program

There is a need to provide suitable restroom facilities at Drewry's Bluff to accommodate the increasing number of visitors who are frequenting the site yearly. Plans for a comfort station have been completed and a two hundred foot test well was drilled in 1978.

This project only lacks funding and construction scheduling. There is a need to upgrade the parking facilities to provide additional spaces. A large parking area is not contemplated.

The Garthright House is an exterior exhibit adjacent to a developing housing area. Due to the loss of historic scene surrounding the house, future visitor enjoyment will depend on effective interpretive facilities that minimizes the negative effects of direct visitor contact with the house. The area should be looked at for possible additional out-buildings for storage and recreation of the historic appearance.

Wayside exhibit plans (pkg. #133) has been approved and construction is expected to begin in FY 85. When completed these exhibits are expected to provide more vandal resistant facilities than those currently is use.

e. Alternative E - Relocate Facilities

Trails presently on earthworks should be relocated except in areas where it is essential for visitors to view the interior of a fort or at an overlook or vista such as at Ft. Darling, Ft. Brady and Chickahominy Bluff. This action will eliminate the problem with erosion of earthworks underneath the paved trail. It will eliminate a safety problem by preventing falls. Relocation will reduce impact on earthworks at one location, they may not understand the importance of not walking on other works.

Several interpretive signs, exhibits, etc. should be relocated to more effectively interpret the resource. This problem can be addressed with the exhibit plan (pkg. #133) discussed in Alternative C.

f. Alternative F - Increase Park Staff

Vandalism is a growing problem throughout the park especially at the Drewry's Bluff unit. Maintenance costs are increasing as expensive

repairs are made to the damaged facilities. There is a need to provide better protection for the site by increasing ranger patrols for longer periods of day and/or night. Housing for ranger personnel to live on site may provide additional deterrent at Drewry's Bluff and other isolated areas. It is not likely the park will be able to provide housing units at all areas. Since units are so widely scattered, it is impractical to provide constant patrol 24 hours daily at all units.

3.4 Recommended Course of Action

a. Resource Management Action

Alternatives C and D each include positive recommendations and should be combined and included in future management actions.

These recommendations will eliminate health and safety problems (water system improvement and restroom facilities) improve operation of existing facilities and solve some of the problems addressed in Alternative E and F. Alternative E may be partially implemented but it is not desirable to relocated all trails. Those that can not be relocated should have trail surface designed to reduce impact.

b. Monitoring Actions

Continue monitoring water treatment facilities to assure compliance with public health standards.

c. Research Actions

Complete research proposed in Alternative C to improve development and operations of visitor use facilities.

4.1 RICH-C4 Historic Landscape Management

4.2 Statement of Problem or Issue

a. Statement of Condition

After park lands were acquired in the 1930's and 1940's, few attempts were made to maintain the historic scene. As a result, open farmland, earthworks, forts and trenches where battles occurred were allowed to return to their natural state through plant succession. this has had a dramatic impact on the management of park land since 1944 when the area officially became a national battlefield park. As stated in current Management Practices, most historic zones are overgrown with trees and other dense vegetation. Vistas from park units no longer provide the scenes desirable. In some cases the growth creates desirable screens between the park and urban development. In other cases the growth conceals desirable views of strategic landscapes. Although some clearing has been done in selected locations, lack of interpretive vistas remains a problem.

b. Current Management Action

At the present time, the management practice of clearing earthworks of low-growing vegetation such as briers, ivy, vines, etc. has made these structures more visible to the visiting public, thus improving their appreciation of the historic resource. Vista clearing has been done routinely at Chickahominy Bluff. Some vista clearing was done at Ft. Brady in 1979. Now the park has issued Special Use Permits for agricultural and grazing uses to maintain the historic scene. Permits to four permittees utilize approximately 140 acres of land. The purpose of these permits is to maintain open field areas in a manner resembling those of the 1861-65 period. Uses permitted are grazing of cattle and horses and crop rotation of grasses, corn, soybeans and silage material. Crops are rotated according to current agricultural practices and all land is required to be limed and fertilized per documented soil studies. Landscaped development areas at Chickahominy Bluff, Gaines Mill, Watt House, Cold Harbor Visitor Center/Picnic area, Garthright House and Ft. Harrison Visitor Center are mowed biweekly to a three inch height during the growing season. Malvern Hill interpretive areas and roadside parking loop at Ft. Darling are mowed every 2-3 weeks during the growth season.

c. Results of Current Action

The utilization of agricultural use permits represent substantial savings of park maintenance workload and expenditures. To include additional acreage under these permits is not practical at this time due to the density of trees in areas adjacent to present permit areas. Clearing of vistas at Chickahominy Bluffs and several other park areas need to be expanded. Landscaped developed areas are maintained as needed and as funds are available; however, there is no program for soil testing, fertilizing and seeding of turf areas.

