

AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

INTRODUCTION

This section describes the environmental consequences associated with the alternatives. It is organized by impact topics, which distill the issues and concerns into distinct topics for discussion analysis. These topics focus on presentation of environmental consequences, and allow a standardized comparison between alternatives based on the most relevant topics. The National Environmental Policy Act requires consideration of context, intensity, and duration of impacts, indirect impacts, cumulative impacts, and measures to mitigate for impacts. National Park Service policy also requires that “impairment” of resources be evaluated in all environmental documents.

AFFECTED ENVIRONMENT

Detailed information on resources related to issues are identified prior to each impact topic analysis.

METHODOLOGY

General Evaluation Method

Overall, the National Park Service based the following impact analyses and conclusions on the review of existing literature (including the park’s general management plan and the heritage area’s management plan), information provided by experts within the park, heritage area, and other agencies, professional judgments and park staff insights, the Louisiana State Historic Preservation Office, interested tribes, and public input. For each impact topic, the analysis includes a brief description of the affected environment and an evaluation of the effects of implementing each alternative. The impact analyses involved the following steps.

- Define issues of concern, based on internal and external scoping.
- Identify the geographic area that could be affected.
- Define the resources within that area that could be affected.
- Impose the action on the resources within the area of potential effect.
- Identify the effects caused by the alternative, in comparison to the baseline represented by the No Action Alternative, to determine the relative change in resource conditions.
- Characterize the effects based on the following factors:
 - Whether the effect would be beneficial or adverse;
 - The intensity of the effect, negligible, minor, moderate, or major. Impact-topic-specific thresholds for each of these classifications are provided in

1 Table 5. Threshold values were developed based on federal and state
2 standards, consultation with regulators from applicable agencies, and
3 discussions with subject matter experts;

- 4 ○ Duration of the effect, either short-term or long-term. Impact-topic-
5 specific definitions of these terms are provided in Table 5;
- 6 ○ Whether the effect would be a direct result of the action or would occur
7 indirectly because of a change to another resource or impact topic. An
8 example of an indirect impact would be increased mortality of an aquatic
9 species that would occur because an alternative would increase soil
10 erosion, which would reduce water quality;
- 11 ○ Determine whether impairment would occur to resources and values that
12 are considered necessary and appropriate to fulfill the purposes of Cane
13 River Creole National Historical Park and Cane River National Heritage
14 Area; and
- 15 ○ Determine cumulative effects by evaluating the effect in conjunction with
16 the past, current, or reasonably foreseeable future actions for Cane River
17 Creole National Historical Park, Cane River National Heritage Area, and
18 the region.

19 **Analysis of Alternative E**

20 Note that for analysis of impacts in this environmental assessment, Alternative E will
21 only be analyzed for post-construction impacts, as the facilities would already exist
22 when the park and heritage area staff occupy their offices. Louisiana Department of
23 Transportation and Development has already completed a categorical exclusion on
24 the rest area and joint information center that includes the building where NPS
25 offices would be located (Louisiana State Project No. 698-08-0002, LaDOTD 2005).

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TABLE 5: IMPACT TOPIC THRESHOLD DEFINITIONS

Impact Topic	Negligible	Minor	Moderate	Major	Duration
Archeological Resources	Impact is at the lowest levels of detection – barely measurable with no perceptible consequences, either adverse or beneficial, to archeological resources. For purposes of Section 106, the determination of effect would be no effect on historic properties.	Adverse impact – The impact affects an archeological site(s) with modest data potential and no significant ties to a living community's cultural identity. The site disturbance is confined to a small area with little, if any, loss of important information potential. For purposes of Section 106, the determination of effect would be no adverse effect. Beneficial impact – preservation of a site in its natural state. For purposes of Section 106, the determination of effect would be no adverse effect.	Adverse impact – The impact affects an archeological site(s) with high data potential and no significant ties to a living community's cultural identity. Disturbance to the site would be modest, but would cause a loss of integrity. The determination of effect for Section 106 would be adverse effect. Beneficial impact – stabilization of the site occurs. For purposes of Section 106, the determination of effect would be no adverse effect.	Adverse impact – The impact affects an archeological site(s) with exceptional data potential and/or that has significant ties to a living community's cultural identity. Disturbance of the site may be substantial, resulting in the loss of most or all of the site and its potential to yield important information. The determination of effect for Section 106 would be adverse effect. Beneficial impact – active intervention occurs to stabilize and develop future preservation measures. For purposes of Section 106, the determination of effect would be no adverse effect.	Archeological resources are non-renewable, so most effects would be long-term and permanent.

TABLE 5: IMPACT TOPIC THRESHOLD DEFINITIONS

Impact Topic	Negligible	Minor	Moderate	Major	Duration
Historic Resources	Impact is at the lowest levels of detection – barely measurable with no perceptible consequences, either adverse or beneficial, to historic resources. For purposes of Section 106, the determination of effect would be no effect on historic properties.	Adverse impact – The action would affect a feature(s) of a National Register of Historic Places-eligible or -listed structure, building, or district, but would not alter its character-defining features, nor would the action diminish the overall integrity of the property. For purposes of Section 106, the determination of effect would be no adverse effect. Beneficial impact – The action would maintain the character-defining features of a National Register of Historic Places-eligible or -listed structure, building, or district in accordance with the Secretary of the Interior's Standards for the Treatment of Historic Properties (NPS 1995). For purposes of Section 106, the determination of effect would be no adverse effect.	Adverse impact – impact alters a character-defining feature of the structure or building but does not diminish the integrity of the resource to the extent that its National Register eligibility is jeopardized. For purposes of Section 106, the determination of effect would be adverse effect. Beneficial impact – Positive actions would be taken to preserve character-defining elements of a structure, building, or district in accordance with the Secretary of the Interior's Standards for the Treatment of Historic Properties (NPS 1995). For purposes of Section 106, the determination of effect would be no adverse effect.	Adverse impact – The action would alter character-defining features of the structure, building, or district seriously diminishing the overall integrity of the resource to the point where its National Register eligibility may be in question. For purposes of Section 106, the determination of effect would be adverse effect. Beneficial impact – The action would noticeably enhance the character-defining features of a structure or a building that represent important components of the nation's historic heritage and would foster conditions under which these cultural foundations of the nation and modern society could exist in productive harmony and fulfill the social, economic, and other requirements of present and future generations. The Section 106 determination of effect would be no adverse effect.	Most historic resources are non-renewable, so effects would be long-term and permanent.

TABLE 5: IMPACT TOPIC THRESHOLD DEFINITIONS

Impact Topic	Negligible	Minor	Moderate	Major	Duration
Cultural Landscapes	Impacts of the action would be barely perceptible and would not affect cultural landscape resource conditions either beneficially or adversely. For purposes of Section 106, the determination would be no historic properties affected.	Adverse impact - Impacts of the action would alter a pattern, feature, or vegetation in the cultural landscape but would not diminish the overall integrity of the landscape. For purposes of Section 106, the determination of effect would be no adverse effect. Beneficial impact - Impacts of the action would help maintain existing landscape patterns and features in accordance with the <i>Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes</i> . For the determination of effect would be no adverse effect.	Adverse impact - impact alters a character-defining feature of the cultural landscape but would not diminish the integrity of the landscape to the extent that its National Register eligibility is jeopardized. For purposes of Section 106, the determination of effect would be adverse effect. Beneficial impact - Impacts of the action would improve the cultural landscape in accordance with the <i>Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes</i> . For purposes of Section 106, the determination of effect would be no adverse effect.	Adverse impact - Impacts of the action would alter patterns or features of the cultural landscape, seriously diminishing the overall integrity of the resource to the point where its National Register eligibility may be in question. For purposes of Section 106, the determination of effect would be adverse effect. Beneficial impact - Impacts of the action would actively enhance the landscape in accordance with the <i>Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes</i> . For purposes of Section 106, the determination of effect would be no adverse effect.	Effects on virtually all cultural features other than vegetation components would be long-term effects because most cultural resources are non-renewable. Impacts on vegetation elements of a cultural landscape may be short-term, until vegetation regrows.

TABLE 5: IMPACT TOPIC THRESHOLD DEFINITIONS

Impact Topic	Negligible	Minor	Moderate	Major	Duration
Ethnographic Resources	Impact is barely perceptible and would alter neither resource conditions, such as traditional access or site preservation, nor the relationship between the resource and the affiliated group's body of beliefs and practices. There would be no change to a group's body of beliefs and practices. For purposes of Section 106, the determination of effect on ethnographic resources would be no effect on historic properties.	Adverse impact – impact is slight but noticeable. It does not appreciably alter resource conditions, such as traditional access or site preservation, or the relationship between the resource and the affiliated group's body of beliefs and practices. For purposes of Section 106, the determination of effect on ethnographic resources would be no adverse effect. Beneficial impact – impact enhances traditional access and/or accommodates a group's traditional practices or beliefs. For purposes of Section 106, the determination of effect on ethnographic resources would be no adverse effect.	Adverse impact – impact is apparent and alters resource conditions. Interference occurs with preservation, or the relationship between the resource and the affiliated group's beliefs and practices, even though the group's beliefs and practices would survive. For purposes of Section 106, the determination of effect on ethnographic resources would be adverse effect. A memorandum of agreement would be executed among the National Park Service and applicable state or tribal historic preservation officer and, if necessary, the Advisory Council on the Historic Preservation in accordance with 36 CFR 800.6(b). Beneficial impact – a group's beliefs and practices are facilitated. For purposes of Section 106, the determination of effect on ethnographic resources would be no adverse effect.	Adverse impact – impact alters resource conditions. Traditional access, site preservation, or the relationship between the resource and the affiliated group's body of beliefs and practices are blocked or greatly affected, to the extent that the survival of a group's beliefs and/or practices would be jeopardized. For purposes of Section 106, the determination of effect on ethnographic resources would be adverse effect. Measures to minimize or mitigate adverse impacts cannot be agreed upon and the National Park Service and applicable state or tribal historic preservation officer and/or Advisory Council are unable to negotiate and execute a memorandum of agreement in accordance with 36 CFR 800.6(b). Beneficial impact – a group's beliefs or practices are encouraged. For purposes of Section 106, the determination of effect on ethnographic resources would be no adverse effect.	Effects on many ethnographic features would be long-term because they are non-renewable. Effects on vegetation and other renewable ethnographic resources would be short-term (e.g., vegetation could be regenerated).

TABLE 5: IMPACT TOPIC THRESHOLD DEFINITIONS

Impact Topic	Negligible	Minor	Moderate	Major	Duration
Visitor Use and Experience	Visitors would not be affected, or changes in visitor use and/or experience would be below or at the level of detection. The visitor would not likely be aware of the effects associated with the alternative.	Changes in visitor use and/or experience would be detectable, although the changes would be slight. The visitor would be aware of the effects associated with the alternative, but the effects would be slight.	Changes in visitor use and/or experience would be readily apparent. The visitor would be aware of the effects associated with the alternative and would likely express an opinion about the changes.	Changes in visitor use and/or experience would be readily apparent and have important consequences. The visitor would be aware of the effects associated with the alternative and would likely express a strong opinion about the changes.	Short-term – Effects occur only during project implementation activities. Long-term – Effects extend beyond project implementation activities.
Park and Heritage Area Operations	Park and heritage area operations would not be affected or the effect would be at or below levels of detection, and would not have an appreciable effect on park and heritage area operations.	The effect would be detectable but would not be of a magnitude that it would appreciably change park and heritage area operations. If mitigation were needed to offset adverse effects, it would be relatively simple and likely successful.	The effects would be readily apparent and would result in a substantial change in park and heritage area operations in a manner noticeable to staff and the public. Mitigation measures would probably be necessary to offset adverse effects and would likely be successful.	The effects would be readily apparent and would result in a substantial change in park and heritage area operations in a manner noticeable to staff and the public and be markedly different from existing operations. Mitigation measures to offset adverse effects would be needed, and their success would not be assured.	Short-term – Occurs only during the duration of the project. Long-term – Persists beyond the duration of the project.

TABLE 5: IMPACT TOPIC THRESHOLD DEFINITIONS

Impact Topic	Negligible	Minor	Moderate	Major	Duration
Paleontological Resources	There would be no measurable impact to or loss of fossils because 1) the activity would occur in a geologic layer not known to contain extensive fossils and the volume of bedrock disturbance would be negligible, or 2) the activity would occur in a fossil-rich geologic layer, but the volume of bedrock disturbed would be nearly indiscernible. Monitoring would not be likely to detect fossils and the loss of fossils and/or associated contextual information would be minimal.	A few fossils may be lost due to collecting or there would be a low probability of impact due to a ground-disturbing activity because 1) the activity would occur in a geologic layer not known to contain extensive fossils and the volume of bedrock disturbance would be small, or 2) the activity would occur in a fossil-rich geologic layer, but the volume of bedrock disturbed would be unlikely to detect fossils and the loss of fossils and/or associated contextual information would be minimal.	A number of fossils may be lost due to collecting, or a moderate probability of impact due to a ground-disturbing activity because 1) the activity would occur in a geologic layer not known to contain extensive fossils and the volume of bedrock disturbance would be large, or 2) the activity would occur in a fossil-rich area and the volume of bedrock disturbance would be small. Most fossils uncovered would be likely to be found by monitoring, but some fossils and/or associated contextual information may be lost.	Many fossils may be lost due to collecting or a high probability of impact due to a ground-disturbing activity because the activity would occur in a geologic layer of high fossil richness and the volume of bedrock disturbance would be large. Even with monitoring, many fossils and/or associated contextual information would likely be lost.	Short-term – There are no short term fossil (paleontological) impacts. Long-term – The impact would be permanent.
Soils	Soils or biological soil crusts would not be affected or the effects would be below or at the lower levels of detection. Any effects to physical soil properties, productivity, or fertility would be slight, and no long-term effects to soils would occur.	The effects to soils would be detectable. Effects to physical soil properties, stability, productivity, fertility, or to infiltration capacity would be small, as would the area affected. If mitigation were needed to offset adverse effects, it would be relatively simple to implement and likely successful.	The effect on physical soil properties, productivity, or fertility would be readily apparent, likely in long term, and result in change to the soil character over a relatively wide area. Mitigation measures would probably be necessary to offset adverse effects and would likely be successful.	The effect on physical soil properties, productivity, or fertility would be readily apparent, long term, and would substantially change the character of the soils over a large area in and out of the park. Mitigation measures to offset adverse effects would be necessary and extensive, and their success could not be guaranteed.	Short-term – Following completion of the project, recovery would take less than a year. Long-term – Following completion of the project, recovery would take more than a year.

TABLE 5: IMPACT TOPIC THRESHOLD DEFINITIONS

Impact Topic	Negligible	Minor	Moderate	Major	Duration
Vegetation	Individual native plants may be affected, but measurable or perceptible changes in plant community size, integrity, or continuity would not occur.	Effects on native plants would be measurable or perceptible, but would be local within a small area. The viability of the plant community would not be affected and the community, if left alone, would recover.	A change would occur to the native plant community over a relatively large area that would be readily measurable in terms of abundance, distribution, quantity, or quality. Mitigation measures to offset or minimize adverse effects would be necessary and would likely be successful.	Effects on native plant communities would be readily apparent and would substantially change vegetative community types over a large area. Extensive mitigation would be necessary to offset adverse effects and their success would not be assured.	Short-term – Following completion of the project, recovery would take less than a year. Long-term – Following completion of the project, recovery would take more than a year.
Threatened and Endangered Species (Note: Section 7 of the Endangered Species Act requires use of the indicated specific wording [in italics] when quantifying potential effects on listed species.)	<i>No effect</i> – Actions would not affect listed or protected species or designated critical habitat.	<i>May affect / Not likely to adversely affect</i> – Effects on special status species or designated critical habitat would be discountable (i.e., adverse effects are unlikely to occur or could not be meaningfully measured, detected, or evaluated) or would be entirely beneficial.	<i>May affect / Likely to adversely affect</i> – Adverse effects on a listed species or designated critical habitat might occur as a direct or indirect result of the proposed action, and the effect would be neither discountable nor completely beneficial. Moderate impacts on species would result in a changed distribution or local population decline due to reduced survivorship or recruitment; no direct casualty or mortality would occur.	Effects on native plant communities would be readily apparent and would substantially change vegetative community types over a large area. Extensive mitigation would be necessary to offset adverse effects and their success would not be assured.	Plants Short-term – Recovers in less than one year. Long-term – Takes more than one year to recover. Animals Short-term – Recovers in less than one year. Long-term – Takes more than one year to recover.

