

Conclusion. Under the no-action alternative, impacts on visitor use and experience would be long term, moderate, and neutral. The cumulative impact on visitor use and experience in the monument would be long term and beneficial. The actions under the no-action alternative would not contribute an appreciable increment to this cumulative impact.

Socioeconomic Environment

Analysis of economic impacts under alternative A was based on projected visitation to the monument as well as estimated one-time capital expenditures due to construction activities, if appropriate. Because alternative A would maintain the status quo, visitor spending is assumed to remain more or less as it is today, with some slight increase due to anticipated population growth in the local area.

Local Economy Employment. Because no new jobs would be created under alternative A, Chatham County would not realize any changes to its employment levels. As a result, long-term impacts resulting from alternative A would be local, negligible, and neutral. Furthermore, because there would be no new capital expenditures in the monument, short-term employment impacts would also remain unaffected, because there would be no need to hire labor for construction activity. Consequently, short-term impacts of alternative A would be local, negligible, and neutral.

Housing. Because alternative A would not entail hiring additional staff, demand for residential housing would remain unchanged. Short-term impacts resulting from alternative A would be local, negligible, and neutral.

Sales. Total sales of goods and services in Chatham County, as a result of visitor spending, would remain more or less unchanged under the no-action alternative. Because alternative A does not increase or decrease sales revenue, long-term impacts would be local, negligible, and neutral.

Cumulative Impacts. The action area for evaluating cumulative impacts on the socioeconomic environment is Chatham County. The implementation of alternative A does not have a strong likelihood of attracting new visitors and locals to the monument. Relatively steady visitation would translate into more or less unchanged spending in the area, resulting in neutral impacts for Chatham County in terms of employment, housing, and taxable annual sales. However, long-term economic activity in the county appears likely to increase due to the continued long-term expansion of world shipping and the potential construction of new facilities at the Port of Savannah and the proposed port at Jasper County, South Carolina. A surge in retirees in coming years is expected to increase populations near the coast with concomitant impacts on construction, health care, and related industries. Combining the likely effects of implementing the no-action alternative with the effects of other past, present, and reasonably foreseeable actions described previously, the cumulative socioeconomic impacts would be local and beneficial. Alternative A would contribute a negligible increment to this cumulative impact.

Conclusion. Because there would be no changes to visitor spending or construction activity within Chatham County under alternative A, long-term and short-term impacts on the socioeconomic environment would be local, negligible, and neutral. As a result, county employment, housing, and sales would remain constant. In terms of cumulative impacts, long-term and short-term impacts would be local and beneficial. Alternative A would contribute a negligible increment to this total cumulative effect.

Park Operations

Alternative A would maintain the status quo with respect to monument staff and facilities. Possible future boundary expansions adding new historical resources would impose additional long-term maintenance and

1 interpretation responsibilities on monument
2 staff. Current staff levels are generally
3 adequate to protect existing monument
4 resources and serve visitors. Thus, alternative
5 A would result in minor, long-term, neutral
6 impacts on NPS operations.

7 **Cumulative Impacts.** Cooperation and
8 coordination with neighboring agencies and
9 entities regarding planning, land use,
10 resources, and development proposals near
11 the monument would continue to require
12 varying amounts of staff time and result in
13 minor to moderate long-term adverse
14 impacts. Combined with other past, present,
15 and reasonably foreseeable future impacts,
16 alternative A would result in minor to
17 moderate, long-term, neutral cumulative
18 impacts on NPS operations.

19 **Conclusion.** Operation of existing visitor
20 and administrative facilities in the monument
21 would result in continuing minor, long-term,
22 neutral impacts on NPS operations. The
23 cumulative impacts of the no-action
24 alternative and other reasonably foreseeable
25 future actions required of monument staff
26 would be minor to moderate, long term, and
27 neutral.

Energy Requirements and Conservation Potential

28 Under alternative A, no new facilities would
29 be developed, thereby eliminating any new
30 energy requirements for facility construction.
31 Public use of the monument would remain at
32 about its current level. The fuel and energy
33 consumed by visitors traveling to the
34 monument would not be likely to increase
35 because visitation is not likely to increase
36 substantially. Energy would still be consumed
37 to maintain existing facilities and for resource
38 management of the monument.

Unavoidable Adverse Impacts

39 Unavoidable adverse impacts are defined as
40 impacts that cannot be fully mitigated or
41 avoided. Adverse impacts on natural and

42 cultural resources and visitor experience
43 could occur in some areas throughout the
44 monument, resulting from limited public use
45 or NPS management activities.

Irretrievable or Irreversible Commitments of Resources

46 Under alternative A, the energy requirements
47 identified previously would result in an
48 irreversible commitment of resources. There
49 would be no permanent effects on
50 monument resources.

Relationship between Local Short-Term Uses of the Environment and Maintenance or Enhancement of Long-Term Productivity

51 In this alternative, most of the monument
52 would be protected in a natural state and
53 would maintain its long-term productivity.
54 Only a small percentage of the monument
55 would be maintained as developed areas.

IMPACTS OF IMPLEMENTING ALTERNATIVE B (NPS PREFERRED ALTERNATIVE)

Cultural Resources

56 **Archeological Resources.** Under this
57 alternative, management of archeological
58 resources would be similar to alternative A
59 (continue current management). However,
60 under alternative B, funding would also be
61 sought for archeological studies to provide
62 information about the construction village
63 that was necessary to recreate part of the
64 cultural landscape. Studies would be
65 performed in such a way as not to constitute
66 an adverse effect on a historic property. The
67 proposed studies would improve
68 archeological understanding of the site and
69 expand the monument's museum collections.

70 On the other hand, the landscape restoration
71 activities called for under this alternative (i.e.
72 removing and replanting trees) could result in
73 some soil disturbance and attendant impacts
74 on archeological resources. Impacts are

expected to be negligible because removed trees would be cut off at the ground surface the park. Similar impacts on archeological resources could come from (a) removing the existing parking area and constructing a new one in a less conspicuous location, and (b) constructing a new visitor center annex on pilings above the 100-year floodplain in close proximity to the existing visitor center.

(Before either of these projects could proceed, an archeological survey would need to be performed in the area of the proposed ground disturbance, followed by consultation with the Historic Preservation Division of the Georgia Department of Natural Resources.) Few if any impacts are expected to archeological resources from the latter projects because ground disturbance would take place in previously disturbed areas that consist primarily of dredge spoil.

Overall, impacts on archeological resources under this alternative, if any, could be greater than under alternative C because the landscape area to be restored under alternative B is larger and because impacts may result from moving the parking area and removing the old lot. Impacts on archeological resources under this alternative are anticipated to be local, permanent, negligible, and adverse.

Cumulative Impacts — Ongoing monument management and visitor use activities have resulted in relatively little disturbance of archeological resources in the monument. Large-scale projects such as deepening the Savannah River ship channel could pose some impacts on archeological resources in the vicinity of the monument. The number and extent of these archeological resources is unknown so the potential impact cannot be assessed with any degree of accuracy. However, the impacts of the federal channel project will be assessed in separate environmental compliance documents being prepared by the U.S. Army Corps of Engineers. When the long-term, direct and indirect, and beneficial effects of implementing the actions under alternative B are added to the minor effects of other past, present, and reasonably foreseeable actions

rather than uprooted, and new plantings would be installed outside the historic core of as described previously, there would be a permanent, negligible to minor, adverse cumulative impact on archeological resources. The actions under alternative B would contribute a negligible increment to this cumulative impact.