4.3 Alternative Actions and Probable Impacts

a. Alternative A - Continue Current Action

Under this alternative the landscape problems identified would continue to expand as undesirable impact on the historic scene increases.

b. Alternative B - Stop Current Action

This lack of action would result in park areas eventually returning to mature forest and complete loss of historic landscape appearances.

c. Alternative C - Return Total Park to Historic Appearance

This action would recreate the 1861-65 appearance in all park units. Visitor appreciation would be at the highest possible level. This would not be an easily established condition; however, and maintenance costs would be extensive. A historic landscape study would be needed to accurately restore the area.

d. Alternative D - Return Selected Areas to Historic Appearance

Clearing the trees and shrubs from high priority areas would provide the most benefit to the visitor in presenting the interpretive story. Examples include the area between the Union and Confederate trenches at Cold harbor, on the earthworks within Drewry's Bluff, on the earthworks inside Ft. Harrison, Ft. Brady, in front of Ft. Gilmer, the vista from Chickahominy Bluff. These are only a few of the areas where line-of-sight and historic authenticity would be improved. This type of recommended resource management emphasis would gradually remove the trees from significant areas where the historic scene is of paramount importance. A historic landscape study would be needed to accurately restore the area.

e. Alternative E - Adaptive Restoration of Selected Areas

It may be desirable in several areas to change the historic or natural landscape to provide better understanding and appreciation of the resource. Consideration should be given to maintaining certain tree lines for screening purposes in historic areas where visual and noise intrusions are a problem.

Although this action may obscure distant vistas that were open during the Civil War, the action will obliterate modern development intrusions that have replaced historic scenes. Since the park has not control over external developments this action will at least make it possible to maintain desirable landscapes outside the park boundary. This action can be easily completed and maintained. It can easily be adjusted if undesirable changes take place in the vista cleared, i.e. housing areas, industrial development.

New or adjusted plans will be needed to develop and maintain this proposed action. A developed area landscape maintenance plan is needed to provide a detailed program of scheduled maintenance activities to include mowing, fertilization and seeding of turf areas and other landscape maintenance needs. The plan could be combined with a parkwide maintenance schedule document to assist the Maintenance Foreman in planning and carrying out necessary maintenance activities.

4.4 Recommended Course of Action

Alternative A and B can not be recommended since it would allow the problems identified to continue. Alternative C is impractical although desirable. The small size of individual park units makes it impossible in most areas to effectively recreate the historic scene. The recommended course of action is a combination of Alternative D and E.

a. Resource Management Actions

Gradually remove trees from appropriate areas are recommended in Alternative D. Adaptively restore selected areas as recommended in Alternative E. Develop a landscape maintenance plan to schedule maintenance activities as recommended in Alternative E.

b. Monitoring Actions

None

c. Research Actions

Develop a historic landscape study to assemble information needed to accurately restore selected park areas to historic appearances.

RESOURCES PROGRAMMING SHEET

Richmond NBP (Park) MAR (Region) VA (State) ____ Natural X Cultural 3/84 (Date) Page 1 of 2