TABLE 5: IMPACT TOPIC THRESHOLD DEFINITIONS

Impact Topic	Negligible	Minor	Moderate	Major	Duration
Wildlife	Wildlife and their habitats would not be affected or the effects would be at or below the level of detection and would not be measurable or of perceptible consequence to wildlife populations.	Effects on wildlife or habitats would be measurable or perceptible, but local within a small area. While the mortality of individual animals might occur, the viability of wildlife populations would not be affected, and the community, if left alone, would recover.	A change in wildlife populations or habitats would occur over a relatively large area. The change would be readily measurable in terms of abundance, distribution, quantity, or quality of population. Mitigation measures would be necessary to offset adverse effects, and would likely be successful.	Effects on wildlife populations or habitats would be readily apparent, and would substantially change wildlife populations over a large area in and out of the park. Extensive mitigation would be needed to offset adverse effects, and the success of mitigation measures could not be assured.	Habitats and populations: Short-term – Recovers in less than a year after project completion. Long-term - Takes more than a year to recover after project is complete.
Wetlands and Floodplains	Wetlands or floodplains would not be affected, or effects to the resource would be below or at the lower levels of detection. No U.S. Army Corps of Engineers 404 permit would be necessary.	The effects to wetlands or floodplains would be detectable and relatively small in terms of area and the nature of the change. A U.S. Army Corps of Engineers 404 permit would not be required.	The alternative would result in effect to wetlands or floodplains that would be readily apparent, such that a U.S. Army Corps of Engineer 404 permit could be required.	Effects to wetlands or floodplains would be observable over a relatively large area, and would require a U.S. Army Corps of Engineers 404 permit. The character of the wetland or floodplain would be substantially changed.	Short-term – Following implementation, recovery would take less than one year Long-term – Following implementation, recovery would take longer than one year

1 Cultural Resource Analysis Method

2 Cultural resources typically are understood to include archeological sites, buildings,
3 structures, districts, landscapes, and objects, along with ethnographic sites and
4 landscapes, as defined in the National Historic Preservation Act. The National
5 Historic Preservation Act and its implementing regulations provide guidance for
6 deciding whether cultural resources are of sufficient importance to be determined
7 eligible for listing on the National Register of Historic Places. Historic properties
8 (i.e., archeological, landscape, collections, and ethnographic resources) determined
9 to be eligible for listing in the National Register of Historic Places must be associated
10 with an important historic context (i.e. possess significance, the meaning or value
11 ascribed to the item) and have integrity of those features necessary to convey its
12 significance (i.e., location, design, setting, workmanship, materials, feeling and
13 association).

14 Impacts to cultural resources are described in terms of type, context, duration, and
15 intensity, as described above, which is consistent with the regulations of the Council
16 on Environmental Quality (1978) that implement the National Environmental Policy
17 Act. The impact analyses also are used to comply with the requirements of Section
18 106 of the National Historic Preservation Act.

19 In accordance with the Advisory Council on Historic Preservation's regulations
20 implementing Section 106 of the National Historic Preservation Act (36 Code of
21 Federal Regulations Part 800, Protection of Historic Properties), impacts to cultural
22 resources also were identified and evaluated by

- 23 • Determining the area of potential effects;
- 24 • Identifying cultural resources present in the area of potential effects that are
25 either listed in or eligible to be listed in the National Register of Historic Places;
- 26 • Applying the criteria of adverse effect to affected cultural resources either listed
27 in or eligible for inclusion in the National Register; and
- 28 • Considering ways to avoid, minimize, or mitigate adverse effects.

29 The Advisory Council's regulations for Section 106 compliance require a
30 determination of either adverse effect or no adverse effect for cultural resources. An
31 adverse effect occurs whenever an impact directly or indirectly alters any
32 characteristic of a cultural resource that qualifies it for inclusion in the National
33 Register. For example, this could include diminishing the integrity of the resource's
34 location, design, setting, materials, workmanship, feeling, or association. Adverse
35 effects also include reasonably foreseeable effects caused by the alternative that
36 would occur later in time, be farther removed in distance, or be cumulative (36 Code
37 of Federal Regulations Part 800.5, Assessment of Adverse Effects). A determination
38 of no adverse effect means there is an effect, but the effect would not diminish in any
39 way the characteristics of the cultural resource that qualify it for inclusion in the
40 National Register. Beyond the requirements of Section 106 of the National Historic

1 Preservation Act, the park and heritage area will consider all sites to be eligible for
2 the National Register of Historic Places until an evaluation is done to determine a
3 property's true eligibility.

4 The Council on Environmental Quality (1978) regulations and *Director's Order #12*
5 *and Handbook: Conservation Planning, Environmental Impact Analysis, and Decision*
6 *Making* (NPS 2001b) call for a discussion of the appropriateness of mitigation, as well
7 as an analysis of how effective the mitigation would be in reducing the intensity of a
8 potential impact, such as reducing the intensity of an effect from major to moderate
9 or minor. Any resulting reduction in intensity of impact because of mitigation,
10 however, is an estimate of the effectiveness of mitigation under the National
11 Environmental Policy Act only. It does not suggest that the level of effect as defined
12 by Section 106 is similarly reduced. Although adverse effects under Section 106 may
13 be mitigated, the effect remains adverse.

14 A Section 106 summary is included in the impact analysis for cultural resources. The
15 summary is intended to meet the requirements of Section 106 and is an assessment of
16 the effect of implementing the alternative on cultural resources, based on the
17 criterion of effect and criteria of adverse effect found in the Advisory Council's
18 regulations.

19 **Cumulative Effects Analysis Method**

20 The Council on Environmental Quality (1978) regulations for implementing the
21 National Environmental Policy Act requires an assessment of cumulative effects in
22 the decision-making process for federal projects. Cumulative effects are defined as
23 "the effect on the environment which results from the incremental impact of the
24 action when added to other past, present, and reasonably foreseeable future actions
25 regardless of what agency (federal or non-federal) or person undertakes such other
26 actions" (40 Code of Federal Regulations 1508.7). Cumulative effects are considered
27 for both the no action and action alternatives. The cumulative impacts analysis is
28 presented at the end of each impact topic analysis.

29 Cumulative effects were determined by combining the effects of the alternative with
30 other past, present, and reasonably foreseeable future actions in the vicinity.
31 Therefore, it was necessary to identify other past, ongoing, or reasonably foreseeable
32 future actions at and around the park and the heritage area. Reasonably foreseeable
33 projects and plans in the immediate vicinity of the park were identified previously
34 under "Other Projects and Plans" in the "Purpose and Need" section. Other
35 reasonably foreseeable projects and plans that have the potential to have a
36 cumulative effect in conjunction with this project include:

- 37 • Any development actions by the National Park Service in the park;
- 38 • Development within the heritage area; and

- 1 • Resources development on both public and private lands in the Natchitoches,
2 Louisiana, area, construction of new transportation corridors, and other
3 activities that could adversely affect resources.

4 **Impairment Analysis Method**

5 In addition to determining the environmental consequences of the preferred and
6 other alternatives, the *NPS Management Policies 2001* (NPS 2000) and *Director's*
7 *Order #12* (NPS 2001b) require analysis of potential effects to determine if actions
8 would impair Cane River Creole National Historical Park or Cane River Heritage
9 Area resources.

10 The fundamental purpose of the National Park Service, established by the Organic
11 Act and reaffirmed by the General Authorities Act, as amended, begins with a
12 mandate to conserve park resources and values. National Park Service managers
13 must always seek ways to avoid or minimize to the greatest degree practicable
14 adverse effects on park resources and values. However, the laws do give National
15 Park Service management discretion to allow effects to park resources and values
16 when necessary and appropriate to fulfill the purposes of a park, as long as the
17 impact does not constitute impairment of the affected resources and values.

18 Although Congress has given National Park Service management discretion to allow
19 certain impacts within parks, that discretion is limited by statutory requirement that
20 the National Park Service must leave park resources and values unimpaired, unless a
21 particular law directly and specifically provides otherwise. The prohibited
22 impairment is an impact that, in the professional judgment of the responsible
23 National Park Service manager, would harm the integrity of park resources or values,
24 including opportunities that otherwise would be present for the enjoyment of those
25 resources or values. An impact to any park resource or value may constitute
26 impairment. However, an impact would more likely constitute impairment of the
27 extent it affects a resource or value whose conservation is:

- 28 • necessary to fulfill specific purposes identified in the establishing legislation or
29 proclamation of the park;
- 30 • key to the natural or cultural integrity of the park or to opportunities for
31 enjoyment of the park; or
- 32 • identified as a goal in the park's general management plan or General
33 Management Plan or other relevant National Park Service planning documents.

34 Impairment may result from National Park Service activities in managing the park,
35 visitor activities or from activities undertaken by concessioner, contractors, and
36 others operating in the park. A determination of impairment is made for each impact
37 topic within each "Conclusion" section of this environmental assessment under
38 "Environmental Consequences."

39

1 **CULTURAL RESOURCES**

2 *AFFECTED ENVIRONMENT*

3 **Prehistory**

4 Although there is increasing evidence that North America may have been populated
5 before 11,500 B.C., much of the evidence remains controversial (Girard 2003). By
6 9000 B.C. human occupation of the southeastern part of the North American
7 continent was well underway, but only a few scattered projectile points have been
8 found in the Natchitoches region to suggest the presence of these early peoples.

9 A few sites from the Early (ca. 7000 to 6000 B.C.), Middle (ca. 6000 to 4000 B.C.),
10 and late Archaic (ca. 4000 to 500 B.C.) periods have been found within this part of
11 Louisiana. During this time an efficient, broad-based economy based on gathering,
12 fishing and hunting small game developed, and was accompanied by a change in
13 projectile point and knife technology using local lithic materials (Athens 2004).
14 Debris concentrations at some sites suggest that while human groups probably
15 continued to be fairly mobile, there was a “greater redundancy in use of specific
16 places and territories relative to the Paleoindian period” (Girard 2003). Early peoples
17 exploited local aquatic fauna and weedy plants in areas such as channel meanders
18 that were rich in biotic resources.

19 Most of the sites dating to the Middle Archaic period are found in upland settings,
20 while the Late Archaic Period has been interpreted as a time when growing
21 populations utilized floodplain aquatic resources and established long distance trade
22 networks. Increasingly, these groups relied on indigenous oily and starchy seed
23 plants for food, eventually culminating in cultivation of these plants, the products of
24 which could be stored in stone, gourd, or ceramic vessels. Few sites from the Late
25 Archaic period have been found in the Red River floodplain, probably because they
26 have been washed away or deeply buried.

27 The Early Woodland Period began about 500 B.C. with the appearance of pottery in
28 significant amounts. The Middle Woodland Period lasted to about A.D. 700, and
29 some archeologists feel there was a major cultural separation (reflected in burial
30 practices, economic strategies and pottery) between cultural groups in the Lower
31 Mississippi Valley and in the woodlands west of the Mississippi River floodplain.

32 The Late Woodland Period (ca. A.D. 700 to A.D. 800) is evidenced by more
33 sustained occupation in the Natchitoches area. Local sites contain mounds and
34 midden areas with ceramics similar to cultures in the Lower Mississippi Valley. By
35 this time the dart and atlatl technology was being replaced with the bow and arrow,
36 and local inhabitants were using a hunting and gathering economy, with fish and
37 deer of primary importance.

38 After about A.D. 800, considerable change began to occur in human behavior in the
39 Red River drainage as the Caddoan cultural traditions established in this area, and
40 there was a “tremendous increase” in the number of sites in the Red River

1 floodplain. These sites represent villages with small clusters of widely dispersed
2 houses and mounds (Girard 2003). During the Middle and Late Caddoan periods
3 (ca. A.D. 1200-1500 and A.D. 1500-1700) farming, especially cultivation of maize,
4 became more important. However, hunting, fishing, and gathering continued and
5 “riverine environments were of primary importance to most groups” (Girard 2003).

6 History

7 The historic period in northwestern Louisiana began around A.D. 1700 with
8 increased exploration and settlement by Euroamericans and Native Americans from
9 other areas of the Southeast. In 1714, France sent Louis Juchereau de St. Denis to
10 establish a permanent French settlement in Louisiana, and in 1716 St. Denis began the
11 construction of Fort St. Jean Baptiste at what is now Natchitoches. This location was
12 ideal, for it was adjacent to both Spanish Texas and the Indian nations of the
13 Southeast and was situated near the Camino Real de los Tejas (the Spanish trail
14 connecting Mexico City with the missions of Texas). The presidio of Los Adaes,
15 established in the 1720s for the Adaes Indians, became the capital of the Spanish
16 province of Texas.

17 Fort St. Jean Baptiste served for many years as an important strategic and trade
18 center, and from Natchitoches the Cane River provided the “transportation route
19 for commerce and communication to all parts of the colony” (NPS 2001a). The Red
20 River was blocked by a gigantic logjam known as the Great Raft, so Natchitoches was
21 the northern terminus for river traffic. Establishment of the fort resulted in
22 Natchitoches “becoming a predominantly European settlement” during the 18th
23 century (Girard 2003).

24 Eastern tribes, including the Coushatta, Apalachee, Pascagoula, Chatot, Choctaw,
25 and Biloxi, had begun to arrive in the area in the late 1700s. Initially they settled on
26 bluffs or rises along the floodplain but eventually they moved out of the region or
27 onto surrounding uplands. By the early 1800s the remaining native Caddoan peoples
28 had moved to the margins of the Red River floodplain and near lakes on major
29 tributaries. This influx of peoples from different cultures resulted in rapid changes in
30 local settlement systems, material culture, and demographics.

31 One of the most important demographic changes was precipitated by French
32 colonial policy of using land grants and regulations to encourage land clearing and
33 permanent settlement. The agricultural fertility of the soils also long played a major
34 role in the region’s development. Soon after the French arrived and constructed Fort
35 St. Jean Baptiste, settlers began clearing the fertile floodplains along the Red River
36 and this area that was to become Cane River “evolved as the focal point for
37 settlement in the region” (NPS 2001a),

38 The French and Indian War, concluded by the 1762 Treaty of Paris, resulted in
39 cession to Spain of Louisiana lands west of the Mississippi. However, this transition
40 did not appear to disrupt traditional ways of life in the colony, and the Natchitoches

1 area remained relatively stable throughout the period of Spanish dominion (NPS
2 2001a).

3 Louisiana was transferred from Spain back to France and was then purchased by the
4 United States in 1803. During this time, the Cane River plantations continued to
5 prosper. Early in the 1700s the frontier economy of animal skins and products had
6 been replaced by tobacco and indigo agriculture, and the plantation system with its
7 large agricultural units worked by slave labor began. Plantation society and slavery
8 continued with the introduction of cotton to the area in 1810, and steamboat landings
9 were constructed along the Cane River.

10 French customs “continued to dominate the social structure” in the Natchitoches
11 area, and the “large population disparity ...between the number of white men and
12 white women who lived in the region” led to numerous interracial unions. One such
13 relationship between Frenchman Claude Thomas Pierre Metoyer and Marie
14 Thérèse Coincoin produced ten children whose descendents established the Cane
15 River Creole community of Isle Brevelle. The community was comprised of a “large
16 group of landowning, slave holding *gens de couleur libre* living in the Natchitoches
17 region” (Athens 2004).