Conclusion — Under alternative B, impacts on archeological resources would be permanent, negligible, and adverse. Cumulative impacts would be permanent, minor, and adverse. The actions under alternative B would contribute a negligible increment to this cumulative impact.

Section 106 Summary — After applying the Advisory Council on Historic Preservation's criteria of adverse effects (36 CFR part 800.5, *Assessment of Adverse Effects*), the National Park Service concludes that implementation of alternative B would have no adverse effect on archeological resources.

Museum Collections. Under this alternative, management of museum collections would be similar to alternative A (continue current management). However, under alternative B, funding would also be sought for archeological studies to provide information about the construction village that was necessary to recreate part of the cultural landscape. In addition, funding would be sought to prepare exhibits. The proposed studies would improve archeological understanding of the site and expand the monument's museum collections. Impacts to museum collections would be local, long term, and beneficial.

Cumulative Impacts — Generally the same as under alternative A, except that alternative B would also expand the monument's museum collections. The actions under alternative B would contribute a significant increment to this cumulative beneficial impact.

Conclusion — Under alternative B, impacts on museum collections would be permanent and beneficial. Cumulative impacts would likewise be permanent and beneficial. The

actions under alternative B would contribute a significant increment to this cumulative impact.

Section 106 Summary — After applying the Advisory Council on Historic Preservation's criteria of adverse effects (36 CFR part 800.5, *Assessment of Adverse Effects*), the National Park Service concludes that implementation of alternative B would have no adverse effect on museum collections.

Historic Structures. The impacts on historic structures under alternative B would be similar to those of alternative A (continue current management). However, under alternative B the parking lot in front of the historic fort would be moved to a new location outside the viewshed from the top of the fort. The former parking lot would then be removed and the area restored to the approximate landscape conditions existing during the principle period of significance. Impacts to the historic fort complex from this action would be local, long term, direct and beneficial. On the other hand, impacts on the historic parking area in the Mission 66 visitor center complex would be local, long term, direct, major, and adverse. Should alternative B become the selected action, the National Park Service would negotiate a memorandum of agreement with the Historic Preservation Division of the Georgia Department of Natural Resources to address this adverse effect, with appropriate mitigation measures.

As under alternative A, impacts on historic structures would continue to occur due to aging of the historic fabric, normal wear and tear, and vandalism. Impacts for the most part would be temporary, adverse, and of negligible intensity. Continued ranger patrols and cyclic maintenance activities would minimize damage to historic structures.

Overall, impacts on the historic fort area would be long term and beneficial, but these beneficial impacts would be partially offset by long-term major direct adverse impacts on the parking area of the Mission 66 visitor center.

Cumulative Impacts — No historic structures associated with Fort Pulaski survive in the immediate area surrounding the monument. However, in the local metropolitan and regional area, a number of historic structures survive, and losses to these resources continue to occur due to development projects and structural modification. Therefore, when the local, long-term, beneficial and adverse effects of implementing alternative B are added to the moderate to major adverse effects of other past, present, and reasonably foreseeable actions as described previously, there would be long-term, moderate to major adverse cumulative impacts on historic structures. The actions under alternative B would contribute to these cumulative adverse impacts in a negligible to minor degree.

Conclusion — Under alternative B, impacts on historic structures would for the most part be local, long term, direct and indirect and beneficial due to partial restoration of the historic scene from the principal period of significance. However, relocating the parking area of the Mission 66 visitor center would result in long-term, direct, major, adverse impacts on a historic structure. In addition, some short-term, direct, negligible, and adverse impacts would occur to historic structures, mostly due to normal wear and tear. Cumulative impacts would be moderate to major and adverse due to continued development in the local and regional area. The actions under alternative B would contribute to these adverse cumulative impacts in a negligible to minor degree.

Section 106 Summary — After applying the Advisory Council on Historic Preservation's criteria of adverse effects (36 CFR part 800.5, *Assessment of Adverse Effects*), the National Park Service concludes that implementation of alternative B would have an adverse effect to the Mission 66 visitor center complex. Should alternative B become the selected approach for managing the monument, the National Park Service would negotiate a memorandum of agreement with the Historic Preservation Division of the Georgia Department of Natural Resources to address

1 this adverse effect, with appropriate
2 mitigation measures.

3 **Cultural Landscapes.** Under alternative B,
4 some of the existing adverse impacts on the
5 cultural landscape would continue. However,
6 this alternative would establish a large
7 Historic Setting Zone, which would permit
8 restoration of some cultural landscapes in
9 accordance with the recommendations of a
10 cultural landscape report currently nearing
11 completion. Of the two action alternatives,
12 alternative B would have the greatest
13 beneficial impacts on cultural landscapes
14 because it would restore more site conditions
15 and views to a condition approximating those
16 in existence at the time of the Civil War.
17 Periodic removal of nonnative vegetation
18 would continue to occur under this
19 alternative through periodic employment of
20 NPS exotic plant management teams. In
21 addition, alternative B would move the
22 parking lot from in front of the historic fort
23 to a new location outside the viewshed from
24 the top of the fort. The former parking lot
25 would then be removed and the area restored
26 to the approximate landscape conditions
27 existing during the principle period of
28 significance. Overall impacts on the cultural
29 landscape due to site restoration would be
30 local, long term, direct and indirect, and
31 beneficial.

32 Although impacts on the cultural landscape
33 from site restoration would be long term and
34 beneficial, moving the parking lot and
35 constructing the visitor center annex would
36 have an adverse effect on a historic property.
37 The adverse impacts would stem from (a)
38 removing the parking lot from its original
39 context adjacent to the Mission 66-era visitor
40 center and moving it to a new location in the
41 cultural landscape, and (b) constructing a
42 visitor center annex adjacent to the Mission
43 66-era visitor center. Impacts to the cultural
44 landscape from moving the parking area and
45 constructing the annex would be local,
46 permanent, direct, major, and adverse.
47 Should alternative B become the selected
48 action, the National Park Service would
49 negotiate a memorandum of agreement with
50 the Historic Preservation Division of the

51 Georgia Department of Natural Resources to
52 address adverse effects with appropriate
53 mitigation measures.

54 *Cumulative Impacts* — Development
55 continues on nearby Tybee Island, including
56 areas where Union batteries were located
57 during the war. On the other hand, efforts are
58 ongoing to preserve the sites of historic
59 batteries on Tybee and Long islands. On
60 balance, impacts on the cultural landscape of
61 the area surrounding the monument are long
62 term, minor to moderate, and both beneficial
63 and adverse. When the long-term, moderate
64 to major, beneficial and adverse effects of
65 implementing alternative B are added to the
66 minor to moderate effects of other past,
67 present, and reasonably foreseeable actions
68 as described previously, there would be long-
69 term beneficial cumulative impacts on the
70 cultural landscape. Alternative B would
71 contribute a moderate increment to this
72 cumulative impact.

73 *Conclusion* — Under alternative B, impacts on
74 the cultural landscape would be long term,
75 moderate to major, and both beneficial and
76 adverse. Restoration of historic site
77 conditions and views would result in an
78 overall beneficial impact on the cultural
79 landscape; however, movement of the visitor
80 center parking lot from its original location
81 would result in an adverse effect to a historic
82 property. Construction of the visitor center
83 annex would have an adverse effect on the
84 cultural landscape. Cumulative impacts
85 would be long term and beneficial.
86 Alternative B would contribute a moderate
87 increment to this cumulative impact.