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Priority	Project Statement Code	Action Title	Funding Type	Action Type	FY 1984 (Year 1) NPS M.Y.	FY 1984 (Year 1) Cost/ $1000	FY 1985 (Year 2) NPS M.Y.	FY 1985 (Year 2) Cost/ $1000	FY 1986 (Year 3) NPS M.Y.	FY 1986 (Year 3) Cost/ $1000	FY 1987 (Year 4) NPS M.Y.	FY 1987 (Year 4) Cost $1000	FY 1988 (Year 5) NPS M.Y.	FY 1988 (Year 5) Cost/ $1000
1	C2	Land Protection Plan		RM	.2	6	.1	3						
2	C2	Survey Encroachment		M	.1	3	.1	3	.1	3	.1	3	.1	3
3	C2	Control Accesses		RM	.2	5	.2	5	.3	7	.3	7	.2	5
4	C1	Earthwork Study		R	.3	6	.2	5						
5	C4	Historic Landscape Study		R			.2	3	.1	2				
6	C1	Remove Trees-Earthworks		RM	.1	3	.1	3	.2	5	.3	7	.2	5
7	C1	Develop Earthwork Preserv. Maintenance Guidelines		RM					.1	3				
8	C3	Develop Structures Preservation Guidelines		RM					.1	2				
9	C3	Complete Wayside Exhibits		RM	.1	2	.2	4	.2	4	.2	4		
10	C4	Remove Selected Trees		RM							.4	15	.4	15
11	C3	Upgrade Facilities Drewry's Bluff		RM	.1	2					.4	15	.4	15
12	C3	Upgrade Facilities Garthright House		RM	.1	2					.2	12		
13	C3	Black History Study		R			.1	5						
14	C4	Adaptive Restoration Landscapes		RM	.1	2	.1	2	.1	2	.3	8	.3	8

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Priority	Project Statement Code	Action Title	Funding Type	Action Type	85 FY 19-- (Year 1) NPS Cost/ M.Y.	$1000	86 FY 19-- (Year 2) NPS Cost/ M.Y.	$1000	87 FY 19-- (Year 3) NPS Cost/ M.Y.	$1000	88 FY 19-- (Year 4) NPS Cost M.Y.	$1000	89 FY 19-- (Year 5) NPS Cost M.Y.	$1000
15	C2	Seek Land Status Change Parker's Battery/Ft. Maury		RM			.1	3	.1	3	.1	3	.1	3
16	C4	Develop Landscape Maintenance Plan		RM							.2	4	.1	3
17	C3	Compile Historical Studies		R			.2	4	.2	5	.2	5	.2	4

ENVIRONMENTAL ASSESSMENT

The attached environmental assessment matrix summarizes the narrative discussions of resource management problems and the alternative solutions found in each Project Statement.

The Visitor Use impact category will be affected positively by most proposed actions. There could be some inconvenience created during the improvement program proposed in Project Statement RICH-C3 but the inconvenience would be minor when compared to the expected long tern results. Impacts on the Vegetation category would result from tree removal proposed for earthwork preservation (RICH-C1) and historic landscape management (RICH-C4). Although the potential for increased erosion would be created, that impact can be eliminated by the proposed stabilization program. The improvements in interpretation and earthwork and historic landscape management proposed by Project Statements creates an overall positive rather than negative impact. Impacts in all categories would be at an acceptable level.

NEED FOR THE PROPOSAL: Heavy understory combined with hazardous fuel build-up is creating a serious wildfire danger and creating additional cover for illegal activities. Also, it is acting as a barrier to visitor appreciation and understanding of the park's cultural resources and historic landscape. The build-up of forest duff is negatively impacting on the earthworks.

ALTERNATIVE ACTIONS / IMPACT CATEGORIES	PROPOSED ACTION	NO ACTION	ALTERNATIVE	ALTERNATIVE	ALTERNATIVE	ALTERNATIVE
	Prescribed burning combined with some volunteer activities.	Continue present management actions.	Stop current management actions.	Increase staffing and equipment	Use of herbicides and insecticides	Use of volunteers
Understory Vegetation	Reduce and control most understory (litter & fermentation only) without damaging overstory and humus.	Limited, short term reduction-no widespread or long term affect. Density would increase.	Greatly increase density of vegetative understory and build-up of litter.	Moderate reduction in understory, but not in ground litter.	Reduce understory but no affect on litter build-up.	Understory would be reduced. No affect on organic litter build up.
Insect Infestation and Diseases	Decrease occurence of insect and disease organisms.	No change. Possibly worsen.	Continue worsening.	No change, possibly worsening.	Decrease occurrence of insect and disease organism.	No affect, continue worsening.
Air Quality	Temporary decrease in air quality of less than 24 hours.	No affect	No affect	No affect	Possible temporary deterioration due to spraying.	No affect
Water Quality	No affect	No affect	No affect	No affect	Possible deterioration due to runoff.	No affect
Soil Erosion	No erosion problems. Increase available soil nutrients.	No change	No change	No change. Some additional compacting of soil	Poisoning of soil due to spraying.	May cause increased compacting.
Fire Danger	Greatly reduce hazardous fuel build-up of litter and fire danger.	Problem will worsen.	Increase fuel build-up and fire danger.	May be reduced some but still litter problem.	May be reduced somewhat.	May be reduced somewhat.
Cultural Resources	Improved accessibility may cause visitor impact to earthworks but this would be counteracted by ability to conduct enhanced earthwork preservation activities.	No long term improvement. Short term affect very restricted to limited park area.	Continued degradation and ultimate loss of historic integrity of earthworks.	Would allow some earthwork preservation activities Accessibility improved some.	Improved accessibility and allow preservation activities on earthworks.	Would allow preservation activities and improved accessibility.