18 Decline of Natchitoches as a regional economic and population center began with
19 the demolition of the Great Raft on the Red River in 1833. Clearing of the logjam
20 eventually opened the broader region to riverboat commerce and paved the way for
21 development of new communities. The Red River channel changed course, and the
22 river port and trade center for northwest Louisiana shifted to Shreveport. In 1916, the
23 Army Corps of Engineers built earthen dams along Cane River that created a 37-
24 mile-long lake in a portion of the river (Commission/NPS n.d.).

25 During the Civil War, the Red River valley with its prosperous plantations and
26 cotton supplies became a prime target for Union troops. During the Red River
27 campaign, a series of battles and skirmishes were fought throughout the area,
28 including near Cloutierville, at Magnolia Plantation, and at Monette's Ferry.
29 Confederate troops retained control of the area until the end of the war.

30 Following the Civil War the breakup of the plantation system “resulted in the spread
31 of small tenant farm houses on the peripheries of agricultural fields, particularly in
32 the floodplain” (Girard 2003). Expansion of the logging industry help develop small
33 upland towns around sawmills and the associated railroads.

34 Political reconstruction in Louisiana lasted until 1876 and was marked by violent
35 incidents as enslaved workers were emancipated and a sharecropping and tenant
36 system evolved. Rural commissaries or plantation stores became major features of
37 plantation life, serving as social and economic centers of rural Louisiana. The stores
38 served as “market place, bank, recreation center, public forum, and broadcast
39 center” (NPS 2001a).

40 Between the Civil War and the end of World War I, Louisiana plantations faced a
41 series of setbacks—devastation by the war, decline in farmland values and crop

1 prices, boll weevils, movement of laborers to urban areas, and growing trade
2 competition. The partial result of these economic pressures was the lack of
3 modernization of plantation structures, and some cabins and other properties
4 crumbled into ruins.

5 The rural agricultural South remained relatively impoverished until the late 1930s
6 when mechanization of farms, advances in agricultural chemicals, and crop
7 diversification transformed traditional farming methods. Changes in transportation
8 patterns, rural electrification, and business consolidation after World War II made
9 “the plantation less of a self-contained unit”, and by 1960 both Magnolia and
10 Oakland Plantations “had ceased being traditional family-run operations dependent
11 on a large resident labor force” (NPS 2001a).

12 **Archeological Resources**

13 Only a few prehistoric sites have been documented in the Natchitoches area, but the
14 potential for deeply buried sites exists. The Fredericks site in northeastern
15 Natchitoches Parish is situated in a rich and diverse ecological setting and has long
16 been recognized as important for Woodland period research (Girard 1997). Sites
17 from the Caddoan period, including the Fish Hatchery site in Natchitoches, reflect
18 cultures that developed around gathering, farming, hunting, and fishing. Extensive
19 historic archeological remains would be expected at sites such as former churches,
20 stores, and plantations.

21 Archeological work in the region has been summarized in annual reports on the
22 Regional Archaeology Program for Management Unit I published by Northwestern
23 University in Natchitoches (Unit I includes Natchitoches Parish). Archeological
24 investigations were conducted at Magnolia Plantation in 1997 (NPS 1997) and at the
25 Fish Hatchery in 1931, 1965, 1972, 1993, and 2003 (Girard 2003).

26 **Historic Structures**

27 The park and heritage area’s historic structures are an integral part of the area’s
28 cultural landscapes so will be discussed under that topic (below).

29 **Ethnography**

30 Prior to Euro-American settlement, American Indian tribes occupied the area we
31 now know as Louisiana. According to the park’s general management plan (NPS
32 2001a), tribes with an interest in the area include the Chitimacha, Coushatta,
33 Choctaw, Apalachee, Tunica-Biloxi, and Caddo. However, none of these tribes have
34 indicated any special association with Oakland or Magnolia (NPS 2001a).

35 The term Creole has had a number of meanings in the past several hundred years.
36 The core of those meanings centers on the concept of New World products derived
37 from Old World stock. The term today applies to those people of non-American
38 ancestry who were born in Louisiana during its French and Spanish colonial periods
39 and their descendants. From the colonial period on, there has been a significant
40 Creole population in the state. Some Creole are of French or Spanish descent, while

1 others have a mixed heritage, with African, French, Spanish and/or American Indian
2 inheritances. When Louisiana became an American territory, the term Creole
3 increasingly came to mean "native born" and was used to distinguish between the
4 land's ancient habitants, or former colonial residents, and incoming Americans. Over
5 time, the French language and the Catholic religion remained as identifying marks of
6 many of Louisiana's Creoles. Today it is the intense pride in and attachment to one's
7 ancestry and culture that is key to understanding what it means to be Creole. This
8 manifests itself in every aspect of living—be it through architecture, religious
9 practices, diet, or language (NPS n.d.). The descendants of those who lived in the
10 area in the 1700s still own much of the original colonial lands on the Cane River, and
11 maintain a strong Creole community built on a framework of enduring family
12 traditions.

13 A number of the early plantations established in the fertile ground along the Cane
14 River are today included within the park and the heritage area, and aptly reflect the
15 synergy where these many cultures – American Indian, French, Spanish, African, and
16 American – came together to create a special way of life dependent on each other
17 and on the land and the river.

18 **Cultural Landscapes**

19 Historic cultural landscapes represent a complex subset of cultural resources
20 resulting from the interaction between people and the land. Cultural landscapes are
21 shaped through time by historical land-use and management practices, politics, war,
22 property laws, levels of technology, and economic conditions. Cultural landscapes
23 are a living record of an area's past, providing a visual chronicle of its history. The
24 dynamic nature of human life contributes to the continual reshaping of cultural
25 landscapes. This makes them a good source of information about specific times and
26 places, but renders their long-term preservation a challenge.

27 A cultural landscape by definition occupies a geographic area that incorporates
28 natural and cultural elements that are associated with a historic activity, event, or
29 person. The National Park Service recognizes four categories:

- 30 • historic designed landscapes (i.e., incorporates a deliberate human element to the
31 modification and use of a particular piece of land),
- 32 • historic vernacular landscapes (reflects on values and attitudes about land over
33 time),
- 34 • historic sites (sites significant for their association with important events,
35 activities, and people; at these areas, existing features and conditions are defined
36 and interpreted primarily in terms of what happened there at particular times in
37 the past), and
- 38 • ethnographic landscapes (landscapes associated with contemporary groups that
39 use the land in a traditional manner).

1 These four landscape categories are not mutually exclusive (NPS 1998). At both the
2 park and the heritage area, these landscape types blend one into another to create
3 the unique plantation landscape. For example, the formal design and arrangement of
4 homes and gardens and fields on the land, and the relationship to Cane River,
5 illustrate the human element of planning that helped to create each of the
6 plantations. As time went by, these early landscapes were modified, becoming
7 vernacular landscapes, as plantation ownership or management changed, structures
8 and plantings were lost to time and war, and new structures were added as machines
9 began to replace human labor. The Creole heritage is reflected within the park and
10 heritage area by many of the traditionally used plants still growing on the property,
11 by the designs and materials used in structures such as quarters and walkways, by
12 “ghost places” (places where buildings once stood and which now remain only in
13 archeological remains, photographs, or memories), and by natural areas that evoke a
14 strong sense of the historic past.

15 Typically, character-defining features of a cultural landscape include spatial
16 organization and land patterns; topography; vegetation; circulation patterns; water
17 features; and structures or buildings, site furnishings, and objects (*Secretary of the*
18 *Interior’s Standards for the Treatment of Historic Properties with Guidelines for the*
19 *Treatment of Cultural Landscapes* 1996). Cultural landscapes within the park and
20 heritage area are itemized and illustrated in the *Cane River National Heritage Area*
21 *Management Plan and Environmental Assessment* (Commission 2003).

22 The Cane River is the central unifying feature that links the plantations, woodlands,
23 and cultivated fields. The level fields that bound the river are a constant reminder
24 that these rich plantation lands were created by eons of river flooding and soil
25 deposition. Unlike the rectilinear property lines in the American West, plantation
26 property lines (arpent lines) were drawn in a pie shape to ensure that each plantation
27 had access to the river.

28 According to the management plan for the heritage area, an “initial survey of cultural
29 landscapes in Natchitoches Parish shows that the region is a mosaic of interrelated
30 cultural landscapes that extend beyond the heritage area’s current boundary”
31 (Commission 2003). Vegetation such as huge live oaks, along with fragrant flowering
32 southern and Japanese magnolias and other trees such Osage orange, catalpa, crepe
33 myrtle, chinaberry plum, and jujube provide a verdant setting for the plantation
34 buildings. These and other plants were utilized historically for food, medicine, or
35 ethnographic uses. Osage orange (also referred to as either bodark or bois d'arc) was
36 especially desired for fence posts or construction where a sturdy, long-lasting wood
37 was needed.

38 Numerous historic plantations, homes, and churches are within the heritage area,
39 which also encompasses Cane River Creole National Historical Park, the
40 Natchitoches Historic District, seven National Historic Landmarks, and three State
41 Historic Sites. Much of the roughly 116,000-acre heritage area is privately owned, but
42 a number of the sites are open to the public. National Park Service units Magnolia

1 Plantation and Oakland Plantation are physically located within the heritage area.
2 These units represent the remnants of two large plantations that contributed to the
3 social, economic, and cultural development of the Cane River region (Commission
4 2003). Within the park are 67 structures, 42 of which are historic vernacular
5 buildings.

6 Of the three potential project areas, only the Derry representative site is within or
7 adjacent to defined cultural landscapes; the Derry project area is within the Cane
8 River Lake and Lower Cane River cultural landscape and adjacent to the Magnolia
9 Plantation unit, also defined as a cultural landscape (NPS 2001a). The two extant
10 buildings at Derry date to the last half of the 20th century and do not have any
11 special architectural or historical significance.

12 The Magnolia Plantation unit of the park is partially owned by the National Park
13 Service (the rest of the historic plantation is owned and operated by descendants of
14 the original LeComte family). The original main house at Magnolia is thought to
15 have been constructed by slaves for plantation owner Ambrose LeComte in the
16 1830s. Burned in 1864 by the retreating Union Army, the 27-room house was rebuilt
17 in 1899, partially following previous house plans. Sixteen of the plantation's
18 outbuildings and dependencies remain and are preserved within the park unit,
19 including the slave hospital/overseer's house, quarters complex, plantation store,
20 blacksmith shop, pigeonier, and a gin barn containing a rare cotton press and two
21 types of cotton gins (NPS 2001a).

22 The circulation patterns at Magnolia Plantation include the walkways (routes
23 between various plantation locations, buildings, the river, and the bayou) and the
24 historic roadways. The spatial organization and land patterning include the
25 relationship of fencelines and fields to the cotton processing equipment, and the
26 layout of the eight extant brick quarters, the plantation store, and the main house.

27 Cane River Lake is a vital part of this landscape as both a water feature and a former
28 circulation feature that recalls the early plantation years when the river was the
29 major transportation link to other places. The views to Cloutierville and the Cane
30 River also are important landscape elements that help to define this historic setting.

31 **Previous Investigations**

32 The office of the Louisiana State Archeologist was contacted to determine if surveys
33 had been conducted within any of the project areas. Only one of these areas, the 75-
34 acre area of potential effect for the proposed Interstate 49 Rest Area and Joint
35 Information Center project (Waterwell Road), had been surveyed. Inventory and
36 testing were conducted by Goodwin & Associates in 2004 (Athens et al. 2004). No
37 evidence of intact cultural deposits was identified, and no historic standing
38 structures were found within or immediately adjacent to the proposed project area.
39 Neither the Derry nor the Highway 6 and Lime Kiln road areas had been surveyed
40 for cultural resources. No known archeological sites were identified within the area
41 of potential effect for either of these areas. Archeological testing at Magnolia

1 Plantation in 1996 found evidence of a number of former historic structures and
2 features as well as a few lithic and ceramic artifacts representing Caddo affiliation
3 and Choctaw materials (NPS 2001a).

4 *National Register of Historic Places*

5 The analysis of project effects on cultural resources focuses on historic properties,
6 which include that subset of cultural resources that are listed on, or eligible for listing
7 on, the National Register of Historic Places (National Register). Oakland and
8 Magnolia Plantations are listed on the National Register. Numerous historic
9 properties within the heritage area are itemized in Appendix B of the *Cane River*
10 *National Heritage Area Management Plan and Environmental Assessment*
11 (Commission 2003). The national heritage area also contains seven national historic
12 landmarks, including Oakland and Magnolia Plantations, the downtown national
13 historic landmark district, Los Adaes, Fort Jesup, Kate Chopin House, and
14 Melrose/Yucca Plantation, nationally significant historic places that possess
15 exceptional value in illustrating American history and heritage.

16 *IMPACTS OF ALTERNATIVE A, NO ACTION/CONTINUE CURRENT* 17 *MANAGEMENT*

18 **Archeological Resources**

19 The No Action Alternative would result in no effects on archeological resources at
20 the three representative sites at Waterwell Road, Derry, and Lime Kiln Road.
21 Surveys at the Waterwell Road site found no cultural resources. The Derry site
22 would continue to be farmed for crops, and it is expected that the Lime Kiln Road
23 site would continue to be undisturbed, although the potential for future
24 development may exist.

25 **Cultural Landscapes and Structures**

26 Alternative A would have no effects on cultural landscapes and structures at any of
27 the three areas. The park would continue to manage and protect the cultural
28 landscape at Magnolia, and most of the landowners within the heritage area are
29 committed to preservation of the area's history and its landscape.

30 **Ethnographic Resources**

31 There would be no new effects on ethnographic resources under Alternative A.

32 **Cumulative effects.** Flooding and other natural events plus a variety of past and on-
33 going plans and projects and developments in the Natchitoches area have caused the
34 loss of numerous archeological, historic, and ethnographic resources. The majority
35 of these resources are non-renewable, so each loss of artifacts, data, heirloom
36 planting, or site integrity cumulatively reduces the resource base, diminishing the
37 historic and prehistoric data available for research and public education and
38 enjoyment. Future projects such as the implementation of a master planning study
39 for the Waterwell Road Corridor and construction of the curatorial storage facility

1 could also affect cultural resources, both adversely and beneficially. Construction
2 could disturb archeological resources and landscapes (a minor, local, long-term
3 adverse effect) but master planning could help prevent impacts to cultural
4 landscapes (a minor benefit). Development of a new storage facility would be a
5 moderate long-term benefit to archeological and ethnographic resources on a
6 regional basis. However, Alternative A would not contribute to this cumulative
7 effect.

8 **Conclusion.** The No Action Alternative would have no effect on the cultural
9 resources at the representative sites (Lime Kiln Road, Waterwell Road, and Derry).
10 Cumulative effects would be long term, local, minor, and adverse, but Alternative A
11 would make no contribution.

12 **Impairment.** Alternative A would not have major adverse effects on cultural,
13 archeological, ethnographic, or historic resources or values whose conservation is 1)
14 necessary to fulfill purposes identified in the established legislation or proclamation
15 of Cane River Creole National Historical Park and Cane River National Heritage
16 Area; 2) key to the natural or cultural integrity of the park and heritage area; or 3)
17 identified as a goal in the park and heritage area's general management plans or other
18 relevant National Park Service planning documents. Therefore, there would be no
19 impairment of the park or the heritage area's cultural resources or values.

20 *IMPACTS OF ALTERNATIVE B, LIME KILN ROAD REPRESENTATIVE SITE*

21 **Archeological Resources**

22 The Lime Kiln Road representative site has not been surveyed for archeological
23 resources. However, this area has been previously disturbed by logging activities,
24 road construction, and by installation of a gas line and other utilities. It is likely that
25 any shallow or surface archeological deposits have been disturbed and do not remain
26 in their original context.

27 Archeological surveys would be conducted prior to any ground disturbing activities,
28 and resources would be evaluated under National Register of Historic Places
29 criteria. If significant archeological resources were discovered, mitigating measures,
30 including site avoidance, would be developed in consultation with the Louisiana
31 State Historic Preservation Officer. Implementation of these mitigating measures
32 would help ensure that only long-term, negligible, adverse impacts to archeological
33 resources would result under Alternative B.