88 *Section 106 Summary* — After applying the
89 Advisory Council on Historic Preservation's
90 criteria of adverse effects (36 CFR part 800.5,
91 *Assessment of Adverse Effects*), the National
92 Park Service concludes that implementation
93 of alternative B would have an adverse effect
94 on the cultural landscape in the vicinity of the
95 Mission 66 visitor center. Should alternative
96 B become the selected approach for
97 managing the monument, the National Park
98 Service would negotiate a memorandum of
99 agreement with the Historic Preservation
100 Division of the Georgia Department of

1 Natural Resources to address this adverse
2 effect, with appropriate mitigation measures.

3 **Ethnographic Resources.** Impacts on
4 ethnographic resources would be the same as
5 under alternative A.



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6 *Cumulative Impacts* — Development
7 continues on nearby Tybee Island, including
8 in areas that may have ethnographic
9 resources similar to those within the
10 monument. Actual impacts on ethnographic
11 resources are not known. However, given the
12 long-term protection of the fort and its
13 historic context, alternative B would
14 contribute a negligible increment to any
15 cumulative impact that may be occurring.

16 *Conclusion* — Under alternative B, there
17 would likely be negligible, long-term, and
18 neutral impacts on ethnographic resources.
19 Cumulative impacts are unknown.
20 Alternative B would contribute a negligible
21 increment to this cumulative impact.

22 *Section 106 Summary* — After applying the
23 Advisory Council on Historic Preservation's
24 criteria of adverse effects (36 CFR part 800.5,
25 *Assessment of Adverse Effects*), the National
26 Park Service concludes that implementation
27 of alternative B would have no adverse effect
28 on ethnographic resources.

Natural Resources

29 **Geology and Soils.** Impacts would include
30 those from alternative A (continue current
31 management). However, this alternative

32 would establish a large Historic Setting Zone,
33 which would permit restoration of historic
34 site conditions and views in selected
35 locations, in accordance with a cultural
36 landscape report to be completed after
37 approval of the general management plan. Of
38 the two action alternatives, alternative B
39 would have the most adverse impacts on soils
40 and geologic resources because it would
41 remove the most vegetation and result in the
42 most soil disturbance. Impacts to soils and
43 geologic resources would be local, short and
44 long term, direct, minor, and adverse. These
45 impacts would be partially mitigated by use of
46 best management practices during clearing.
47 In addition to landscape rehabilitation,
48 alternative B also calls for moving the parking
49 lot from in front of the historic fort to a new
50 location outside the viewshed of the top of
51 the fort. The former parking lot would then
52 be removed and the area restored to the
53 approximate landscape conditions existing
54 during the principle period of significance.
55 Soils under the new parking area would be
56 compacted and covered by paving material.
57 Impacts to soils would be local, short and
58 long term, moderate, and both beneficial and
59 adverse.

60 Further impacts on soils would come from
61 construction of a new visitor center annex.
62 Impacts would stem from installation of piles
63 for the new structure, as well as from soil
64 compaction and disturbance by vehicles and
65 heavy equipment in staging areas. Impacts
66 would be local, short and long term, minor,
67 and adverse. Overall impacts on soils and
68 geologic resources from construction
69 activities and the broader landscape
70 rehabilitation described previously would be
71 local, long term, direct, minor to moderate,
72 and adverse. Impacts would be partially
73 mitigated by use of best management
74 practices during clearing and construction.

75 *Cumulative Impacts* — Permanent soil loss
76 resulting from regional growth and
77 development would adversely impact soils.
78 The impact of these efforts on soils is
79 expected to be long term, moderate to major,
80 and adverse. When the local, short- and long-
81 term, direct, minor, and adverse effects of

implementing the actions under alternative B are added to the effects of other past, present, and reasonably foreseeable actions as described previously, there would be a long-term, moderate to major, adverse cumulative impact on soils. The actions under alternative B would contribute a very small increment to this cumulative impact.

Conclusion — Impacts to soils would stem largely from landscape rehabilitation efforts, together with additional impacts from moving the visitor parking lot and constructing a new visitor center annex. Soils under the old parking area would be restored as much as possible in order to recover a semblance of the historic scene. Soils under the new parking area would be compacted and covered by paving material. Soils in the vicinity of the new visitor center annex would be compacted and otherwise disturbed by construction activities. Overall impacts on soils would be local, long term, direct, minor to moderate, and adverse. Impacts would be partially mitigated by use of best management practices during clearing and construction. Cumulative impacts would be long term, moderate to major, and adverse. The actions under alternative B would contribute a very small increment to this cumulative impact.

Plant Communities and Vegetation.

Impacts would include those from alternative A (continue current management). However, this alternative would establish a large Historic Setting Zone, which would permit restoration of historic site conditions and views in selected locations, in accordance with a cultural landscape report to be completed after approval of the general management plan. Of the two action alternatives, alternative B would have the most adverse impacts on plant communities and vegetation because it would result in removal of the most vegetation. Furthermore, alternative B calls for movement of the parking area to a new location, which would result in additional removal of existing vegetative cover. The latter impacts would be partially offset by revegetation of the old parking area. Additional impacts to vegetation would result from construction of

a visitor center annex in close proximity to the existing visitor center. Vegetation, trees, and grasses would be removed from the site of the new structure and other vegetation would be disturbed by vehicles and heavy equipment in staging areas. Overall, impacts on plant communities and vegetation under alternative B would be local, short and long term, direct, minor, and adverse. These impacts would be beneficial to the extent the removed vegetation consisted of nonnative species. Impacts would be mitigated by new plantings outside the historic core of the park.

Cumulative Impacts — Regional growth and development is expected to result in an increase in the conversion of natural lands to developed areas and thereby increase the amount of disturbed land available for colonization by exotic species. The impact of these activities on native plants and plant communities is expected to be long term, moderate to major, and adverse. When the local, short- and long-term, direct, minor, and adverse effects of implementing the actions under alternative B are added to the effects of other past, present, and reasonably foreseeable actions as described previously, there would be a long-term, moderate to major, adverse cumulative impact on native natural processes resulting from the loss of vegetative cover and the spread of exotic plants. The actions under alternative B would contribute a small increment to this adverse cumulative impact. The contribution would be marginally greater under this alternative than under alternative C due to the relocation of the parking area. On the other hand, it is possible that alternative B could offset adverse cumulative impacts to a negligible degree to the extent it results in the removal of nonnative vegetation.

Conclusion — Under alternative B, impacts on plant communities and vegetation would result primarily from landscape rehabilitation efforts, together with impacts from moving the visitor parking lot. Vegetation in the vicinity of the old parking area would be restored as much as possible in order to recover a semblance of the historic scene.

Vegetation in the area of the new parking lot would be removed. Overall impacts on plant communities and vegetation would be local, long term, direct, minor to moderate, and adverse. Cumulative impacts would be long term, moderate to major, and adverse. The actions under alternative B would contribute a small increment to this adverse cumulative impact.

Exotic/Nonnative Plants. Under alternative B, impacts on monument resources from the growth and spread of exotic/nonnative plants would continue to occur. Some limited removal of exotics would take place as funding became available, but large scale restoration would not be likely to take place in the near term. Alternative B would establish a large Historic Setting Zone, which would permit restoration of historic site conditions and views in selected locations. Such restoration activities would produce corresponding reductions in exotic vegetation. On the other hand, this alternative calls for construction of a new visitor center annex and the movement of the parking area to a new location. Both of these projects would result in disturbed ground in the project area and immediate vicinity. Disturbed ground frequently provides ideal generating sites for exotics. One aspect of site restoration in the area of the former parking area would entail control of exotics. Nevertheless, despite these and other efforts, nonnative vegetation would continue to displace native vegetation in large portions of Cockspur Island, resulting in adverse impacts on natural processes and native wildlife. On balance, impacts from exotic vegetation would be local, short and long term, moderate to major, and adverse.