NEED FOR THE PROPOSAL:

ALTERNATIVE ACTIONS / IMPACT CATEGORIES	PROPOSED ACTION	NO ACTION	ALTERNATIVE	ALTERNATIVE	ALTERNATIVE	ALTERNATIVE
Historic Landscape	Be improved, less vegetative encroachment on historic scene.	Very limited, short term improvement.	Ultimate loss of historic scene.	Historic scene improve for short term in areas.	Historic scene improved some.	Some improvemen
Visitor Appreciation and Understanding	Greatly improved on long term. Short term may be some negative affect from scorching but gone within one growing season. Some may object to loss of "park like" atmosphere.	No change, quality of experience continue to deteriorate.	Significant deterioration of visitor appreciation and understanding. Interpretative value of park would be lost.	Visitor enjoyment would be improved.	Appreciation will be increased but also negative impact on public relations (and environment) due to spraying.	Visitor experience would be improved.
Park Operations	Minor reallocation of staff and budget. Some increased cost during start-up year. Allow easier removal of SPB infested trees Long term would be less affect on staff and budget.	No change in staff allocation or cost. Illegal activities continue to increase.	Decrease cost and staff allocation. Illegal activities continue or increase	Major reallocation of park staff and budget required. Illegal activities would be decreased.	Would be counter to NPS policy. Major increase in cost to conduct such a type of program.	Minor reallocation of staff, may result in cost savings. Illegal activities may decrease.

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NEED FOR THE PROPOSAL: Forested areas of park being heavily attacked by southern pine bark beetle (SPB). Failure to take action will mean further creation of serious visitor/employee safety and fire hazards, negative impact on neighboring community relations and further degradation of the cultural resources and historic scene.

ALTERNATIVE ACTIONS / IMPACT CATEGORIES	PROPOSED ACTION	NO ACTION	ALTERNATIVE	ALTERNATIVE	ALTERNATIVE	ALTERNATIVE
	Biological study followed by removal of SPB infested trees	Continue present management actions	Cut and leave	Insecticides	Pile and burn	
SPB Infestation	Removal of infested trees and buffer will reduce concentration of SPB and spread.	No affect on reversing infestation. Infested trees act as host for spread of SPB	Not effective on large infestation such as at Cold Harbor.	If done sufficiently would reduce occurrence of SPB.	Can be effective in reducing SPB occurrence and spread.	
Fire Danger	Will substantially reduce danger of serious wildfire.	Forest litter build-up increase. Danger of wildfire.	Would increase litter and danger of serious wildfire.	Would not reduce wildfire danger.	Greatly increase danger of very serious wildfire.	
Natural Resources	No affect on air, soil or water quality. Will improve overall condition of forest..	No affect on air, soil, water quality. Forest condition will deteriorate.	No affect	Conditions will deteriorate for air, soil, water, flora and fauna.	Temporary decrease in air quality.	
Cultural Resources	May cause some damage to earthworks but allow greater earthwork preservation activities. On long term less damage to earthworks.	Continue degradation of earthworks and historic integrity. Neighbor forest owners blame park for SPB spread.	Activities will cause further damage to earthworks.	Would not improve earthworks	Activities will cause further damage to earthworks.	
Historic Landscape	Greatly improve overall historic appearance.	Ultimate loss of historic scene as climax forest develops.	Would not improve. Downed trees would intrude on scene.	No change	Would be improved	
Visitor Use	Significant improvement of visitor understanding and appreciation. Increase interpretive value.	Deterioration of visitor appreciation. Increase safety hazard.	Safety hazards reduced. Visitor enjoyment might decrease with piles of downed trees.	No reduction in safety hazards nor increase visitor appreciation.	Increased visitor understanding over long term. Some may object to loss of park like atmosphere	

NEED FOR THE PROPOSAL:

ALTERNATIVE ACTIONS / IMPACT CATEGORIES	PROPOSED ACTION	NO ACTION	ALTERNATIVE	ALTERNATIVE	ALTERNATIVE	ALTERNATIVE
Park Operations	Initial first year cost increase. Prevent illegal activities.	No change in staff or cost. Illegal activities continue. Economic value of trees lost as revenue.	Illegal activities decrease. No economic value received.	Substantial increase in cost. Negative impact on public relations. Contradicts NPS policy	Increased cost and staffing. Illegal activities reduced.	