34 **Cultural Landscapes and Structures**

35 There are no historic structures present within the Lime Kiln Road representative
36 site, and no cultural landscapes have been defined for this area, which is almost
37 entirely covered by second growth forest. Designs for the new visitor center would
38 be reminiscent of the area's historic past, and would be compatible in materials,
39 scale, massing, and design with structures in the Natchitoches Historic District and

1 in the park and heritage area. Thus there would be no effects on either cultural
2 landscapes or historic structures under Alternative B.

3 **Ethnographic Resources**

4 Construction of a new visitor center would benefit ethnographic resources by
5 providing a single location where knowledge about the area's cultural heritage could
6 be showcased, researched, and interpreted to visitors. The interpretive programs and
7 orientation to area resources would encourage visitors to visit Louisiana's cultural
8 sites and learn more about their history, cultural values, architecture, food, and
9 landscapes. Visitors would leave with a better understanding and appreciation of
10 Creole culture that would, in turn, help encourage its preservation and future
11 viability. Effects would be long-term, moderate, and beneficial.

12 **Cumulative effects.** Over time, natural events and human activities have resulted in
13 the loss of numerous archeological, historic, and ethnographic resources in the area.
14 Most of these resources are non-renewable, so each loss of artifacts, data, heirloom
15 planting, or site integrity cumulatively reduces the resource base, diminishing data
16 available for research and public education and enjoyment. Construction of a visitor
17 center at the Lime Kiln Road site would have a negligible effect on heritage area and
18 park cultural landscapes, archeological resources, and historic structures.

19 Construction of a curatorial storage facility would provide badly-needed long-term
20 climate-controlled storage for archeological and ethnographic artifacts and archival
21 materials. The new shared visitor center would benefit ethnographic resources
22 moderately by helping visitors understand, appreciate, and be supportive of the
23 many different aspects of Creole culture. Cumulatively these effects and benefits
24 combine to result in long-term, minor, beneficial cumulative effects on cultural
25 resources.

26 **Conclusion.** With surveying and implementation of mitigating measures, only
27 negligible long-term adverse impacts to archeological resources would result under
28 Alternative B, and there would be no effects to either cultural landscapes or historic
29 structures. Effects on ethnographic resources would be long-term, moderate, and
30 beneficial. Cumulative effects on cultural resources would be much the same as
31 described for Alternative A except the visitor center would enhance programs and
32 opportunities such as heritage tourism, which would produce long-term, minor,
33 beneficial cumulative effects regionally and perhaps nationally.

34 **Impairment.** Alternative B would not have major adverse effects on cultural,
35 archeological, ethnographic, or historic resources or values whose conservation is 1)
36 necessary to fulfill purposes identified in the established legislation or proclamation
37 of Cane River Creole National Historical Park and Cane River National Heritage
38 Area; 2) key to the natural or cultural integrity of the park and heritage area; or 3)
39 identified as a goal in the park and heritage area's general management plans or other
40 relevant National Park Service planning documents. Therefore, there would be no
41 impairment of the park or the heritage area's cultural resources or values.

2 **Archeological Resources**

3 The Derry representative site has not been surveyed for archeological resources but
4 the area has been previously disturbed by road building, construction of the bank
5 and sheriff's substation, farming activities, and flooding so few *in situ* resources
6 would be expected. However, the area is adjacent to Magnolia Plantation, so there is
7 a modest possibility that unidentified buried archeological resources might be
8 present in the general vicinity.

9 Archeological surveys would be conducted prior to any ground disturbing activities,
10 and resources evaluated under National Register of Historic Places criteria. If
11 significant archeological resources were discovered, mitigating measures, including
12 site avoidance, would be developed in consultation with the Louisiana State Historic
13 Preservation Officer. Implementation of these mitigating measures would help
14 ensure that only negligible to minor long-term adverse impacts to archeological
15 resources would result under Alternative B.

16 **Cultural Landscapes and Structures**

17 No historic structures are within the Derry representative site (two modern
18 structures lacking architectural or historical significance are in the general vicinity).
19 However, historic structures associated with Magnolia Plantation are nearby. In
20 addition, the Derry area is within the Cane River Lake and Lower Cane River
21 cultural landscape and adjacent to the Magnolia Plantation landscape unit.

22 The new visitor center and its landscaping would be designed to reflect the area's
23 historic ambiance, and the building(s) would be compatible in materials, scale,
24 massing, and design with the other historic plantation structures in this area. The
25 specific site and the site aspect would be carefully chosen so that the structure, its
26 parking area, and access road would blend unobtrusively into the existing plantation
27 landscape. Views in the direction of the Cane River and Cloutierville would be
28 maintained. Insofar as is possible, existing circulation patterns would be retained, as
29 would the broad patterning of planted fields, fence rows, river, and vegetation. With
30 mitigation, there would be long-term, minor, adverse effects on the cultural
31 landscape and historic structures under Alternative C.

32 **Ethnographic Resources**

33 The Derry site is located within the heritage area and close to one of the two park
34 units. The proximity of the visitor center to these resources would help visitors to
35 better visualize the historic scene and facilitate their appreciation of the Creole
36 culture in its historic setting. Effects on ethnographic resources would be the same as
37 described for Alternative B.

38 **Cumulative effects.** Cumulative effects would be the same as described for
39 Alternative B.

1 **Conclusion.** With archeological survey and implementation of mitigating measures,
2 long-term, negligible to minor, adverse impacts to archeological resources would
3 result under Alternative C. Careful choice of design, site location, orientation and
4 aspect would help ensure that any long-term adverse effects on the area's historic
5 structures and cultural landscapes are minor. Effects on ethnographic resources
6 would be long-term, beneficial, and moderate. Cumulative effects on cultural
7 resources would be the same as described for Alternative A (long-term, beneficial,
8 and moderate).

9 **Impairment.** Alternative C would not have major adverse effects on cultural,
10 archeological, ethnographic resources and ethnographic landscapes, or historic
11 resources or values whose conservation is 1) necessary to fulfill purposes identified in
12 the established legislation or proclamation of Cane River Creole National Historical
13 Park and Cane River National Heritage Area; 2) key to the natural or cultural
14 integrity of the heritage area and the park; or 3) identified as a goal in the park's
15 general management plan or other relevant National Park Service planning
16 documents. Therefore, there would be no impairment of the park's cultural
17 resources or values.

18 *IMPACTS OF ALTERNATIVE D, WATERWELL ROAD REPRESENTATIVE SITE*

19 **Archeological Resources**

20 The Waterwell Road site has been surveyed and tested for archeological resources
21 with negative findings. There would be no effect on archeological resources under
22 Alternative D.

23 **Cultural Landscapes and Historic Structures**

24 As described for Alternative B, no historic structures are present within the
25 Waterwell Road representative site, and no cultural landscapes have been defined
26 for this area. Designs for the new visitor center would be compatible in materials,
27 scale, massing, and design with structures in the Natchitoches Historic District and
28 in the park and heritage area. Thus, there would be no effects on either cultural
29 landscapes or historic structures under Alternative D.

30 **Ethnographic Resources**

31 Effects on ethnographic resources would be the same as described for Alternative B.

32 **Cumulative effects.** Cumulative effects would be the same as described for
33 Alternative A.

34 **Conclusion.** Implementation of Alternative D would have no effect on archeological
35 resources, cultural landscapes or historic structures. Effects on ethnographic
36 resources would be long term, moderate, and beneficial; cumulative effects would be
37 long term, minor, and beneficial.

38 **Impairment.** Alternative D would not have major adverse effects on cultural,
39 archeological, ethnographic resources and ethnographic landscapes, or historic

1 resources or values whose conservation is 1) necessary to fulfill purposes identified in
2 the established legislation or proclamation of Cane River Creole National Historical
3 Park and Cane River National Heritage Area; 2) key to the natural or cultural
4 integrity of the heritage area and the park; or 3) identified as a goal in the park's
5 general management plan or other relevant National Park Service planning
6 documents. Therefore, there would be no impairment of the park's cultural
7 resources or values.

8 *IMPACTS OF ALTERNATIVE E, WATERWELL ROAD REPRESENTATIVE SITE,*
9 *PARTNERSHIP WITH LADOTD, THE PREFERRED ALTERNATIVE*

10 **Archeological Resources**

11 There would be no effect on archeological resources under Alternative E.

12 **Cultural Landscapes and Historic Structures**

13 As described for Alternative D, there would be no effect on either cultural
14 landscapes or historic structures under Alternative E.

15 **Ethnographic Resources**

16 By combining the functions of a National Park Service visitor center with an
17 interstate rest area, more people would be likely to stop and go through the facility,
18 which would help to increase public awareness and understanding of the area's
19 cultural resources, including Creole culture. This would, in turn, result in enhanced
20 appreciation and support for ethnographic resources. On the other hand, the facility
21 would be designed to serve multiple functions, so that the historical and
22 ethnographic significance of the park and heritage area could be overlooked as
23 visitors view the many available regional recreational and travel opportunities. It
24 would be more difficult to conduct special programs and projects related to the park
25 and heritage area, given the more transitory nature of the visitors who would come
26 to a combined facility. Overall effects on ethnographic resources would be long
27 term, minor, and beneficial.

28 **Cumulative effects.** Cumulative effects would be the same as described for
29 Alternative B.

30 **Conclusion.** There would be no effect on archeological resources, cultural
31 landscapes, or historic structures under Alternative E. Effects to ethnographic
32 resources from the addition of an NPS visitor center would be long term, minor, and
33 beneficial. Cumulative effects would be the same as described for Alternative A (long
34 term, minor, beneficial).

35 **Impairment.** Alternative E would not have major adverse effects on cultural,
36 archeological, ethnographic resources and ethnographic landscapes, or historic
37 resources or values whose conservation is 1) necessary to fulfill purposes identified in
38 the established legislation or proclamation of Cane River Creole National Historical
39 Park and Cane River National Heritage Area; 2) key to the natural or cultural

1 integrity of the heritage area and the park; or 3) identified as a goal in the park’s
2 general management plan or other relevant National Park Service planning
3 documents. Therefore, there would be no impairment of the park’s cultural
4 resources or values.

5 *SECTION 106 SUMMARY*

6 Both units of Cane River Creole National Historical Park – Oakland Plantation and
7 Magnolia Plantation – are National Historic Landmarks. Of the numerous historic
8 properties and the seven national historic landmarks within the national heritage
9 area that are itemized in Appendix B of the *Cane River National Heritage Area*
10 *Management Plan and Environmental Assessment*, only Magnolia Plantation is within
11 one mile of the proposed project areas (Commission/NPS 2003).

12 This environmental assessment provides detailed descriptions of five alternatives
13 (including a no action alternative), analyzes the potential effects associated with
14 possible implementation of each alternative, and describes the rationale for choosing
15 the preferred alternative. Also contained in the environmental assessment are
16 mitigation measures that would help avoid adverse effects on cultural resources.

17 The four action alternatives each propose a different representative location for the
18 new shared visitor center. (These alternatives are based on “representative”
19 locations [e.g. locations in the “vicinity of”] because the actual locations cannot be
20 determined at this time.) The preferred alternative (Alternative E) proposes co-
21 location of the proposed visitor center within the Natchitoches Rest Area and
22 Information Center, to be constructed by the Louisiana Department of
23 Transportation and Development at the Waterwell Road Interchange of I-49.
24 Impacts to resources and values under Alternative E were analyzed based upon the
25 assumption that the facilities are already constructed by the Louisiana Department
26 of Transportation. See the “General Methodology” section in “Affected
27 Environment and Environmental Consequences” for further explanation.

28 No archeological or ethnographic resources were located during the recent survey
29 and testing of the 75-acre tract at the Waterwell Road site, so there would be no
30 historic [archeological] properties affected at this location(Athens 2004).

31 There are no historic structures present at or immediately adjacent to the Waterwell
32 Road site, which has been logged and now contains stands of second growth timber.
33 There would be no historic properties affected [no historic structures or districts] at
34 this location.

35 No cultural landscapes have been defined for the Waterwell Road site, which
36 presently consists of second growth timber edged by mowed roadway right-of-way.
37 The representative site would be on the west side/base of a hill overlooking and

1 adjacent to the freeway. Design of the new Louisiana Department of Development
2 and Transportation Natchitoches Rest Area and Joint Information Center would be
3 carefully selected to help ensure that the building(s) and landscaping would be
4 compatible with historic structures and cultural landscapes in the Natchitoches area.
5 There would be no historic properties [cultural landscapes] affected at the
6 Waterwell Road site. Mitigation measures contained in this environmental
7 assessment have been drafted to:

- 8 • avoid unauthorized collecting,
- 9 • educate work crews about cultural resources in general and the need to protect
10 any cultural resources encountered,
- 11 • include stop-work provisions in construction documents, and
- 12 • define procedures in the unlikely event that previously unknown cultural
13 resources were discovered during construction.

14 This environmental assessment will be forwarded to the Louisiana State Historic
15 Preservation Office for its review and comment, and any comments will be
16 addressed in the final compliance documents. Should the need arise, additional
17 mitigation measures would be developed in consultation with the State Historic
18 Preservation Office.

19 **VISITOR USE AND EXPERIENCE**

20 *AFFECTED ENVIRONMENT*

21 *Cane River Creole National Historical Park*

22 Cane River Creole National Historical Park and the Cane River National Heritage
23 Area were established in 1994. The park became open to visitors in 1998. Visitor use
24 statistics from 2002 and 2003 show the annual number of visits to the park alone was
25 between 7,500 and 8,500 (NPS 2005). Visitation for 2005 was more than 23,000.
26 Because the park is new, staff is only recently available to actually count visitation
27 and signage is continually improving, seasonal trends are still developing. At this
28 point, July, October and December are showing higher than average visits.

29 The two park sites, Magnolia Plantation and Oakland Plantation, include a total of 67
30 historic structures remnant from 200 years of plantation life. Due to the preservation
31 and restoration work in progress on these buildings and the grounds, limited services
32 are available to the public. Formal tours of Oakland Plantation are provided free of
33 charge each day at 1:00 p.m. Self-guided tour maps are available at the Main House.
34 Visitors are welcome to tour the grounds every day from 8:00 a.m. to 4:00 p.m., on a
35 self-guided visit. Guided tours are also available on the weekends. Portions of the
36 Magnolia Plantation are in National Park Service ownership, but the main house and
37 adjoining grounds and buildings are in private ownership.

1 Park headquarters, located in Natchitoches, are open from 8:00 a.m. to 4:30 p.m.
2 daily. Here, visitors can be oriented towards park units.

3 *Cane River National Heritage Area*

4 The Cane River National Heritage Area extends westward from Interstate 49 to the
5 Red River and includes everything in between. The heritage area's boundary on the
6 north is Waterwell Road. On the south end it is the Natchitoches/Rapides Parish
7 line. Total acreage for the heritage area is approximately 116,000 acres. The
8 congressionally designated heritage area also includes the Natchitoches National
9 Historic Landmark District, six other National Historic Landmarks, and the
10 National Historical Park. There are no official counts for visitors to the Cane River
11 National Heritage Area.

12 A 2004 combined in-person and mail survey by Michigan State University evaluated
13 visitor trends in the national heritage area. For 63 percent, this was their first trip to
14 the area. Seven percent were visiting with a chartered group, or bus. For 25 percent,
15 this visit to the national heritage area was only a day trip, with an average visit length
16 of 5 hours. About one-third of those surveyed indicated they were “somewhat
17 familiar” with the national heritage area (Stynes and Sun 2004).

18 From the sampled visitors, Melrose Plantation (39 percent) was the most visited site
19 in the region. Magnolia Plantation and Oakland Plantation, units of Cane River
20 Creole National Historical Park, were visited by 22 percent and 30 percent,
21 respectively, of those surveyed. Of the national heritage area sites, visitors were most
22 aware of Melrose Plantation and Beau Fort Plantation. Visitors who took the onsite
23 survey reported visiting on average 2.7 sites. Visitors who filled out the mail survey
24 visited 3.75 sites (Stynes and Sun 2004).