Cumulative Impacts — Regional growth and development is expected to result in an increase in the conversion of natural lands to developed areas and thereby increase the amount of disturbed land available for colonization by exotic species. The impact of these activities on native plants and plant communities is expected to be long term, moderate to major, and adverse. When the long-term, moderate to major, and adverse

effects of implementing the actions under alternative B are added to the effects of other past, present, and reasonably foreseeable actions as described previously, there would be a long-term, moderate to major, adverse cumulative impact on native natural processes resulting from the loss of vegetative cover and the spread of exotic plants. Certain of the actions in alternative B (i.e., restoration of historic site conditions and views in selected locations) would offset these cumulative adverse impacts to a negligible degree.

Conclusion — Under alternative B, impacts from exotic plants and nonnative vegetation would be long-term, adverse, and moderate to major, and would be concentrated on Cockspur Island. There could be long-term, moderate to major, adverse cumulative impacts on native natural processes. The actions under alternative B would both contribute to and offset these cumulative adverse impacts to a negligible degree.

Fish and Wildlife. Impacts would include those from alternative A (continue current management). However, this alternative would establish a large Historic Setting Zone, which would permit restoration of historic site conditions and views in selected locations. Of the two action alternatives, alternative B would have more adverse impacts on fish and wildlife because it would result in removal of the most vegetative cover, with corresponding direct and indirect impacts on fish and wildlife habitat. Adverse impacts on fish and wildlife would result from increased siltation in adjacent waterways and loss of habitat due to removal of plant cover. Impacts to wildlife would not be uniform, because the clearing of historic sight lines would benefit some species and hurt others. Moreover, impacts on wildlife would be beneficial to the extent that removed vegetation consisted of nonnative species. Alternative B would result in more adverse impacts on wildlife than alternative C because it calls for movement of the parking area to a new location, which would result in additional removal and modification of existing habitat. The latter impacts would be

partially offset by revegetation of the old parking area. Impacts on wildlife from the new visitor center annex would be negligible because this facility would be built in an area that has marginal value as wildlife habitat. Overall, impacts on fish and wildlife under alternative B would be local, short and long term, direct and indirect, minor, and both beneficial and adverse. Adverse impacts would be mitigated by new plantings outside the historic core of the park.

Cumulative Impacts — Regional growth and development is expected to continue and result in an increase in the conversion of natural lands to development in the general area. The loss of natural areas and the increasing urbanization of the region have led to a loss of wildlife habitat. Continued urbanization will fragment remaining natural areas and increase the risks and threats to wildlife, including automobile collisions, exotic species, and pathogens. Rainwater runoff and industrial discharges from urban areas may lead to a deterioration of water quality, with corresponding impacts on fish species. Overall, the effects of the activities described previously would likely be long term, moderate, and adverse on fish and wildlife in the region. When the local, short- and long-term, direct, minor, and both beneficial and adverse effects of implementing the actions under alternative B are added to the effects of other past, present, and reasonably foreseeable actions as described previously, there would be a long-term, moderate, adverse cumulative impact on fish and wildlife. The actions under alternative B would contribute a very small increment to this cumulative impact.

Conclusion — Under alternative B, impacts on fish and wildlife would be local, short and long term, direct and indirect, minor, and both beneficial and adverse. Impacts would be concentrated at Cockspur Island and would result from restoration of historic site conditions and views in selected locations, as well as movement of the principal parking area to a new location. Minor adverse impacts on soil, water quality, and vegetation would result in minor adverse effects on

some fish and wildlife species. In contrast, the removal of exotics would result in minor beneficial effects on some wildlife species. There would be long-term, moderate, adverse cumulative impacts on fish and wildlife. The actions under alternative B would contribute a very small increment to this cumulative impact.

Water Quality. Impacts would include those from alternative A (continue current management). However, this alternative would establish a large Historic Setting Zone, which would permit restoration of historic site conditions and views in selected locations. Of the two action alternatives, alternative B would have more adverse impacts on water quality because it would result in removal of the most vegetative cover, with corresponding direct and indirect impacts on water quality in adjacent water bodies. Adverse impacts on water quality would result from an increase in polluted runoff and from increased siltation in adjacent waterways. Adverse impacts would also result from construction of a new visitor center annex and from movement of the parking area to a new location. Both of these projects would cause additional soil disturbance and more potential for impacts on adjacent waters. The new education facility would also be served by a septic system, which potentially could adversely impact subsurface waters if not adequately maintained. Overall, impacts on water quality under alternative B would be local, short and long term, direct and indirect, minor, and adverse. Impacts would be partially mitigated by use of best management practices during clearing and site recovery.

Cumulative Impacts — Regional growth and development is expected to result in an increase in the conversion of natural lands to development and alter the hydrology of the general area. Water quality would be affected by inputs from urban and suburban development, including increases in organic compounds and chemical concentrations. Inputs would derive both from point sources (e.g., sewer outfalls) and nonpoint sources (e.g., storm water runoff). The impact on

water quality within the watershed is expected to be adverse, but the intensity is unknown. When the local, short- and long-term, direct, minor, and adverse effects of implementing the actions under alternative B are added to the effects of other past, present, and reasonably foreseeable actions as described previously, there would be a long-term, adverse cumulative impact on water quality in the watershed. The intensity of the impact is unknown. The actions under alternative B would contribute a very small increment to this cumulative impact.

Conclusion — Under alternative B, impacts on water quality would be local, short and long term, direct and indirect, minor, and adverse. There would be a long-term, adverse cumulative impact on water quality in the watershed. The intensity of the impact is unknown. The actions under alternative B would contribute a very small increment to this cumulative impact. Impacts would be partially mitigated by use of best management practices during clearing and site recovery.

Floodplains. Impacts would be the same as those under alternative A, except that a new visitor center annex would be built in the 100-year floodplain. The structure would meet a compelling need for additional space to interpret the fort to the public, accommodate school groups, hold staff meetings, etc. There is no practicable alternative to building in the floodplain because all of Cockspur Island is in the 100-year floodplain. Impacts on both floodplain functions and infrastructure would be minimized by building the structure above the 100-year floodplain on piles. Impacts on floodplain functions would be local, long term, direct and indirect, minor, and adverse. Impacts to infrastructure island-wide in the event of flooding would be short and long term, moderate to major, and adverse. For more information, see “Floodplain Statement of Findings” in appendix D.

Cumulative Impacts — Cumulative impacts would be the same as under alternative A. The actions under alternative B would contribute a small increment to this cumulative impact.

Conclusion — Given that Cockspur Island rarely floods, impacts on floodplain functions under alternative B would be local, direct and indirect, negligible to minor, and adverse. Impacts to infrastructure in the event of flooding would be short and long term, moderate to major, and adverse. Cumulative impacts would be long term, minor to major, and adverse. The actions under alternative B would contribute a small increment to this cumulative impact.

Wetlands. Impacts would generally be the same as those from alternative A (continue current management). The site of the new visitor parking area under alternative B would be in an area of former (pre-1847) wetlands. Some wetland areas may remain in this area, and others may have developed in subsequent years. Final siting of the parking area would be done in such a way as to avoid or minimize any wetland impacts. Such impacts, if they occur, are likely to be local, long term, negligible to moderate, and adverse.

Cumulative Impacts — Cumulative Impacts would be the same as under alternative A. The actions under alternative B would contribute a very small increment to this cumulative impact, if any.