NEED FOR THE PROPOSAL: Earthworks here received minimal preservation maintenance. Increasing impacts threaten to destroy the historic integrity of all earthen structures.

ALTERNATIVE ACTIONS / IMPACT CATEGORIES	PROPOSED ACTION	NO ACTION	ALTERNATIVE	ALTERNATIVE	ALTERNATIVE	ALTERNATIVE
	Remove large growth and develop stabilization program.	Remove vegetation (Continue present management action)	Stop current action	Restrict accessibility	Develop stabilization program	
Visitor Use	Visitor enjoyment would be increased by more earthwork visibility. Would preserve earthwork for future visitors.	Earthworks would be more visible to visitors enhancing their appreciation	Interpretive value of works will be destroyed sooner than if other action is taken.	Visitor use would be discouraged and/or eliminated.	Would provide assurance that works will be available for future visitor enjoyment.	
Vegetation	Some tree removal will be required. Cover sod will be needed to prevent erosion.	Forest in vicinity of works would be removed.	Forest density would increase through natural succession.	Forest density would increase through natural succession.	Some trees may have to be removed.	
Grounds Maintenance	Some increase in costs; preservation guide would be prepared to direct maintenance staff.	Maintenance costs would increase.			Program guide would be created to direct maintenance activities.	
Historic Structures	Stabilization would increase life expectancy of earthworks.	Damage from tree roots would be prevented. Earthworks would be exposed to more weathering.	Will gradually lose historic integrity.	Earthworks would be preserved longer.	Earthworks would be preserved.	

RICH-C2 External Encroachment

EED FOR THE PROPOSAL: Urban development adjacent to all park units threatens to destroy the park atmosphere and istoric integrity of the park. Buffer zones are needed to offset the rapidly changing scene near park units.

ALTERNATIVE ACTIONS / IMPACT CATEGORIES	PROPOSED ACTION	NO ACTION	ALTERNATIVE	ALTERNATIVE	ALTERNATIVE	ALTERNATIVE
	Combination of Alternative 2 and 5	Continue present management action	Stop current action	Protect additional setting	Establish vegetative screening	Deal with access problems individually
Visitor Use	Visitor enjoyment will be retained and increased in the future by maintenance of buffer zones and parklike environment.	Visitor enjoyment will continue to decline as nearby urban development expands.	Visitor enjoyment will decrease as encroachment accelerates uncontrolled.	Future visitor use and enjoyment of "park like" and historic scenes would be possible.	Visitors would enjoy park unit without visual intrusion of nearby housing areas.	Park neighbors would be upset with attempts to control their access. Lack of control will detract from visitor enjoyment.
egetation	Park would have more control over operations to eliminate or restore forest areas.			Forest management would be controlled by park.	Tree planting program would be required. Would only be a temporary solution.	Additional forest screens will be eliminated to expose housing if access is not controlled.
istoric andscape	Historic scenes will be retained and buffer zones created.	In most areas park scenes will eventually become unidentifiable as historic resources	Resources would lose all historic integrity.	Landscapes could be restored.	Forests would be created in inappropriate areas.	Control of accesses will help preserve historic scene.

CED FOR THE PROPOSAL:

ALTERNATIVE ACTIONS / IMPACT CATEGORIES	PROPOSED ACTION	NO ACTION	ALTERNATIVE 6	ALTERNATIVE	ALTERNATIVE	ALTERNATIVE
			Deauthorization and/or land exchange			
Visitor Use			Visitor use would be changed little since most current use is not appropriate and has a negative impact.			
Vegetation			Land exhange would create potential for improved visitor use in other area.			
Grounds Maintenance			Emergency maintenance now done could be eliminated.			
Historic Structures			Structures would become the responsibility of another agency.			

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ED FOR THE PROPOSAL: Visitor facilities improvement is needed to correct current vandalism problems on signs and hibits, improve interpretation throughout the park and protect historic resources.