25 Natchitoches Parish Tourist Commission maintains monthly visitor statistics for 13
26 sites within the national heritage area, including Oakland and Magnolia plantations.
27 Seasonal peak visits are between the months of April and July. Yearly totals from
28 2003 and 2004 were estimated to be between 153,000 and 158,000 (Natchitoches
29 Parish Tourist Commission 2005).

30 The Natchitoches Chamber of Commerce keeps records of visitors to their office
31 and the area in general. In 1990, 14,241 out of over 39,000 visitors recorded by the
32 local Chamber of Commerce and Tourism Commission signed the register at the
33 chamber office. They represented all 50 states and the District of Columbia. Visitors
34 from Louisiana and Texas (split about equally between the two states) made up over
35 one-half of those who recorded their visit. Over 36 foreign counties were also
36 represented by at least one visitor to the chamber office. The total number of visitors
37 to the parish is not known, but local chamber officials estimate that as many as

1 250,000 visitors come to the parish to enjoy the numerous attractions and festivals
2 (Commission 2003).

3 The city of Natchitoches is the focal point for the tourism industry in the parish.
4 Most necessary visitor services are found here. The parish has 33 restaurants and five
5 motels providing a total of 321 rooms. Bed-and-breakfast establishments also cater to
6 the tourist trade. The usual complement of public services, for a city of its size, is
7 available. Several shops and businesses provide gifts, craft items, and souvenirs for
8 tourists. Outdoor recreation opportunities such as boating, fishing, hunting, and
9 skiing are available on Cane River, Saline, Black, Clear, Chaplins, and Sibley lakes.

10 *IMPACTS OF ALTERNATIVE A, NO ACTION/CONTINUE CURRENT*
11 *MANAGEMENT*

12 Visitors to the historical park and/or the historic area would continue to have limited
13 opportunities for visitor interpretation and orientation. Individual heritage sites and
14 park units that currently offer interpretative tours and exhibits would be the primary
15 source of information regarding the park and heritage area. Park units or heritage
16 area sites that have no interpretation would not receive much attention from visitors,
17 as little information would be available beyond their location on a map.

18 An overall understanding of the region's history and culture would not be readily
19 accessible to all visitors. Some visitors that arrived at the city of Natchitoches
20 Visitor's Bureau would become oriented to the heritage area and the park from maps
21 and other information sources, but this would not apply to all park and heritage area
22 visitors. Visitor interaction with park and heritage area staff would be very limited.

23 Because of these limitations of orientation and interpretation, effects of continuing
24 current management on visitor use and experience would be long term, regional,
25 moderate, and adverse.

26 **Cumulative effects.** Cumulative effects on visitor use and experience would include
27 such projects as the new Natchitoches Rest Area, the city of Natchitoches Historic
28 Recreational Trail, the Heritage Tourism program, a new gateway kiosk, and
29 programs of the Creole Heritage Center. All of these projects and plans would work
30 to improve the quality of the visitor experience and could ultimately increase visitor
31 use in the Natchitoches region (the expanse of the national heritage area). These
32 projects would have an overall cumulative effect that would be long term, region
33 wide, moderate, and beneficial. Alternative A would make a long term, regional,
34 minor, adverse contribution, resulting in overall cumulative effects that would be
35 long term, regional, minor, and beneficial .

36 **Conclusion.** Because of these limitations of orientation and interpretation, effects of
37 continuing current management on visitor use and experience would be long term,
38 moderate, and adverse. Lack of adequate orientation to disparate park units and
39 heritage area sites could have an appreciable effect on the visitor experience of this
40 historically and culturally rich area. Alternative A would make a long term, regional,

1 minor, adverse contribution, resulting in overall cumulative effects that would be
2 long term, regional, minor, and beneficial.

3 *IMPACTS OF ALTERNATIVE B, LIME KILN ROAD REPRESENTATIVE SITE*

4 Under Alternative B, a shared visitor center for the park and heritage area would be
5 built on a site represented by the area where Lime Kiln Road and Highway 6 meet.
6 This site is in between I-49 and the city of Natchitoches on a main route with an
7 easily visible entrance, making the location very accessible for visitors. However,
8 locating the visitor center to the northern end of the heritage area would result in it
9 being isolated from many of the historic sites and park units, except for those in the
10 city of Natchitoches, which would detract slightly from the location. Overall,
11 locating the visitor center at Lime Kiln Road and Highway 6 would have long-term,
12 minor, beneficial effects on visitor use and experience, as it would be easily
13 accessible.

14 Adequate parking would ensure that visitors would not have trouble accessing the
15 visitor center, as is currently the case with the headquarters of the heritage area,
16 resulting in a long-term, minor, beneficial effect.

17 By the creation of a shared visitor center, visitors would be better oriented to both
18 the park and the heritage area. The Creole-style building would symbolize visitors'
19 entry into the Creole culture and history of the area. Visitors would have the
20 opportunity to learn about sites that are not interpreted onsite, adding to the overall
21 visitor understanding of the region. Also, the roles of each entity in protecting and
22 interpreting historic sites and Creole culture in the Cane River region would become
23 clearer to visitors. The visitor center and its increased interpretation opportunities
24 would have a long-term, moderate, beneficial effect on visitor use and experience.

25 The outdoor classroom and loop trail would increase opportunities for the
26 interpretation of natural resources and Creole culture. The outdoor classroom could
27 also be used for special events.

28 Housing the administrative offices for both the park and the heritage area in the
29 visitor center building would provide the public with improved opportunities to
30 interact with park and heritage area staff. This would result in a long-term, minor,
31 beneficial effect, because only a few visitors would be likely to take advantage of this
32 opportunity.

33 There would be no short-term impacts to visitors during construction, as the
34 representative site is not currently a portion of either the park or national heritage
35 area.

36 **Cumulative effects.** Cumulative effects on visitor use and experience would include
37 the projects listed in the cumulative effects for Alternative A. All of these projects
38 and plans would work to improve the quality of the visitor experience and could
39 ultimately increase visitor use in the Natchitoches region (the expanse of the
40 national heritage area). These projects would have an overall cumulative effect that

1 would be long term, region wide, moderate, and beneficial. Alternative B would
2 make a long term, minor to moderate, beneficial contribution, resulting in a total
3 cumulative effect of long term, moderate, and beneficial.

4 **Conclusion.** Effects on visitor use and experience from the addition of a centralized
5 visitor center would range from minor to moderate in intensity, and would be long
6 term and beneficial. Alternative B would make a long term, minor to moderate,
7 beneficial contribution, resulting in a total cumulative effect of long term, moderate,
8 and beneficial.

9 *IMPACTS OF ALTERNATIVE C, DERRY REPRESENTATIVE SITE*

10 Under Alternative B, a shared visitor center for the park and heritage area would be
11 built on a site represented by the area where Highway 119 and Highway 1 meet in
12 Derry. This site is just off of I-49, with an easily visible entrance, making the location
13 very accessible for visitors. Locating the visitor center to the southern end of the
14 heritage area would place it near two major park units (Magnolia and Oakland
15 Plantations), along with a number of historic sites, such as the Kate Chopin House.
16 For visitors arriving from the south, this would be ideally situated; however, it would
17 be somewhat far from the city of Natchitoches. The open agricultural lands near the
18 lower portion of the Cane River would provide an excellent environment for
19 interpretation. Overall, locating the visitor center in Derry would have long-term,
20 minor, beneficial effects on visitor use and experience, as it would be easily
21 accessible, highly visible, and near a number of park units and heritage sites.

22 Effects of parking lots would be the same as in Alternative B.

23 Because the design and intention of the visitor center would be the same as
24 Alternative B, effects to visitor use and experience from the visitor center would be
25 the same as in Alternative B.

26 The outdoor classroom and loop trail would increase opportunities for the
27 interpretation of natural and cultural resources. The outdoor classroom could also
28 be used for special events.

29 Noise from the railroad could potentially affect visitor experience at the visitor
30 center, but effects would only be negligible.

31 Housing the administrative offices for the park in the visitor center building would
32 provide the public with improved opportunities to interact with park staff. This
33 would result in a long-term, minor, beneficial effect, because only a few visitors
34 would be likely to take advantage of this opportunity. However, to visit with heritage
35 area staff, visitors would still need to visit them in their offices in Natchitoches,
36 continuing to have a long-term, minor, adverse effect.

37 As in Alternative B, there would be no short-term effects to visitors during
38 construction.

1 **Cumulative effects.** Cumulative effects would be the same as described for
2 Alternative B.

3 **Conclusion.** Effects on visitor use and experience from the addition of a centralized
4 visitor center would range from minor to moderate in intensity, and would be long
5 term and beneficial. Alternative C would make a long-term, minor to moderate,
6 beneficial contribution, resulting in a total cumulative effect that would be long term,
7 moderate, and beneficial.

8 *IMPACTS OF ALTERNATIVE D, WATERWELL ROAD REPRESENTATIVE SITE*

9 Under Alternative D, a shared visitor center for the park and heritage area would be
10 built on a site represented by the area just off of I-49 on Waterwell Road. This site is
11 along I-49 on a main route with a visible entrance, making the location very
12 accessible for visitors. However, the location would result in the visitor center being
13 isolated from many of the historic sites and park units, which would detract slightly
14 from the location. Overall, locating the visitor center at Waterwell Road would have
15 long-term, minor, beneficial effects on visitor use and experience, as it would be
16 easily accessible.

17 Effects of parking lots would be the same as in Alternative B.

18 Because the design and intention of the visitor center would be the same as
19 Alternative B, effects to visitor use and experience from the visitor center would be
20 the same as in Alternative B.

21 The outdoor classroom and loop trail would increase opportunities for the
22 interpretation of natural resources and Creole culture. The outdoor classroom could
23 also be used for special events.

24 Effects of housing only the park headquarters in the visitor center would be the same
25 as Alternative C.

26 As in Alternative B, there would be no short-term impacts to visitors during
27 construction.

28 **Cumulative effects.** Effects would be the same as described for Alternative B.

29 **Conclusion.** Effects on visitor use and experience from the addition of a centralized
30 visitor center would range from minor to moderate in intensity and would be long
31 term and beneficial. Alternative D would make a long term, minor to moderate,
32 beneficial contribution, resulting in a total cumulative effect that would be long term,
33 moderate, and beneficial.

34 *IMPACTS OF ALTERNATIVE E, WATERWELL ROAD REPRESENTATIVE SITE,*
35 *PARTNERSHIP WITH LADOTD, THE PREFERRED ALTERNATIVE*

36 Effects to visitor experience would be similar to Alternative D, as this alternative
37 provides the same amenities and opportunities in the same location. However, co-
38 location with a Louisiana Department of Transportation and Development rest stop

1 would likely increase the number of visitors to the visitor center itself, resulting in a
2 long-term, minor, beneficial effect.

3 Also, sharing the visitor center with the rest stop and information center might alter
4 the national park experience for visitors from the increased availability of local
5 tourism information and sharing space with other people only looking for a rest
6 stop. Effects to visitor experience would be long term, minor, and adverse in nature.

7 **Cumulative effects.** Effects would be the same as described for Alternative B, except
8 the Natchitoches Rest Area would no longer be a separate project in the cumulative
9 effects.

10 **Conclusion.** Effects on visitor use and experience from the addition of a centralized
11 visitor center would range from minor to moderate in intensity, and would be long
12 term and beneficial, except for effects from sharing the national park experience
13 with a rest stop, which would be long term, minor, and adverse. Alternative E would
14 make a long term, minor to moderate, beneficial contribution, resulting in a total
15 cumulative effect that would be long term, moderate, and beneficial.

16 **PARK AND HERITAGE AREA OPERATIONS**

17 *AFFECTED ENVIRONMENT*

18 *Cane River Creole National Historical Park*

19 The superintendent of Cane River Creole National Historical Park is responsible for
20 managing the park, its staff and residents, its programs, and its interactions with
21 persons, agencies, and organizations interested in the park. Park staff provide the full
22 scope of functions and activities to accomplish management objectives and meet
23 requirements of law enforcement, emergency services, public health and safety,
24 science, resource protection and management, visitor services, interpretation and
25 education, utilities, and management support. Extensive rehabilitation and
26 restoration of the 67 historic structures on the two park units also requires additional
27 staff and contractors.

28 Cane River Creole National Historical Park is open to the public year-round.
29 Educational information and interpretive programming require ongoing staffing by
30 park employees. Water, wastewater, and waste management systems must operate
31 year-round. The facilities therefore have continuous operational needs.

32 *Cane River National Heritage Area*

33 Cane River National Heritage Area is guided by a 19-person commission, appointed
34 by the Secretary of the Interior. All commissioners are volunteers. The commission
35 has the authority to hire people, administer grant programs, develop loan programs,
36 and set priorities, but it has no zoning or land-use powers and no power of eminent
37 domain. At the direction of the commission, the heritage area maintains a small staff
38 of four permanent employees and two interns. The Cane River National Heritage
39 Area and related sites are open year-round.

1 The heritage area concept offers an innovative method for citizens, in partnership
2 with local, state, and federal government, nonprofit and private sector interests, to
3 develop a plan and an implementation strategy focused on conserving the special
4 qualities of the local cultural landscape.

5 There currently is no visitor center for either the park or the heritage area. Park
6 headquarters are located in Natchitoches, just south of downtown along the Cane
7 River. The Cane River National Heritage Area Commission's office is located in
8 downtown Natchitoches. The heritage area also maintains a small office at the
9 Sheriff's substation at Derry, while park staff has a presence at Magnolia Plantation.
10 Both the heritage area and park offices are constrained by the amount of space. The
11 heritage area's downtown office also lacks adequate parking space for visitors.

12 *IMPACTS OF ALTERNATIVE A, NO ACTION/CONTINUE CURRENT*
13 *MANAGEMENT*

14 Under the No Action Alternative, park and heritage area headquarters would remain
15 in their current locations in the city of Natchitoches. Park headquarters would
16 continue to be inadequate for park staff use. This would result in a long-term,
17 moderate, adverse effect to park and heritage area operations.

18 Park management would remain separated from field staff stationed at park units,
19 which would continue to have a long-term, minor, adverse effect on park and
20 heritage area operations.

21 Parking would continue to be an issue for heritage area staff, as their headquarters
22 has no parking lot and is located in crowded downtown Natchitoches, resulting in a
23 negligible, adverse effect.

24 By park and heritage area staff having separate headquarters, coordination among
25 staff would remain difficult. Effects to park and heritage area operations would be
26 long term, minor, and adverse. However, heritage area headquarters remaining in
27 Natchitoches would continue to be beneficial to communications between
28 headquarters and individual sites, resulting in a long-term, minor, beneficial effect.

29 **Cumulative effects.** Other plans and projects that could affect park and heritage
30 area operations include the signage, branding, and wayfinding project, the curatorial
31 storage facility, the heritage tourism program, and the master planning study of
32 Waterwell Road Corridor. Combined, these projects would have a long-term, minor,
33 beneficial effect on park and heritage area operations, by improving storage and
34 directions to the park and heritage area. Alternative A would have long-term, minor
35 to moderate, adverse effects on park and heritage area operations. Overall
36 cumulative effects (the combination of effects of other plans and projects and
37 Alternative A) would be long term, minor, and adverse.

38 **Conclusion.** Overall effects to park and heritage area operations would range from
39 negligible to moderate in intensity and would be long term and adverse, with the
40 largest effect occurring from the inadequate park headquarters (long term,

1 moderate, adverse). However, the location of the heritage area’s headquarters in the
2 city of Natchitoches would have a long term, minor, beneficial effect, by maintaining
3 strong communications with heritage sites and partners in town. Overall cumulative
4 effects would be long term, minor, and adverse, with Alternative A contributing
5 long-term, minor to moderate, adverse effects.