Conclusion — Under alternative B, impacts on wetlands are likely to be local, long term, negligible to moderate, and adverse. There would be a long-term, minor to major, adverse cumulative impact on wetlands. The actions under alternative B would contribute a very small increment to this cumulative impact.

Wilderness Resources and Values

Alternative B proposes that approximately 4,500 acres of salt marsh within the monument boundary be designated as part of the National Wilderness Preservation System. Designation as wilderness would afford the highest level of protection available to federally managed public lands and allow permanent protection of the wilderness

resource. Permanent protection would minimize or prevent fragmentation of habitat and would ensure that opportunities for solitude and primitive and unconfined recreation are available over the long term. Fishing would continue to be allowed but would be accommodated by boat-in access only. Wilderness designation would not prevent use of motorboats in the main channels of the salt marsh because this is an established use of long duration.

Ongoing NPS resource management activities would continue to preserve the long-term naturalness and untrammelled quality of the eligible lands, but development outside the monument boundary could cause some short- and long-term adverse impacts on wilderness character, including degradation of the natural soundscape and diminished opportunities for solitude.

Cumulative Impacts. Regional growth and development is expected to continue and result in an increase in the conversion of natural lands in the general area. Increasing urbanization, fragmentation of habitat, and the loss of natural areas have led to the degradation of natural resources, ecosystem function, and natural soundscapes in the region. The impact of these activities on wilderness resources and values would be long term, moderate, and adverse. Alternative B would not prevent or alter these impacts, but would offset them somewhat by granting most of the salt marsh in the monument permanent protection as wilderness.

Conclusion. Under alternative B, impacts on wilderness resources and values from the designation of wilderness would be long term, moderate to major, and beneficial. There would be a long-term, minor to moderate, adverse cumulative impact on wilderness resources and values in the region. The actions under alternative B would offset these impacts somewhat by granting most of the salt marsh in the monument permanent protection as wilderness.

Visitor Use and Experience

Impacts would generally be the same as alternative A, except that implementation of alternative B would remove vegetation to facilitate understanding of Fort Pulaski's field of fire and restore a portion of its historic sight lines. Alternative B calls for more site restoration than alternative C. The targeted clearing activities would provide visitors a greater understanding of the siege and reduction of Fort Pulaski in 1862. Some visitors would appreciate the enhanced historical perspective, while others would experience the removal of vegetative cover as a loss. Movement of the parking area to a new, less visible location would further enhance historic views from the fort. The area of the former parking area would be restored as much as possible to its historic appearance, thereby enhancing the experience of many visitors. A new visitor center annex would be constructed near the park's administration building, enhancing visitor understanding and enjoyment. No new recreational opportunities would be provided under this alternative. Overall, enhanced appreciation of the historic scene and continued availability of varied recreational opportunities would result in long-term beneficial impacts on visitor use and experience.

Cumulative Impacts. Regional growth is expected to result in increased development in the vicinity of the monument. As a result, opportunities for cultural tourism and recreational activities may expand at Tybee Island and in the Savannah metropolitan area. Because the monument is well-buffered by thousands of acres of salt marsh, these opportunities would expand the choices available to monument visitors without affecting the actual visitor experience of most people using the park. Combining the long-term, moderate, beneficial effects of implementing alternative B with the effects of other past, present, and reasonably foreseeable actions described previously, the cumulative impact on visitor use and experience in the monument would be long term and beneficial. The actions under

alternative B would contribute substantially to this cumulative impact.

Conclusion. Impacts to visitor use and experience would stem primarily from targeted restoration of historic views and movement of the parking area to a less visible location. Impacts would be local, short and long term, moderate, and both beneficial and adverse, depending on a given visitor's individual preferences. Some visitors would appreciate the enhanced opportunity to experience historic views, while others would experience the removal of vegetative cover as a loss. Cumulative impacts would be long term and beneficial. The actions under alternative B would contribute a substantial increment to this cumulative impact.

Socioeconomic Environment

Under alternative B, visitation would be unlikely to increase to any appreciable degree over current levels, but might increase due to population growth. Impacts to the local economy from increased visitation-related spending would be long term, direct and indirect, and beneficial.

Local Economy Employment. No new permanent jobs would be created under alternative B as no new permanent staff would be necessary to implement the alternative. As a result, Chatham County would not realize any long-term changes to its employment levels and long-term impacts resulting from alternative B would be local, negligible, and neutral. On the other hand, total one-time costs (facility and nonfacility) would be over 7.5 times higher under alternative B than under alternative A, and slightly more than under alternative C. These new expenditures would result in additional short-term employment opportunities for local contractors and others. Consequently, short-term impacts of alternative B would be local and beneficial.

Housing. Because alternative B would not entail hiring additional permanent staff, demand for residential housing would remain

unchanged. Short-term impacts resulting from alternative B would be local and neutral.

Sales. Under alternative B, total sales of goods and services in Chatham County, as a result of visitor spending, would likely increase a small amount over the life of this plan. Because alternative B would result in only a small increase in sales revenue, long-term impacts would be local and beneficial.

Cumulative Impacts. The action area for evaluating cumulative impacts on the socioeconomic environment is Chatham County. The implementation of alternative B would not have a strong likelihood of attracting significant numbers of new visitors and locals to the monument. Relatively steady to slightly increased visitation would translate into slightly increased spending in the area, resulting in small beneficial impacts for Chatham County in terms of employment, housing, and taxable annual sales. However, long-term economic activity in the county appears likely to increase due to the continued long-term expansion of world shipping and the potential construction of new facilities at the Port of Savannah and the proposed port at Jasper County, South Carolina. A surge in retirees in coming years is expected to increase populations near the coast with concomitant impacts on construction, health care, and related industries. Combining the likely effects of implementing alternative B with the effects of other past, present, and reasonably foreseeable actions described previously, the cumulative socioeconomic impacts would be local, moderate, and beneficial. Alternative B would contribute a negligible increment to this cumulative impact.

Conclusion. Because there would be only slight increases to visitor spending or monument expenditures within Chatham County under alternative B, long-term and short-term impacts on the socioeconomic environment would be local and slightly beneficial. As a result, county employment, housing, and sales would not be measurably affected. In terms of cumulative impacts, long-term and short-term impacts would be

1 local and beneficial. Alternative B would
2 contribute a negligible increment to this total
3 cumulative effect.

Park Operations

4 The impacts of alternative B on monument
5 operations would include those of alternative
6 A, plus the additional costs and effort needed
7 to restore and maintain targeted historic
8 views and operate and maintain the visitor
9 center annex. The latter undertakings would
10 impose additional long-term maintenance
11 and interpretation responsibilities on
12 monument staff. However, no addition of
13 permanent staff would be necessary to
14 implement alternative B. Thus, alternative B
15 would result in minor, long-term, neutral
16 impacts on NPS operations.

17 **Cumulative Impacts.** Same as under
18 alternative A.

19
20 **Conclusion.** Operation of existing and
21 projected visitor and administrative facilities
22 in the monument would result in minor,
23 long-term, neutral impacts on NPS
24 operations. The cumulative impacts of
25 alternative B and other reasonably
26 foreseeable future actions required of
27 monument staff would be minor to moderate,
28 long term, and neutral.