ALTERNATIVE ACTIONS / IMPACT CATEGORIES	PROPOSED ACTION Improve existing and develop new facilities	NO ACTION Continue present management action	ALTERNATIVE Stop current action	ALTERNATIVE Improve existing facilities	ALTERNATIVE Relocate facilities	ALTERNATIVE Increase park staff
itor Use	After inconvenience of initial improvement program, visitor enjoyment, use and appreciation would increase.	Visitor impact will continue to increase without facility change to keep pace.	Visitor enjoyment will decrease.	Visitor enjoyment would be impaired during improvement work. Public acceptance, use and attitude would improve after completion.	Vandalism would be deterred. Negative effects of external encroachment would be reduced. Visitor enjoyment parkwide will be increased.	Visitor enjoyment would improve. Visitor safety would improve.
ntenance	Vandal related maintenance will decrease but new facility maintenance may increase.	Maintenance will continue without detailed preservation guides.	Maintenance cost would be saved.		New facilities may require additional maintenance.	Existing sites would have to be restored.
toric uctures	Current impact on structures would be reduced.		Resources will deteriorate more rapidly.	Preservation management would improve.	Increased visitor appreciation may reduce negative impact on earthworks.	Visitor impact will be reduced.

NEED FOR THE PROPOSAL:

ALTERNATIVE ACTIONS / IMPACT CATEGORIES	PROPOSED ACTION	NO ACTION	ALTERNATIVE 6	ALTERNATIVE	ALTERNATIVE	ALTERNATIVE
			Increase park staff			
Visitor Use			More public contact may reduce visitor related facility misuse.			
Maintenance			Vandalized facilities could be repaired quickly.			
Historic Structures			Slightly more personal protection would result from increased patrols.			

NEED FOR THE PROPOSAL: Historic landscapes changed gradually after the Civil War until park units bear little resemblance to original appearance. A change is necessary to recreate the scene in certain areas while providing developed visitor use areas in some locations.

ALTERNATIVE ACTIONS / IMPACT CATEGORIES	PROPOSED ACTION	NO ACTION	ALTERNATIVE	ALTERNATIVE	ALTERNATIVE	ALTERNATIVE
	Recreate selected areas, adaptively restore others	Continue present management action	Stop current action	Recreate total historic appearance	Recreate appearance of selected areas	Adaptive restoration for improved interpretation
Visitor Use	Visitor appreciation and understanding would be improved.	Quality of visitor experience will neither improve nor deteriorate.	Quality of visitor experience will deteriorate.	Visitor appreciation will be enhanced, however, many may object to loss of "park" atmosphere.	Visitor enjoyment would be increased significantly.	Understanding and enjoyment would be improv
Vegetation	Forest scene would be returned more closely to historic appearance. Selected vista clearing and screening plants would improve interpretation of resources.	Trees will continue to encroach on the historic scene.	Historic landscape appearance will completely disappear.	Forest will be removed from most areas; the "park" atmosphere will be destroyed	Forest would be lost in selected areas but a more historic appearance would be created.	Additional vis clearing would be required. Reforestation may be needed i some areas.
Grounds Maintenance	Maintenance costs may increase slightly		Maintenance costs would decrease	Erosion will increase due to absence of vegetation. Maintenance costs would be increased.	Additional maintenance attention will be needed in affected area to prevent erosion; more historic appearance would result.	

C. Listing of Agencies and Persons Consulted

U.S. Soil Conservation Service
USDI, National Park Service, Mid-Atlantic Region - Mike Maule, Resource Mgr.
John Karrish, Scientist
Ed Hay, Div. of Planning
USDI, National Park Service, Richmond NBP - Bob Howard, Park Ranger
USDA, Forest Service - Bill Carouthers, Entomologist
Virginia Commission of Game and Inland Fisheries
Virginia Commission of Outdoor Recreation
Virginia Dept. of Conservation and Economic Development
Virginia Historic Landmarks Commission
Richmond Regional Planning District Commission
Virginia Division of Forestry - Bill Ruby, Forester
Office of the Governor
Henrico County Division of Recreation and Parks
Henrico County Dept. of Planning
Chesterfield County Parks and Recreation Dept.
Chesterfield County Soil Conservation Service
Hanover County Soil Conservation Service
VCU Dept. of History and Geography
VPI & SU Extension Service

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