6 *IMPACTS OF ALTERNATIVE B, LIME KILN ROAD REPRESENTATIVE SITE*

7 By constructing a facility that would house park and heritage area headquarters,
8 coordination of staff would improve, removing much duplication of effort. Park staff
9 would now have adequate office space and facilities in which to operate. Effects on
10 park and heritage area operations would be long term, moderate, and beneficial.

11 Both park and heritage area staff would have increased facilities with which to
12 interpret the park units and heritage sites, including an auditorium and an outdoor
13 classroom. Effects on park and heritage area operations would be long term, minor,
14 and beneficial. However, by heritage area staff locating themselves away from the
15 majority of their heritage area sites and partners in the city of Natchitoches, it would
16 become more difficult for communications between headquarters and individual
17 sites, which would have a long-term, minor, adverse effect.

18 Parking for staff would be much improved from previous headquarters for the
19 heritage area, resulting in a long-term, minor, beneficial effect.

20 Short-term effects of overseeing construction activities and moving offices and
21 collections would be minor and adverse, as they would place stress on maintenance
22 employees’ workloads and their ability to work during moving conditions.

23 **Cumulative effects.** Other plans and projects with effects on park and heritage area
24 operations would be the same as described under Alternative A. In combination,
25 these projects would have a long-term, minor, beneficial effect on park and heritage
26 area operations, by improving storage and directions to the park and heritage area.
27 Alternative B would have long-term, minor to moderate, beneficial effects on park
28 and heritage area operations. Overall cumulative effects would be long term, minor
29 to moderate, and beneficial.

30 **Conclusion.** Effects on park and heritage area operations from a new visitor center
31 and park and heritage area offices would range from minor to moderate in intensity
32 and would be long term and beneficial, except for moving the heritage area
33 headquarters out of town, which would be long term, minor, and adverse. Short
34 term, minor, adverse effects would result from moving offices and directing
35 construction activities. Overall cumulative effects would be long term, minor to
36 moderate, and beneficial.

1 *IMPACTS OF ALTERNATIVE C, DERRY REPRESENTATIVE SITE*

2 Park staff would now have adequate office space and facilities in which to operate.
3 Effects on park and heritage area operations would be long term, moderate, and
4 beneficial.

5 Because the heritage area staff headquarters would remain in Natchitoches,
6 duplication of effort and limited coordination would continue to occur. This would
7 result in a long-term, minor, adverse effect to park and heritage area operations.
8 However, heritage area headquarters remaining in Natchitoches would continue to
9 be beneficial to communications between headquarters and individual sites,
10 resulting in a long-term, minor, beneficial effect.

11 Parking would continue to be an issue for heritage area staff, as their headquarters
12 has no parking lot and is located in cramped downtown Natchitoches, resulting in a
13 negligible, adverse effect.

14 Both park and heritage area staff would have increased facilities with which to
15 interpret the park units and heritage sites, including an auditorium and an outdoor
16 classroom. Effects on park and heritage area operations would be long term, minor,
17 and beneficial.

18 Short-term effects would be the same as described for Alternative B.

19 **Cumulative effects.** Other plans and projects would be the same as described in
20 Alternative A. Their effect (long term, minor, and beneficial), when combined with
21 the effect of Alternative C (long term, minor, and beneficial), would create an overall
22 cumulative effect that would be long term, minor, and beneficial.

23 **Conclusion.** Effects on park and heritage area operations from a new visitor center
24 and park offices would range from minor to moderate in intensity and would be long
25 term and beneficial. The difficult parking situation near the heritage area
26 headquarters would continue to cause negligible, adverse effects. Short term, minor,
27 adverse effects would result from moving offices and directing construction. When
28 combined with the effect of Alternative B (long term, minor, and beneficial), other
29 plans and projects would create an overall cumulative effect that would be long term,
30 minor, and beneficial.

31 *IMPACTS OF ALTERNATIVE D, WATERWELL ROAD REPRESENTATIVE SITE*

32 Long-term effects to park and heritage area operations would be similar to those
33 described for Alternative C, although the location of the Waterwell Road site would
34 be slightly farther from park units than the Derry Site.

35 Short-term effects would be the same as described for Alternative B.

36 **Cumulative effects.** Effects on park and heritage area operations would be the same
37 as described for Alternative C.

1 **Conclusion.** Effects on park and heritage area operations from a new visitor center
2 and park offices would range from minor to moderate in intensity and would be long
3 term and beneficial. The difficult parking situation near the heritage area
4 headquarters would continue to cause negligible, adverse effects. Short term, minor,
5 adverse effects would result from moving offices and directing construction. When
6 combined with the effect of Alternative D (long term, minor, and beneficial), other
7 plans and projects would create an overall cumulative effect that would be long term,
8 minor, and beneficial.

9 *IMPACTS OF ALTERNATIVE E, WATERWELL ROAD REPRESENTATIVE SITE,*
10 *PARTNERSHIP WITH LADOTD, THE PREFERRED ALTERNATIVE*

11 Long-term effects to park and heritage area operations would be the same as for
12 Alternative C, although staff would have to coordinate with the Louisiana
13 Department of Transportation and Development about onsite operations of the
14 visitor center facilities.

15 Short-term effects would be minor and adverse and a result of moving park offices
16 into a new building.

17 **Cumulative effects.** Effects on park and heritage area operations would be the same
18 as described for Alternative C.

19 **Conclusion.** Effects on park and heritage area operations from a new visitor center
20 and park offices would range from minor to moderate in intensity and would be long
21 term and beneficial. The difficult parking situation near the heritage area
22 headquarters would continue to cause negligible, adverse effects. Short term, minor,
23 adverse effects would result from moving offices. When combined with the effect of
24 Alternative E (long term, minor, and beneficial), other plans and projects would
25 create an overall cumulative effect that would be long term, minor, and beneficial.

26 **PALEONTOLOGICAL RESOURCES**

27 *AFFECTED ENVIRONMENT*

28 Paleontological resources (fossils) are non-renewable resources that are the
29 preserved remains or evidence of prehistoric plants and animals. They are the only
30 direct means of documenting the history of life on earth (Stringer 2002). Fossils are
31 important scientific and educational resources because they can be used to
32 document evolutionary histories of groups of now extinct organisms, reconstruct
33 these organisms' environments, and determine the relative age of the fossil
34 specimens from the surrounding strata. For any given extinct species, there are only
35 a finite number of fossil specimens, and these continue to be lost to erosion and
36 construction activities.

37 Because the surface exposures in Louisiana are very young, the number and diversity
38 of fossils are less than other areas with older surficial geology (Stringer 2002). The
39 majority of surface exposures in Louisiana are Tertiary or Quaternary, less than 65

1 million years old. Also, marine environments are more conducive to fossilization
2 than terrestrial or freshwater environments, such as the swamps, rivers, and deltas
3 that created Louisiana. The best-known fossiliferous formation in Natchitoches
4 Parish is the Cane River Formation, from the Middle Eocene (37 to 48 million years
5 ago), which formed in marine sediments. At the I-49 Cane River Formation site, over
6 150 different species have been found fossilized. The majority are invertebrate
7 animals, but there are also some partial fossils of cartilaginous and bony fishes
8 (Stringer 2002).

9 The Cane River Formation stretches northeast/southwest on both the western and
10 eastern sides of the Cane and Red Rivers. On the western side of the rivers, the
11 project area, it is limited to a band.

12 The Wilcox Group and the Cockfield Formation, also from the Middle Eocene, have
13 the potential for plant remains and trace fossils (Arkansas Geological Commission
14 n.d.). However, neither is as well known for fossils as the Cane River Formation. No
15 other groups or formations from the Eocene occur in the representative sites.

16 Known fossil locations in the national heritage area include the I-49 Cane River
17 Formation, which is one-half mile south of the Highway 6 exit on I-49, on the west
18 side of the southbound lanes.

19 **Lime Kiln Road Representative Site**

20 The Lime Kiln Road representative site includes both Wilcox Group and Cane River
21 Formation geological formations, according to the 1:500,000 Geologic Map of
22 Louisiana (LGS 1984). The Wilcox Group (from the Eocene) is located along
23 Highway 6, stretching south $\frac{1}{4}$ of a mile. To the south, it meets the Cane River
24 Formation, which parallels it in an east/west fashion.

25 **Derry Representative Site**

26 The Geologic Map of Louisiana (LGS 1984) indicates that the area in which the
27 Derry representative site is located is “Natural levees”. These levees are found only
28 on past and present courses of major streams, in this case, the Cane River. The
29 sediments of natural levees in Louisiana include “gray and brown silt, silty clay, some
30 very fine sand, [and] reddish brown along the Red River” (LGS 1984). Because these
31 sediments have not hardened into rock or stone, there is little likelihood that fossils
32 would be present at this representative site.

33 **Waterwell Road Representative Site**

34 At the Waterwell Road site, “Alluvium” is located along the Big Henry Branch and its
35 floodplain. Alluvium is sedimentary deposits from streams and rivers, from the
36 Quaternary era. In this case, the alluvium is “Gray to brownish gray clay and silty
37 clay, reddish brown in the Red River Valley [, with] some sand and gravel locally”
38 (LGS 1984). The remaining areas of the site are in the “Cockfield Formation”, which
39 is also from the Eocene. This site contains “brown lignitic clays, silts, and sands”

1 (LGS 1984). It is very unlikely any fossils would be located in the alluvium, as it is
2 newer material.

3 *IMPACTS OF ALTERNATIVE A, NO ACTION/CONTINUE CURRENT*
4 *MANAGEMENT*

5 No effect to paleontological resources would occur under Alternative A, because no
6 new construction would occur.

7 **Cumulative effects.** Future projects such as the implementation of the master
8 planning study of the Waterwell Road Corridor, the Louisiana Department of
9 Transportation and Development rest stop, and construction of the curatorial
10 storage facility could potentially affect paleontological resources. Effects of these
11 other plans and projects on paleontological resources would likely be long term,
12 negligible to minor, and adverse, as most projects have “stop work” provisions for
13 archeological and paleontological resources. Alternative A would make no
14 contribution to the overall cumulative effects, which would be long term, negligible
15 to minor, and adverse.

16 **Conclusion.** There would be no effect to paleontological resources under
17 Alternative A, as no soils or geology would be disturbed by continuing current
18 management. Overall cumulative effects would be long term, negligible to minor, and
19 adverse.

20 **Impairment.** Alternative A would not have major adverse effects on paleontological
21 resources or values whose conservation is 1) necessary to fulfill purposes identified in
22 the established legislation or proclamation of Cane River Creole National Historical
23 Park and Cane River National Heritage Area; 2) key to the natural or cultural
24 integrity of the park and heritage area; or 3) identified as a goal in the park and
25 heritage area’s general management plans or other relevant National Park Service
26 planning documents. Therefore, there would be no impairment of the park or the
27 heritage area’s paleontological resources or values.

28 *IMPACTS OF ALTERNATIVE B, LIME KILN ROAD REPRESENTATIVE SITE*

29 In Alternative B, paleontological resources could occur in the Cane River Formation
30 and the Wilcox Group, although they would be few and of lesser value than those in
31 the Cane River Formation, if present. With mitigation measures in place to prevent
32 damage to potential paleontological resources, effects would vary from negligible to
33 minor (depending upon if fossils were found in the Cane River Formation) and
34 would be long term and adverse.

35 **Cumulative effects.** Other plans and projects would have long term, negligible to
36 minor, and adverse effects on paleontological resources, as described in Alternative
37 A. Alternative B would contribute long term, negligible to minor, adverse effects,
38 resulting in cumulative effects that would be long term, negligible to minor, and
39 adverse.

1 **Conclusion.** Effects to paleontological resources would vary from negligible to
2 minor (depending upon if fossils were found in the Cane River Formation) and
3 would be long term and adverse. Alternative B would contribute long term,
4 negligible to minor, adverse effects, resulting in cumulative effects that would be
5 long term, negligible to minor, and adverse.

6 **Impairment.** Alternative B would not have major adverse effects on paleontological
7 resources or values whose conservation is 1) necessary to fulfill purposes identified in
8 the established legislation or proclamation of Cane River Creole National Historical
9 Park and Cane River National Heritage Area; 2) key to the natural or cultural
10 integrity of the park and heritage area; or 3) identified as a goal in the park and
11 heritage area's general management plans or other relevant National Park Service
12 planning documents. Therefore, there would be no impairment of the park or the
13 heritage area's paleontological resources or values.

14 *IMPACTS OF ALTERNATIVE C, DERRY REPRESENTATIVE SITE*

15 It would be highly unlikely that fossils would have formed in Natural Levees, as the
16 sediments are not conducive to fossilization. Therefore, Alternative C would have no
17 effect on paleontological resources from building a visitor center at the Derry
18 representative site.

19 **Cumulative effects.** Cumulative effects of other plans and projects and Alternative
20 C would be the same as described for Alternative A.

21 **Conclusion.** Alternative C would have no effect on paleontological resources.
22 Cumulative effects of other plans and projects and Alternative C would be the same
23 as described for Alternative A (long term, negligible to minor, adverse).

24 **Impairment.** Alternative C would not have major adverse effects on paleontological
25 resources or values whose conservation is 1) necessary to fulfill purposes identified in
26 the established legislation or proclamation of Cane River Creole National Historical
27 Park and Cane River National Heritage Area; 2) key to the natural or cultural
28 integrity of the park and heritage area; or 3) identified as a goal in the park and
29 heritage area's general management plans or other relevant National Park Service
30 planning documents. Therefore, there would be no impairment of the park or the
31 heritage area's paleontological resources or values.

32 *IMPACTS OF ALTERNATIVE D, WATERWELL ROAD REPRESENTATIVE SITE*

33 In Alternative D, paleontological resources could occur in the Cockfield Formation,
34 although they would be few and of lesser value, if present. With mitigation measures
35 in place to prevent damage to potential paleontological resources, effects would be
36 negligible and adverse.

37 **Cumulative effects.** Other plans and projects would have long term, negligible to
38 minor, and adverse effects on paleontological resources, as described in Alternative

1 A. Alternative D would contribute long term, negligible, adverse effects, resulting in
2 cumulative effects that would be long term, negligible to minor, and adverse.

3 **Conclusion.** Effects to paleontological resources would be negligible and adverse
4 under Alternative D. Cumulative effects would be long term, negligible to minor, and
5 adverse.

6 **Impairment.** Alternative D would not have major adverse effects on paleontological
7 resources or values whose conservation is 1) necessary to fulfill purposes identified in
8 the established legislation or proclamation of Cane River Creole National Historical
9 Park and Cane River National Heritage Area; 2) key to the natural or cultural
10 integrity of the park and heritage area; or 3) identified as a goal in the park and
11 heritage area's general management plans or other relevant National Park Service
12 planning documents. Therefore, there would be no impairment of the park or the
13 heritage area's paleontological resources or values.

14 *IMPACTS OF ALTERNATIVE E, WATERWELL ROAD REPRESENTATIVE SITE,*
15 *PARTNERSHIP WITH LADOTD, THE PREFERRED ALTERNATIVE*

16 There would be no effect to paleontological resources under Alternative E, as no
17 new disturbance of soils or geology would occur.

18 **Cumulative effects.** Cumulative effects of other plans and projects and Alternative
19 C would be the same as described for Alternative A.

20 **Conclusion.** Alternative E would have no effect on paleontological resources.
21 Cumulative effects of other plans and projects and Alternative E would be the same
22 as described for Alternative A (long term, negligible to minor, adverse).

23 **Impairment.** Alternative E would not have major adverse effects on paleontological
24 resources or values whose conservation is 1) necessary to fulfill purposes identified in
25 the established legislation or proclamation of Cane River Creole National Historical
26 Park and Cane River National Heritage Area; 2) key to the natural or cultural
27 integrity of the park and heritage area; or 3) identified as a goal in the park and
28 heritage area's general management plans or other relevant National Park Service
29 planning documents. Therefore, there would be no impairment of the park or the
30 heritage area's paleontological resources or values.

31 **VEGETATION**

32 *AFFECTED ENVIRONMENT*

33 The Cane River National Heritage Area includes the lowlands along the Cane River
34 valley, as well as the forested uplands to the west. The Cane River Creole National
35 Historical Park's units are located in the Cane River valley, near Natchez and Derry.