Energy Requirements and Conservation Potential

29 Under alternative B, one new facility would
30 be developed, thereby adding a new long-
31 term energy requirement for facility
32 construction and maintenance. Construction
33 and operation of the visitor center annex
34 would be in accordance with NPS
35 sustainability guidelines in order to minimize
36 energy consumption. Some fuel would be
37 consumed in the course of restoring historic
38 sites and views and moving the parking area
39 to a new location, but the amounts would be
40 minor. Public use of the monument would
41 remain at about its current level. The fuel and
42 energy consumed by visitors traveling to the
43 monument would not be likely to increase
44 because visitation is not likely to increase

45 substantially. Energy would still be consumed
46 to maintain existing facilities and for resource
47 management of the monument.

Unavoidable Adverse Impacts

48 Unavoidable adverse impacts are defined as
49 impacts that cannot be fully mitigated or
50 avoided. Adverse impacts on natural and
51 cultural resources and visitor experience
52 could occur in some areas throughout the
53 monument, resulting from limited public use
54 or NPS management activities.

Irretrievable or Irreversible Commitments of Resources

55 Under alternative B, the energy requirements
56 identified previously would result in an
57 irreversible commitment of resources. There
58 would be no permanent effects on
59 monument resources.

Relationship between Local Short-Term Uses of the Environment and Maintenance or Enhancement of Long-Term Productivity

60 In this alternative, most of the monument
61 would be protected in a natural state and
62 would maintain its long-term productivity.
63 Only a small percentage of the monument
64 would be maintained as developed areas.

IMPACTS OF IMPLEMENTING ALTERNATIVE C

Cultural Resources

1 **Archeological Resources.** Alternative C
2 does not call for any changes in the
3 management of archeological resources.
4 Impacts to these resources would generally
5 be the same as under alternative A. However,
6 the landscape restoration activities called for
7 under this alternative (i.e. removing and
8 replanting trees) could result in some soil
9 disturbance and attendant impacts on
10 archeological resources. Impacts would be
11 permanent, adverse, and of negligible
12 intensity. The parking area would not be
13 moved under this alternative and thus there
14 would be no associated impacts on
15 archeological resources. However, minimal
16 (if any) impacts could also arise from
17 constructing a visitor center annex on pilings
18 in close proximity to the existing visitor
19 center. Impacts from landscape restoration
20 would be fewer under this alternative than
21 under alternative B because less restoration
22 would be called for under alternative C.

23 *Cumulative Impacts* — Same as alternative A.
24 The actions under alternative C would
25 contribute a negligible increment to this
26 cumulative impact.

27 *Conclusion* — Under alternative C, impacts
28 on archeological resources would be
29 permanent, negligible, and adverse.
30 Cumulative impacts would be permanent,
31 minor, and adverse. The actions under
32 alternative C would contribute a negligible
33 increment to this cumulative impact.

34 *Section 106 Summary* — After applying the
35 Advisory Council on Historic Preservation's
36 criteria of adverse effects (36 CFR part 800.5,
37 *Assessment of Adverse Effects*), the National
38 Park Service concludes that implementation
39 of alternative C would have no adverse effect
40 on archeological resources.

41
42 **Museum Collections.** This alternative does
43 not call for any changes in the management of
44 museum collections. Impacts to these

45 resources would be the same as under
46 alternative A.

47 *Cumulative Impacts* — Same as alternative A.
48 The actions under alternative C would
49 contribute a significant increment to this
50 beneficial cumulative impact.

51 *Conclusion* — Under alternative C, impacts
52 on museum collections would be long term
53 and beneficial. Cumulative impacts would
54 likewise be long term and beneficial. The
55 actions under alternative C would contribute
56 a significant increment to this cumulative
57 impact.

58 *Section 106 Summary* — After applying the
59 Advisory Council on Historic Preservation's
60 criteria of adverse effects (36 CFR part 800.5,
61 *Assessment of Adverse Effects*), the National
62 Park Service concludes that implementation
63 of alternative C would have no adverse effect
64 on museum collections.

65 **Historic Structures.** The impacts on historic
66 structures under alternative C would be
67 similar to those of alternative A (continue
68 current management). However, under
69 alternative C, the Tybee Knoll Lighthouse oil
70 shed would be stabilized and access would be
71 provided to Cockspur Island Lighthouse.
72 Impacts from these actions would be local,
73 long term, direct and indirect, and beneficial.
74 As under alternative A, impacts on historic
75 structures would continue to occur due to
76 aging of the historic fabric, normal wear and
77 tear, and vandalism. Impacts for the most
78 part would be temporary, adverse, and of
79 negligible intensity. Continued ranger patrols
80 and cyclic maintenance activities would
81 minimize damage to historic structures.
82 Adverse effects would be anticipated to be
83 short term, negligible, and adverse.

84 *Cumulative Impacts* — No historic structures
85 associated with Fort Pulaski survive in the
86 immediate area surrounding the monument.
87 However, in the local metropolitan and
88 regional area, a number of historic structures
89 survive, and losses to these resources
90 continue to occur due to development
91 projects and structural modification. As a

result, when the local, long-term, moderate, and beneficial effects of implementing alternative C are added to the moderate to major adverse effects of other past, present, and reasonably foreseeable actions as described previously, there would be long-term, moderate to major adverse cumulative impacts on historic structures. The actions under alternative C would offset these cumulative adverse impacts to a negligible degree.

Conclusion — Under alternative C, impacts on historic structures would for the most part be local, long term, direct and indirect, and beneficial. Some short-term negligible to minor adverse impacts would occur, mostly due to normal wear and tear. Cumulative impacts would be moderate to major and adverse due to continued development in the local and regional area. The beneficial actions under alternative C would offset these cumulative adverse impacts to a negligible degree.

Section 106 Summary — After applying the Advisory Council on Historic Preservation's criteria of adverse effects (36 CFR part 800.5, *Assessment of Adverse Effects*), the National Park Service concludes that implementation of alternative C would have no adverse effect to historic structures.

Cultural Landscapes. Under alternative C, some of the existing adverse impacts on the cultural landscape would continue. Like alternative B, this alternative would establish a Historic Setting Zone that would permit restoration of some cultural landscapes in accordance with a cultural landscape report to be completed after approval of the general management plan. However, there would be less restoration of cultural landscapes under this alternative than under alternative B. Beneficial impacts of restoring historic site conditions and views would be correspondingly less under this alternative than under alternative B. Impacts would be local, long term, direct and indirect, and beneficial. Periodic removal of nonnative vegetation would continue to occur under this alternative through periodic employment

of NPS exotic plant management teams. Impacts on the cultural landscape would be long term and beneficial.

On the other hand, adverse impacts would stem from constructing a visitor center annex near the existing Mission 66-era visitor center. Impacts to the cultural landscape from constructing the annex would be local, permanent, direct, major, and adverse. Should alternative C become the selected action, the National Park Service would negotiate a memorandum of agreement with the Historic Preservation Division of the Georgia Department of Natural Resources to address adverse effects with appropriate mitigation measures.

Cumulative Impacts — Cumulative impacts would generally be the same as under alternative B. The actions under alternative C would contribute a moderate increment to this cumulative impact.

Conclusion — Under alternative C, there would be long-term beneficial impacts on the cultural landscape due to restoration of historic site conditions and views, but there would also be long-term adverse impacts resulting from construction of the visitor center annex. Cumulative impacts would be long term, minor to moderate, and both beneficial and adverse. Alternative C would contribute a small beneficial increment to this cumulative impact.

Section 106 Summary — After applying the Advisory Council on Historic Preservation's criteria of adverse effects (36 CFR part 800.5, *Assessment of Adverse Effects*), the National Park Service concludes that implementation of alternative C would have an adverse effect on the cultural landscape in the vicinity of the Mission 66-era visitor center. Should alternative C become the selected approach for managing the monument, the National Park Service would negotiate a memorandum of agreement with the Historic Preservation Division of the Georgia Department of Natural Resources to address this adverse effect, with appropriate mitigation measures.



WORLD WAR II BATTERY

Ethnographic Resources. Impacts on ethnographic resources would be the same as under alternative A.

Cumulative Impacts — Development continues on nearby Tybee Island, including in areas that may have ethnographic resources similar to those within the monument. Actual impacts on ethnographic resources are not known. However, given the long-term protection of the fort and its historic context, alternative C would contribute a negligible increment to any cumulative impact that may be occurring.

Conclusion — Under alternative C, there would likely be negligible long-term neutral impacts on ethnographic resources. Cumulative impacts are unknown. Alternative C would contribute a negligible increment to this cumulative impact.

Section 106 Summary — After applying the Advisory Council on Historic Preservation's criteria of adverse effects (36 CFR part 800.5, *Assessment of Adverse Effects*), the National Park Service concludes that implementation of alternative C would have no adverse effect on ethnographic resources.

Natural Resources

Geology and Soils. Impacts to soils and geologic resources would include those under alternative A (continue current management), together with additional impacts associated with limited restoration of historic site conditions and views. Some removal of vegetation would occur under

alternative C to restore historic sight lines, but not as much as under alternative B. As a result, soil erosion from vista clearing would be less than under the latter alternative. On the other hand, alternative C would generate additional impacts on soils arising out of the construction and use of new trails and other recreational facilities not contemplated under alternative B. Overall, impacts on soils and geologic resources would be local, short and long term, minor, and adverse. Impacts would be partially mitigated by use of best management practices during clearing and construction.

Cumulative Impacts — Cumulative impacts would generally be the same as under alternative B. The actions under alternative C would contribute a negligible increment to this cumulative impact.

Conclusion — Impacts would include those from alternative A, together with additional erosion from construction and use of new trails and other recreational facilities. Additional impacts to soils would stem from construction of a visitor center annex. Some removal of vegetation would occur to restore historic sight lines, but not as much as under alternative B. Impacts to soils would be local, short and long term, minor, and adverse. There would be a long-term moderate to major adverse cumulative impact on soils and geologic resources. The actions under alternative C would contribute a negligible increment to this cumulative impact.

Plant Communities and Vegetation.

Impacts to plant communities and vegetation would include those under alternative A (continue current management), together with additional impacts associated with limited restoration of historic site conditions and views. Some removal of vegetation would occur under alternative C to restore historic sight lines, but not as much as under alternative B. As a result, damage to plants and plant communities from vista clearing would be less than under the latter alternative. On the other hand, alternative C would generate additional impacts on plant communities and vegetation arising out of the

construction of a visitor center annex and the construction and use of new trails and other recreational facilities not contemplated under the other alternatives. Overall, impacts on plants and plant communities would be local, short and long term, minor, and adverse. Beneficial impacts from the removal of nonnative vegetation would be correspondingly less than under alternative B. Overall impacts would be mitigated by new plantings outside the historic core of the park.

Cumulative Impacts — Cumulative impacts would generally be the same as under alternative B. The actions under alternative C would contribute a very small increment to this adverse cumulative impact, and could even offset it to a negligible degree to the extent it results in the removal of nonnative vegetation.

Conclusion — Under alternative C, impacts on plant communities and vegetation would be local, short and long term, direct, minor, and adverse. There could be long-term moderate to major adverse cumulative impacts on vegetation and plant communities in the surrounding region. The actions under alternative C would contribute a very small increment to this cumulative impact.

Exotic/Nonnative Plants. Impacts from nonnative plants would generally be the same as under alternative B, except that a less extensive sightline restoration effort would mean less removal of exotics. In addition, this alternative calls for the construction of new recreational facilities, which would entail new ground disturbance. Disturbed ground frequently provides ideal generating sites for exotics; similarly, trails can act as vectors for exotics. For this reason, mitigation measures would be implemented to limit the establishment of additional exotics in the park. Impacts would be, local, short and long term, moderate to major, and adverse.

Cumulative Impacts — Cumulative impacts would generally be the same as under alternative B.

Conclusion — Under alternative C, impacts from exotic plants and nonnative vegetation would be long term, adverse, and moderate to major, and would be concentrated on Cockspur Island. There could be a long-term moderate to major adverse cumulative impact on native natural processes. The actions under alternative C would offset the cumulative adverse impact to a negligible degree.

Fish and Wildlife. Impacts to fish and wildlife would include those under alternative A (continue current management), together with additional impacts associated with limited restoration of historic site conditions and views. Some removal of vegetation would occur under alternative C to restore historic sight lines, but not as much as under alternative B. As a result, impacts on fish and wildlife from clearing would be less under alternative C than under alternative B. Adverse impacts on fish would result from a slight increase in polluted runoff from disturbed areas and from limited siltation of adjacent waterways. Wildlife would be affected by loss of habitat due to removal of plant cover. Impacts to wildlife would not be uniform, however, because the clearing of historic sight lines would benefit some species and hurt others. Moreover, impacts on wildlife would be beneficial to the extent that removed vegetation consisted of nonnative species. Besides impacts from vista clearing and site restoration, alternative C would generate additional impacts from the construction of a visitor center annex and the construction and use of new trails and other recreational facilities not contemplated under the other alternatives. On balance, impacts on fish and wildlife under this alternative would be local, short and long term, direct and indirect, minor, and both beneficial and adverse. Overall impacts would be mitigated by new plantings outside the historic core of the park.

Cumulative Impacts — Cumulative impacts would generally be the same as under alternative B. The actions under alternative C would contribute a very small increment to this cumulative impact.

Conclusion — Under alternative C, impacts on fish and wildlife would be local, short and long term, direct and indirect, minor, and both beneficial and adverse. Impacts would be concentrated at Cockspur Island and would result primarily from restoration of historic site conditions and views in selected locations, as well as the construction of new recreational facilities. Minor adverse impacts on soil, water quality, and vegetation would result in minor adverse effects on some fish and wildlife species. In contrast, the removal of exotics would result in minor beneficial effects on some wildlife species. This alternative would result in long-term moderate adverse cumulative impacts on fish and wildlife. The actions under alternative C would contribute a very small increment to this cumulative impact.

Water Quality. Impacts to water quality would include those from alternative A, together with additional impacts associated with limited restoration of historic site conditions and views. Some short-term increase in runoff and sedimentation would result from the removal of vegetation to restore historic sight lines, but not as much as under alternative B. Besides impacts from vista clearing and site restoration, alternative C would generate additional impacts from the construction of a visitor center annex and the construction and use of new trails and other recreational facilities not contemplated under the other alternatives. All told, there would be slightly more runoff and impacts on water quality under alternative C than under alternative A, but less than under alternative B. Impacts to hydrology and water quality would be local, short and long term, minor, and adverse. Impacts would be partially mitigated by use of best management practices during clearing and site recovery.

Cumulative Impacts — Cumulative impacts would generally be the same as under alternative B. The actions under alternative C would contribute a very small increment to this adverse cumulative impact.

Conclusion — Under alternative C, impacts on water quality would be local, short and

long term, minor, and adverse. There would be a long-term adverse cumulative impact on water quality in the watershed. The intensity of the impact is unknown. The actions under alternative C would contribute a very small increment to this cumulative impact. Impacts would be partially mitigated by use of best management practices during clearing and site recovery.

Floodplains. Impacts would generally be the same as under alternatives A and B. Some new trails and other recreational facilities would be constructed, with minimal additional impacts on floodplain functioning. Impacts to floodplain functions would be negligible to minor, local, direct and indirect, and adverse. Impacts to infrastructure in the event of flooding would be moderate to major, short and long term, and adverse.