36 Forested upland tree species associated with the Kisatchie Hills include loblolly
37 (*Pinus taeda*), shortleaf (*Pinus echinata*) and longleaf (*Pinus palustris*) pines, white
38 oak (*Quercus alba*), southern red oak (*Quercus falcata*), post oak (*Quercus stellata*),

1 blackjack oak (*Quercus marilandica*), hickories, American beech (*Fagus grandifolia*),
2 and black gum (*Nyssa sylvatica*). Understory trees and shrubs include American
3 beauty-berry (*Callicarpa americana*), flowering dogwood (*Cornus florida*), parsley
4 hawthorn (*Crataegus marshallii* Egglest.), muscadine (*Vitis rotundifolia*), red
5 mulberry (*Morus rubra*), winged sumac (*Rhus copallina*). Vines include blackberry
6 (*Rubus* sp.), greenbriar (*Smilax* sp.), peppervine (*Ampelopsis arborea*), and trumpet
7 creeper (*Campsis* sp.).

8 The native bottomland hardwoods and wooded back swamps represent only a small
9 fraction of what once grew within the river valley. Today, less than 10,000 wooded
10 acres remain in the lowlands along the river. Typical trees found in these lowlands
11 include water oak, willow oak, swamp privet, water locust, honey locust, and bitter
12 pecan. The recent establishment of the Red River National Wildlife Refuge will
13 contribute to future conservation of wooded bottomlands.

14 The dominant land use along the Cane River is agriculture, which can include pecan
15 orchards, cattle pastures, and row crops of soybeans, corn, grain sorghum, and
16 cotton.

17 *Lime Kiln Road Site*

18 The general area of this representative site is primarily composed of loblolly pine
19 forest mixed with sweetgum (*Liquidambar styraciflua*), with some grasses and
20 herbaceous cover located near the edges of the two roads. The edges of the pine
21 forest have a dense understory, but 100 feet into the stand, the multi-level vegetation
22 (including younger pine trees and vines) segues into an even-aged pine stand.

23 The majority of vegetation in this representative site has already been disturbed (i.e.,
24 secondary-growth pine forest, roadside grasses).

25 *Derry Area Site*

26 This representative site is primarily comprised of row crops, some pasture/hay fields,
27 and small amounts of bottomland hardwood forest along the river.

28 The majority of vegetation in this representative site has already been disturbed (i.e.,
29 cropland, hayfields).

30 *Waterwell Road Site*

31 This site has a variety of vegetation types. In the bottomlands, along the Big Henry
32 Branch, there are forested deciduous wetlands and deciduous scrub-shrub/emergent
33 wetlands. On each side of the stream, the elevation rises to upland sites, where
34 loblolly pine plantations and mixed, deciduous, and coniferous upland forests are
35 found.

36 Wetland areas in this site contains obligate species such as common rush (*Juncus*
37 *effuses*), woolgrass (*Scirpus cyperinus*), common cattail (*Typha latifolia*), and common
38 buttonbush (*Cephalanthus occidentalis*). Tree species in the bottomland hardwood
39 wetlands include red maple (*Acer rubrum*), silver maple (*Acer saccharinum*),

1 American elm (*Ulmus americana*), and a number of oak species (*Quercus nuttalli*, *Q.*
2 *shumardii*, *Q. michauxii*) (LaDOTD 2005).

3 Some areas of vegetation in this representative site have already been disturbed (i.e.,
4 pine plantations, roadside grasses).

5 *IMPACTS OF ALTERNATIVE A, NO ACTION/CONTINUE CURRENT*
6 *MANAGEMENT*

7 The No Action Alternative would result in no effects to the vegetation of the
8 representative sites (Waterwell Road, Lime Kiln Road, Derry). The Derry site would
9 continue to be farmed for crops, while the Waterwell Road and Lime Kiln Road sites
10 would continue to be undisturbed, although the potential for timber harvesting may
11 exist.

12 **Cumulative effects.** Other plans and projects with the potential to affect vegetation
13 include the Natchitoches Rest Area, a master planning study of Waterwell Road
14 Corridor, and the curatorial storage facility. All of these projects would permanently
15 remove vegetation and disturb other vegetation, albeit in small areas. The resulting
16 effect would be long term, local, minor, and adverse. Alternative A would make no
17 contribution to this cumulative effect.

18 **Conclusion.** The No Action Alternative would have no effect on the vegetation of
19 the representative sites (Waterwell Road, Lime Kiln Road, Derry). Cumulative
20 effects would be long term, local, minor, and adverse, but Alternative A would make
21 no contribution.

22 **Impairment.** Alternative A would not have major adverse effects on vegetation
23 resources or values whose conservation is 1) necessary to fulfill purposes identified in
24 the established legislation or proclamation of Cane River Creole National Historical
25 Park and Cane River National Heritage Area; 2) key to the natural or cultural
26 integrity of the park and heritage area; or 3) identified as a goal in the park and
27 heritage area's general management plans or other relevant National Park Service
28 planning documents. Therefore, there would be no impairment of the park or the
29 heritage area's vegetation resources or values.

30 *IMPACTS OF ALTERNATIVE B, LIME KILN ROAD REPRESENTATIVE SITE*

31 Alternative B would have the potential to impact up to 10 acres of previously
32 disturbed vegetation. Currently roadside grasses leading into a secondary growth
33 loblolly pine forest, the Lime Kiln Road representative site's vegetation would be
34 altered to allow for a visitor center, parking lot, and an entrance road. The
35 construction of these facilities would result in the permanent loss of vegetation in
36 some areas of the site.

37 For the outdoor classroom, a number of pine trees would need to be cleared
38 permanently from the area to allow for a large outdoor lawn. The loop trail would
39 also permanently clear vegetation from a small portion of the area.

1 Because this site would be a visitor center, additional vegetation would likely need to
2 be cleared in order to provide better visibility from the road. However, wherever
3 possible, mature trees and other vegetation would be retained on the site.

4 Overall, effects to vegetation would be long term, local, minor, and adverse.
5 Permanent changes to vegetation around the visitor center facility would occur, but
6 they would be relatively small in scale, when compared to the entire park and
7 national heritage area, and would occur to previously disturbed vegetation.

8 **Cumulative effects.** Other plans and projects would be the same as described for
9 Alternative B. All of these projects would permanently remove vegetation and
10 disturb other vegetation, albeit in small areas. The resulting effect would be long
11 term, local, minor, and adverse. Alternative B would make a long term, local, minor,
12 adverse contribution, resulting in an overall cumulative effect of long-term, local,
13 minor, adverse effects to vegetation.

14 **Conclusion.** Overall, effects to vegetation would be long term, local, minor, and
15 adverse, created by permanently removing vegetation for buildings and the outdoor
16 classroom. Alternative B would make a long term, local, minor, adverse contribution,
17 resulting in an overall cumulative effect of long-term, local, minor, adverse effects to
18 vegetation.

19 **Impairment.** Alternative B would not have major adverse effects on vegetation
20 resources or values whose conservation is 1) necessary to fulfill purposes identified in
21 the established legislation or proclamation of Cane River Creole National Historical
22 Park and Cane River National Heritage Area; 2) key to the natural or cultural
23 integrity of the park and heritage area; or 3) identified as a goal in the park and
24 heritage area's general management plans or other relevant National Park Service
25 planning documents. Therefore, there would be no impairment of the park or the
26 heritage area's vegetation resources or values.

27 *IMPACTS OF ALTERNATIVE C, DERRY REPRESENTATIVE SITE*

28 Effects to vegetation would be similar to Alternative B, although they would occur to
29 row crops instead of a forest.

30 **Cumulative effects.** Effects would be the same as for Alternative B.

31 **Conclusion.** Effects to vegetation would be similar to Alternative B (long term, local,
32 minor, and adverse), although they would occur to row crops instead of a forest.

33 Cumulative effects would be the same as for Alternative B (long term, local, minor,
34 and adverse).

35 **Impairment.** Alternative C would not have major adverse effects on vegetation
36 resources or values whose conservation is 1) necessary to fulfill purposes identified in
37 the established legislation or proclamation of Cane River Creole National Historical
38 Park and Cane River National Heritage Area; 2) key to the natural or cultural
39 integrity of the park and heritage area; or 3) identified as a goal in the park and

1 heritage area’s general management plans or other relevant National Park Service
2 planning documents. Therefore, there would be no impairment of the park or the
3 heritage area’s vegetation resources or values.

4 *IMPACTS OF ALTERNATIVE D, WATERWELL ROAD REPRESENTATIVE SITE*

5 Effects to vegetation would be similar to Alternative B, although they would occur to
6 a mixture of upland pine and mixed forests, with some grasses along the roadside.
7 Bottomland forests are located in the representative site area, but it would be
8 unlikely they would be affected.

9 **Cumulative effects.** Effects would be the same as for Alternative B.

10 **Conclusion.** Effects to vegetation would be similar to Alternative B (long term, local,
11 minor, and adverse). Cumulative effects would be the same as for Alternative B (long
12 term, local, minor, and adverse).

13 **Impairment.** Alternative D would not have major adverse effects on vegetation
14 resources or values whose conservation is 1) necessary to fulfill purposes identified in
15 the established legislation or proclamation of Cane River Creole National Historical
16 Park and Cane River National Heritage Area; 2) key to the natural or cultural
17 integrity of the park and heritage area; or 3) identified as a goal in the park and
18 heritage area’s general management plans or other relevant National Park Service
19 planning documents. Therefore, there would be no impairment of the park or the
20 heritage area’s vegetation resources or values.

21 *IMPACTS OF ALTERNATIVE E, WATERWELL ROAD REPRESENTATIVE SITE,*
22 *PARTNERSHIP WITH LADOTD, THE PREFERRED ALTERNATIVE*

23 There would be no effect to vegetation under Alternative E, as no new facilities
24 would be constructed.

25 **Cumulative effects.** Effects would be the same as for Alternative B, although the
26 Natchitoches Rest Area would no longer be regarded as a separate project and
27 Alternative E would not contribute to cumulative effects for vegetation.

28 **Conclusion.** There would be no effect to vegetation under Alternative E, as no new
29 facilities would be constructed. Alternative E would make no contribution to
30 cumulative effects, which would be long term, local, minor, and adverse.

31 **Impairment.** Alternative E would not have major adverse effects on vegetation
32 resources or values whose conservation is 1) necessary to fulfill purposes identified in
33 the established legislation or proclamation of Cane River Creole National Historical
34 Park and Cane River National Heritage Area; 2) key to the natural or cultural
35 integrity of the park and heritage area; or 3) identified as a goal in the park and
36 heritage area’s general management plans or other relevant National Park Service
37 planning documents. Therefore, there would be no impairment of the park or the
38 heritage area’s vegetation resources or values.

1 **WILDLIFE**

2 *AFFECTED ENVIRONMENT*

3 Wildlife habitats in Natchitoches Parish include open agricultural land, upland pine
4 forest, and bottomland hardwood forests, each supporting populations of game and
5 nongame wildlife. Red River is a primary migration route for waterfowl and provides
6 resting areas in spring and fall. Temporarily flooded fields also provide food and
7 resting areas for large concentrations of migrating waterfowl.

8 Areas of cropland and pasture provide food and cover for bobwhite (*Colinus*
9 *virginianus*), common snipe (*Gallinago gallinago*), American woodcock (*Scolopax*
10 *minor*), killdeer (*Pluvier kildir*), cottontail and swamp rabbits (*Sylvilagus*
11 *transitionalis*, *Sylvilagus aquaticus*), red fox (*Vulpes vulpes*), coyote (*Cania latrans*),
12 and other non-game animals.

13 Most of the bottomland hardwood forests in the study area have been cleared for
14 use as cropland. The remaining areas of bottomland hardwoods provide habitat for
15 white-tailed deer (*Odocoileus virginianus*), gray and fox squirrel (*Sciurus carolinensis*,
16 *Sciurus niger*), swamp rabbit, raccoon (*Procyon lotor*), bobcat (*Lynx rufus*), coyote,
17 wild turkey (*Meleagris gallopavo*), and many species of birds, reptiles, and
18 amphibians.

19 The upland pine forests provide good habitat for bobwhite, wild turkey, coyote,
20 opossum (*Didelphis virginiana*), cottontail rabbit and white-tailed deer. Bobcat,
21 Louisiana black bear (*Ursus americanus luteolus*) and red fox can also found in
22 upland pine forests, as well as mixed forest and bottomland hardwood forest. The
23 majority of upland pine forests in the region have been altered from historic forest
24 communities, through logging and fire suppression, which has affected some wildlife
25 species, such as the red-cockaded woodpecker (see “Threatened and Endangered
26 Species” for a further explanation).

27 The many lakes, ponds, bayous, and rivers of the parish support small to large
28 populations of fish. Major species include largemouth bass, white bass, yellow bass,
29 striped bass, white and black crappie, sunfish, catfish, bowfin, gar, carp, shad, and
30 pickerel. However, water resources would not be affected under any of the
31 alternatives; therefore, fish and other aquatic species will not be analyzed.

32 *IMPACTS OF ALTERNATIVE A, NO ACTION/CONTINUE CURRENT*
33 *MANAGEMENT*

34 The No Action Alternative would continue current conditions in each of the three
35 representative sites. This would have no effect on wildlife in any of the sites, because
36 no disturbance would be introduced in the sites and wildlife populations would
37 remain as they currently are.

38 **Cumulative effects.** Other plans and projects with the potential to affect wildlife
39 include the Natchitoches Rest Area, the curatorial storage facility, zoning

1 regulations, and a master planning study of Waterwell Road Corridor. These actions
2 would affect wildlife through direct disturbance of habitats and increased
3 fragmentation over time (limited zoning regulations in the parish), resulting in long-
4 term, local and regional, minor, adverse effects to wildlife. Alternative A would make
5 no contribution to cumulative effects.

6 **Conclusion.** There would be no effect to wildlife under Alternative A, because
7 wildlife species and populations would not change on any of the three representative
8 sites. Cumulative effects would be long term, local and regional, minor, and adverse,
9 with Alternative A making no contribution to these effects.

10 **Impairment.** Alternative A would not have major adverse effects on wildlife
11 resources or values whose conservation is 1) necessary to fulfill purposes identified in
12 the established legislation or proclamation of Cane River Creole National Historical
13 Park and Cane River National Heritage Area; 2) key to the natural or cultural
14 integrity of the park and heritage area; or 3) identified as a goal in the park and
15 heritage area's general management plans or other relevant National Park Service
16 planning documents. Therefore, there would be no impairment of the park or the
17 heritage area's wildlife resources or values.

18 *IMPACTS OF ALTERNATIVE B, LIME KILN ROAD REPRESENTATIVE SITE*

19 Alternative B would impact 10 acres of even-aged pine forest, the edge habitat of the
20 pine forest, and roadside grasses and herbaceous species. One building and a parking
21 lot would be added to this 10-acre site and some canopy cover would be removed
22 around the buildings and elsewhere in the site to improve visibility of the visitor
23 center. Species most likely to be affected would be those not adapted to human
24 presence or those that prefer a closed canopy, while species that prefer a more open
25 canopy and/or are accustomed to human presence would benefit from the change in
26 conditions.

27 Effects to wildlife would be long term, local, minor, and adverse. Effects would be
28 unlikely to extend more than a few hundred feet beyond the 10-acre site. There
29 could be loss of individual animals during construction activities, and habitats in the
30 10-acre site would be altered permanently, with less canopy cover, more landscaping,
31 and the presence of humans.

32 **Cumulative effects.** Other plans and projects with the potential to affect wildlife
33 would be the same as described in Alternative A. These plans would affect wildlife
34 through direct disturbance of habitats and increased fragmentation over time
35 (limited zoning regulations in the parish), resulting in long-term, local and regional,
36 minor, adverse impacts to wildlife. Alternative B would contribute long term, local,
37 minor, adverse effects, resulting in overall cumulative effects that would be long
38 term, local and regional, minor, and adverse in nature.