Cumulative Impacts — Cumulative impacts would generally be the same as under alternative A. The actions under alternative C would contribute a very small increment to this adverse cumulative impact.

Conclusion — Given that Cockspur Island rarely floods, impacts on floodplain functions under alternative C would be local, direct and indirect, negligible to minor, and adverse. Impacts to infrastructure in the event of flooding would be short and long term, moderate to major, and adverse. Cumulative impacts would be long term, minor to major, and adverse. The actions under alternative C would contribute a very small increment to this adverse cumulative impact.

Wetlands. Impacts would be the same as those from alternative A (continue current management).

Cumulative Impacts — Cumulative Impacts would be the same as under alternative A.

Conclusion — Under alternative C, past impacts on wetlands would continue and would be long term, minor, adverse, and local. There would be a long-term minor to major adverse cumulative impact on wetlands. The actions under alternative A

1 would not contribute any new impacts to this
2 cumulative impact.

Wilderness Resources and Values

3 **Analysis.** Same as alternative B. Like
4 alternative B, alternative C proposes that
5 approximately 4,500 acres of salt marsh
6 within the monument boundary be
7 designated as part of the National Wilderness
8 Preservation System. Designation would
9 guarantee permanent protection of the
10 wilderness resource while allowing most
11 current uses, including motor boating, to
12 continue.

13 **Cumulative Impacts.** Same as alternative B.

14 **Conclusion.** Under alternative C, impacts on
15 wilderness resources and values from the
16 designation of wilderness would be long
17 term, moderate to major, and beneficial.
18 There would be a long-term minor to
19 moderate adverse cumulative impact on
20 wilderness resources and values in the region.
21 The actions under alternative C would offset
22 these impacts somewhat by granting most of
23 the salt marsh in the monument permanent
24 protection as wilderness.

Visitor Use and Experience

25 **Analysis.** Because it calls for less clearing of
26 historic sight lines than alternative B,
27 alternative C would provide less historic
28 perspective and information for visitors
29 seeking an in-depth experience of the
30 monument's cultural resources. On the other
31 hand, some visitors would appreciate the
32 greater amount of vegetative cover remaining
33 under this alternative. Alternative C would
34 also provide more new recreational
35 opportunities than any of the other
36 alternatives by authorizing an expanded trail
37 system on Cockspur Island and expanding
38 the launching facilities for canoes and kayaks
39 at Lazaretto Creek. A visitor center annex
40 would be constructed near the existing
41 Mission 66-era visitor center, enhancing
42 visitor understanding and enjoyment.
43 Impacts to visitor use and experience would

44 be moderate, local, short and long term, and
45 both beneficial and adverse, depending on a
46 given visitor's individual preferences.

47 **Cumulative Impacts.** Cumulative impacts
48 would generally be the same as under
49 alternative B. The actions under alternative C
50 would contribute a substantial increment to
51 this cumulative impact.

52 **Conclusion.** Impacts to visitor use and
53 experience under alternative C would stem
54 both from targeted restoration of historic
55 views and authorization of additional
56 recreational facilities. Impacts would be local,
57 short and long term, moderate, and both
58 beneficial and adverse, depending on a given
59 visitor's individual preferences. Some visitors
60 would appreciate the enhanced opportunity
61 to experience historic views, while others
62 would experience the removal of vegetative
63 cover as a loss. Less clearing would take place
64 under this alternative than under alternative
65 B, and impacts on visitor use and experience
66 would vary accordingly. The cumulative
67 impact on visitor use and experience in the
68 monument would be long term and
69 beneficial. The actions under alternative C
70 would contribute a substantial increment to
71 this cumulative impact.

Socioeconomic Environment

72 As under alternative B, visitation under
73 alternative C would be unlikely to increase to
74 any appreciable degree over current levels,
75 but might increase due to population growth.
76 Impacts to the local economy from increased
77 visitation-related spending would be long
78 term, direct and indirect, and beneficial.

79 **Local Economy Employment.** No new
80 permanent jobs would be created under
81 alternative C as no new permanent staff is
82 deemed necessary to implement the
83 alternative. As a result, Chatham County
84 would not realize any long-term changes to
85 its employment levels and long-term impacts
86 resulting from alternative C would be local,
87 negligible, and neutral. On the other hand,
88 total one-time costs (facility and nonfacility)

would be over seven times higher under alternative C than under alternative A, but less than under alternative B. These new expenditures would result in additional short-term employment opportunities for local contractors and others. Consequently, short-term impacts of alternative C would be local and beneficial.

Housing. Because alternative C would not entail hiring additional permanent staff, demand for residential housing would remain unchanged. Short-term impacts resulting from alternative C would be local, negligible, and neutral.

Sales. Under alternative C, total sales of goods and services in Chatham County, as a result of visitor spending, would likely increase a small amount over the life of this plan. Because alternative C would result in only a small increase in sales revenue, long-term impacts would be local and slightly beneficial.

Cumulative Impacts. Same as alternative B. Alternative C would contribute a negligible increment to this cumulative impact.

Conclusion. Because there would be only slight increases to visitor spending or monument expenditures within Chatham County under alternative C, long-term and short-term impacts on the socioeconomic environment would be local and slightly beneficial. As a result, county employment, housing, and sales would not be measurably affected. In terms of cumulative impacts, long-term and short-term impacts would be local and beneficial. Alternative C would contribute a negligible increment to this total cumulative effect.

Park Operations

The impacts of alternative C to monument operations would include those of alternative A, plus the additional costs and effort needed to restore and maintain targeted historic views and operate and maintain the new visitor center annex. The latter undertakings

would impose additional long-term maintenance and interpretation responsibilities on monument staff. However, because alternative C calls for a less extensive landscape restoration than alternative B, it would have correspondingly less impact on monument operations. No addition of permanent staff would be necessary to implement alternative B. Thus, alternative B would result in minor long-term neutral impacts on NPS operations.

Cumulative Impacts. Same as alternative A.

Conclusion. Operation of existing and projected visitor and administrative facilities in the monument would result in minor long-term neutral impacts on NPS operations. The cumulative impacts of alternative C and other reasonably foreseeable future actions required of monument staff would be minor to moderate, long term, and neutral.

Energy Requirements and Conservation Potential

Under alternative C, no major new facilities would be developed, thereby eliminating any new long-term energy requirements for facility construction and maintenance. Some fuel would be consumed in the course of restoring historic sites and views and installing new recreational facilities, but the amounts would be minor. Public use of the monument would remain at about its current level. The fuel and energy consumed by visitors traveling to the monument would not be likely to increase because visitation is not likely to increase substantially. Energy would still be consumed to maintain existing facilities and for resource management of the monument.

Unavoidable Adverse Impacts

Unavoidable adverse impacts are defined as impacts that cannot be fully mitigated or avoided. Adverse impacts on natural and cultural resources and visitor experience could occur in some areas throughout the

- 1 monument, resulting from limited public use
2 or NPS management activities.

Irretrievable or Irreversible Commitments of Resources

- 3 Under alternative C, the energy requirements
4 identified previously would result in an
5 irreversible commitment of resources. There
6 would be no permanent effects on
7 monument resources.

Relationship between Local Short- Term Uses of the Environment and Maintenance or Enhancement of Long-Term Productivity

- 8 In this alternative, most of the monument
9 would be protected in a natural state and
10 would maintain its long-term productivity.
11 Only a small percentage of the monument
12 would be maintained as developed areas.