39 **Conclusion.** Effects to wildlife would be long term, local, minor, adverse, and
40 unlikely to extend more than a few hundred feet beyond the 10-acre site. Loss of

1 individual animals could occur during construction and habitats in the 10-acre site
2 would be altered permanently, with less canopy cover, more landscaping, and the
3 presence of humans. Alternative B would contribute long term, local, minor, adverse
4 effects, resulting in overall cumulative effects that would be long term, local and
5 regional, minor, and adverse in nature.

6 **Impairment.** Alternative B would not have major adverse effects on wildlife
7 resources or values whose conservation is 1) necessary to fulfill purposes identified in
8 the established legislation or proclamation of Cane River Creole National Historical
9 Park and Cane River National Heritage Area; 2) key to the natural or cultural
10 integrity of the park and heritage area; or 3) identified as a goal in the park and
11 heritage area's general management plans or other relevant National Park Service
12 planning documents. Therefore, there would be no impairment of the park or the
13 heritage area's wildlife resources or values.

14 *IMPACTS OF ALTERNATIVE C, DERRY REPRESENTATIVE SITE*

15 Alternative C would impact 10 acres of croplands. Only one building, a parking lot,
16 and one road would be added to the site. Vegetation changes would result in
17 increased vertical habitats (e.g., shrubs, trees) where there were only crops or bare
18 ground, depending upon the season, which could increase wildlife diversity on a
19 local level. This could result in negligible, beneficial effects to wildlife.

20 However, species that selected croplands as their habitat would lose some habitat to
21 buildings and parking lots. Effects to these wildlife species would be long-term, local,
22 minor, and adverse. Effects would be unlikely to extend very far beyond the 10 acre
23 site, but there could be the loss of individual animals during construction activities.

24 **Cumulative effects.** Effects would be the same as described for Alternative B.

25 **Conclusion.** Effects to wildlife would be long term, local, negligible, and beneficial
26 by increasing vegetation diversity and strata, but cropland-preferring species would
27 lose some habitat, resulting in long-term, local, minor, adverse effects. Cumulative
28 effects would be the same as described for Alternative B (long term, local, minor,
29 adverse).

30 **Impairment.** Alternative C would not have major adverse effects on wildlife
31 resources or values whose conservation is 1) necessary to fulfill purposes identified in
32 the established legislation or proclamation of Cane River Creole National Historical
33 Park and Cane River National Heritage Area; 2) key to the natural or cultural
34 integrity of the park and heritage area; or 3) identified as a goal in the park and
35 heritage area's general management plans or other relevant National Park Service
36 planning documents. Therefore, there would be no impairment of the park or the
37 heritage area's wildlife resources or values.

1 *IMPACTS OF ALTERNATIVE D, WATERWELL ROAD REPRESENTATIVE SITE*

2 Under Alternative D, 10 acres of a combination of mixed or evergreen forest uplands,
3 bottomland hardwoods, or scrub/shrub/emergent wetlands could be affected. Were
4 upland forest sites to be affected, canopy cover would be diminished and there could
5 be some loss of individual animals. Effects would be the same as for Alternative B.

6 Were bottomland hardwoods to be affected, canopy cover would also be diminished
7 and there could be loss of individual animals. Because the majority of bottomland
8 hardwood forests in the area have been converted to farmland, there is less of this
9 habitat available for wildlife than has been available historically. However, because
10 only ten acres or less would be affected under Alternative D, effects would be long
11 term, local, minor, and adverse.

12 If emergent or scrub/shrub wetlands were affected by Alternative D, the habitat
13 would be altered, resulting in a drier, manicured area with more trees and less
14 wetland vegetation. These wetlands are not evenly distributed upon the landscape;
15 therefore, changing this habitat would disproportionately affect wildlife species
16 dependent upon these wetlands. Effects to wildlife species dependent upon
17 scrub/shrub and emergent wetland habitats would be long term, local, and adverse
18 and would range from minor to moderate in intensity depending on how many acres
19 of wetland habitats would be altered.

20 **Cumulative effects.** Effects would be the same as described for Alternative B.

21 **Conclusion.** Effects would be the same as for Alternative B in upland habitats (long
22 term, local, minor, and adverse). Effects to wildlife species dependent upon
23 scrub/shrub and emergent wetland habitats would be long term, local, and adverse
24 and would range from minor to moderate in intensity depending on how many acres
25 of wetland habitats would be altered. Cumulative effects would be the same as
26 described for Alternative B (long term, local, minor, adverse).

27 **Impairment.** Alternative D would not have major adverse effects on wildlife
28 resources or values whose conservation is 1) necessary to fulfill purposes identified in
29 the established legislation or proclamation of Cane River Creole National Historical
30 Park and Cane River National Heritage Area; 2) key to the natural or cultural
31 integrity of the park and heritage area; or 3) identified as a goal in the park and
32 heritage area's general management plans or other relevant National Park Service
33 planning documents. Therefore, there would be no impairment of the park or the
34 heritage area's wildlife resources or values.

35 *IMPACTS OF ALTERNATIVE E, WATERWELL ROAD REPRESENTATIVE SITE,*
36 *PARTNERSHIP WITH LADOTD, THE PREFERRED ALTERNATIVE*

37 Under Alternative E, there would be negligible, adverse effects to wildlife from
38 increased presence of humans near the visitor center. However, because the facilities
39 already would exist in this alternative, there would be no additional effects.

1 **Cumulative effects.** Effects would be the same as described for Alternative B,
2 although the Natchitoches Rest Area would not be considered a separate project in
3 cumulative effects, as it is part of Alternative E, and Alternative E would not make a
4 contribution to cumulative effects.

5 **Conclusion.** Negligible effects would occur because of the increased presence of
6 humans near the visitor center. Cumulative effects would be the same as described
7 for Alternative B (long term, minor, adverse), except Alternative E would not make a
8 contribution to cumulative effects.

9 **Impairment.** Alternative E would not have major adverse effects on wildlife
10 resources or values whose conservation is 1) necessary to fulfill purposes identified in
11 the established legislation or proclamation of Cane River Creole National Historical
12 Park and Cane River National Heritage Area; 2) key to the natural or cultural
13 integrity of the park and heritage area; or 3) identified as a goal in the park and
14 heritage area's general management plans or other relevant National Park Service
15 planning documents. Therefore, there would be no impairment of the park or the
16 heritage area's wildlife resources or values.

17 **THREATENED AND ENDANGERED SPECIES**

18 *AFFECTED ENVIRONMENT*

19 In Natchitoches Parish, the red-cockaded woodpecker is listed as a federally and
20 state endangered species.

21 Although probably extinct in Louisiana, the red wolf is also listed as federally
22 endangered. This species is therefore dismissed from further analysis.

23 **Red-cockaded woodpecker**

24 The red-cockaded woodpecker's (*Picoides borealis*) range is closely tied to the
25 distribution of southern pines; this range includes the state of Louisiana (USFWS
26 2004). Open stands of pines with a minimum age of 80 to 120 years provide suitable
27 nesting habitat. Longleaf pines (*Pinus palustris*) are preferred, but other species of
28 southern pine also are acceptable. Dense stands that are primarily hardwoods or that
29 have a dense hardwood understory are avoided (USFWS n.d.a).

30 Pine and pine hardwood stands that are 30 years old or older provide foraging
31 habitat, with foraging preference for pine trees 10-inches or larger in diameter.
32 Where there is good, well-stocked, pine habitat, sufficient foraging substrate can be
33 provided on 80 to 125 acres (USFWS n.d.a).

34 This woodpecker excavates roosting cavities in living pines, especially those with a
35 fungus producing what is known as red-heart disease. Cavity tree ages may range
36 from 63 to 300+ years for longleaf pine and from 62 to 200+ years for loblolly or
37 other pines. A cluster (an aggregate of cavity trees) may include one to 20 or more
38 cavity trees on from 3 to 60 acres, with the average cluster of about 10 acres.

1 **State-listed species**

2 The Louisiana Natural Heritage Program has compiled a list of plants and animals
3 that are rare within the state. Four species of rare animals (the Southern redback
4 salamander, osprey, big brown bat, and Louisiana pine snake) and 36 rare plant
5 species have been identified within the parish (see Appendix C).

6 The Southern redback salamander prefers moist forested habitats with stone
7 outcroppings and/or abundant leaf litter or logs for shelter (LaDWF 2005). It is
8 unlikely that the Southern redback salamander would be present at the Derry
9 Representative Site, or the Lime Kiln Road Site, as neither contains moist forested
10 habitat. However, the bottomland hardwood forests of the Waterwell Road site
11 could provide habitat for the Southern redback salamander.

12 None of the alternatives would affect osprey habitat because neither water resources
13 nor perches, would be affected under any of the alternatives. This species is
14 dismissed from further analysis.

15 Big brown bats, which are critically imperiled in Louisiana, prefer hardwood forests
16 to coniferous forests, select roost sites according to temperature, and roost primarily
17 in caves, crevices, and buildings, although they will select hollow trees (NatureServe
18 2005). Because of lack of caves, crevices, and buildings and the high summer
19 temperatures in forests in Louisiana, it would be unlikely that big brown bats would
20 roost in any of the representative sites considered in this environmental assessment.
21 Thus, this species is dismissed from further analysis.

22 The Louisiana pine snake, a federal species of concern and is known to occur within
23 Natchitoches Parish, one of only three parishes where it still exists in Louisiana
24 (USFWS n.d.b). It prefers open, longleaf pine uplands, which have become reduced
25 and fragmented by development and fire suppression. However, it is unlikely that
26 the Louisiana pine snake would be present in any of the representative sites or
27 equivalent habitats, as it requires mature pine forests with 50 percent herbaceous
28 understory, a history of prescribed fire, and sandy-well drained soils (USFWS n.d.b).
29 None of the sites' habitats have all of these characteristics; therefore, this species is
30 dismissed from further analysis.

31 The 36 rare plant species listed in Alternative C as occurring in Natchitoches Parish
32 are found in a variety of habitats within the parish. Some of these plant species could
33 potentially occur in the representative sites, in roadside areas, pine forests,
34 bottomland hardwoods, or emergent wetlands.

1 *IMPACTS OF ALTERNATIVE A, NO ACTION/CONTINUE CURRENT*
2 *MANAGEMENT*

3 Alternative A would have no effect on threatened and endangered species, as no
4 construction activities would occur at any of the representative sites.

5 **Cumulative effects.** Other plans and projects with the potential to affect wildlife
6 include the Natchitoches Rest Area, the curatorial storage facility, zoning
7 regulations, and the city of Natchitoches master planning study of Waterwell Road
8 Corridor. These plans potentially affect some threatened and endangered plant
9 species through direct disturbance of habitats and increased fragmentation over time
10 (limited zoning regulations in the parish), resulting in long-term, local and regional,
11 minor, adverse impacts to threatened and endangered species. Alternative A would
12 make no contribution to cumulative impacts.

13 **Conclusion.** Alternative A would have no effect on threatened and endangered
14 species and would make no contribution to cumulative effects, which would be long
15 term, local and regional, minor, and adverse.

16 **Impairment.** Alternative A would not have major adverse effects on threatened and
17 endangered species whose conservation is 1) necessary to fulfill purposes identified
18 in the established legislation or proclamation of Cane River Creole National
19 Historical Park and Cane River National Heritage Area; 2) key to the natural or
20 cultural integrity of the park and heritage area; or 3) identified as a goal in the park
21 and heritage area's general management plans or other relevant National Park
22 Service planning documents. Therefore, there would be no impairment of the park
23 or the heritage area's threatened and endangered species.

24 *IMPACTS OF ALTERNATIVE B, LIME KILN ROAD REPRESENTATIVE SITE*

25 Alternative B could potentially affect red-cockaded woodpecker habitat, as it would
26 involve the clearing of a small area (<10 acres) of secondary growth loblolly pine
27 forest, which red-cockaded woodpeckers, if they are in the area, could potentially
28 use for foraging. However, this habitat is of low quality for red-cockaded
29 woodpeckers, which prefer longleaf pine forests. Because this site is previously
30 disturbed, small in size (not large enough to provide a foraging substrate), and low in
31 quality, effects to the red-cockaded woodpecker would be long term, local, minor,
32 and adverse (*may affect/not likely to adversely effect*).

33 Alternative B could potentially affect some of the state-listed plant species in
34 Appendix C, including Southern lady's slipper, bearded grass-pink, and nodding
35 pogonia. A mitigative plant survey would be completed prior to activities beginning.
36 Any plant individuals or communities identified in areas to be disturbed by
37 construction would be relocated to a nearby area of similar habitat that would not be
38 disturbed. Were state-listed plant species to be discovered onsite, effects to
39 threatened and endangered species would be long-term, local, minor, and adverse,
40 with mitigation measures in place.

1 **Cumulative effects.** Other plans and projects with the potential to affect threatened
2 and endangered species would be the same as described in Alternative A. These
3 plans would affect threatened and endangered species through direct disturbance of
4 habitats and increased fragmentation over time (limited zoning regulations in the
5 parish), resulting in long-term, local and regional, minor, adverse impacts to wildlife.
6 Alternative B would contribute long-term, local, minor, adverse effects, resulting in
7 overall cumulative effects that would be long term, local and regional, minor, and
8 adverse in nature.

9 **Conclusion.** Because this site is previously disturbed, small in size, and low in
10 quality, effects to the red-cockaded woodpecker would be long term, local, minor,
11 and adverse (*may affect/not likely to adversely effect*). Were state-listed plant species
12 to be discovered onsite, with mitigation measures, effects to threatened and
13 endangered species would be long-term, local, minor, and adverse. Overall
14 cumulative effects would be long term, local and regional, minor, and adverse, of
15 which Alternative B would contribute long-term, local, minor, adverse effects.

16 **Impairment.** Alternative B would not have major adverse effects on threatened and
17 endangered species whose conservation is 1) necessary to fulfill purposes identified
18 in the established legislation or proclamation of Cane River Creole National
19 Historical Park and Cane River National Heritage Area; 2) key to the natural or
20 cultural integrity of the park and heritage area; or 3) identified as a goal in the park
21 and heritage area's general management plans or other relevant National Park
22 Service planning documents. Therefore, there would be no impairment of the park
23 or the heritage area's threatened and endangered species.

24 *IMPACTS OF ALTERNATIVE C, DERRY REPRESENTATIVE SITE*

25 The Derry Representative Site primarily is agricultural land, with some bottomland
26 hardwoods. However, the only areas to be disturbed would be those already in
27 agricultural use. Therefore, because none of the threatened and endangered species'
28 habitats include row crops, Alternative C would have no effect on threatened and
29 endangered species.

30 **Cumulative effects.** Other plans and projects with the potential to affect threatened
31 and endangered species would be the same as described in Alternative A. These
32 plans would affect threatened and endangered species through direct disturbance of
33 habitats and increased fragmentation over time (limited zoning regulations in the
34 parish), resulting in long-term, local and regional, minor, adverse effects to
35 threatened and endangered species. Alternative C would make no contribution to
36 these cumulative effects.

37 **Conclusion.** Alternative C would have no effect on threatened and endangered
38 species, as actions would be taken only in agricultural land, where there is no habitat
39 for threatened and endangered species. Cumulative plans and projects would result
40 in long-term, local and regional, minor, adverse impacts to wildlife, with no
41 contribution of effects from Alternative C.

1 **Impairment.** Alternative C would not have major adverse effects on threatened and
2 endangered species whose conservation is 1) necessary to fulfill purposes identified
3 in the established legislation or proclamation of Cane River Creole National
4 Historical Park and Cane River National Heritage Area; 2) key to the natural or
5 cultural integrity of the park and heritage area; or 3) identified as a goal in the park
6 and heritage area's general management plans or other relevant National Park
7 Service planning documents. Therefore, there would be no impairment of the park
8 or the heritage area's threatened and endangered species.

9 *IMPACTS OF ALTERNATIVE D, WATERWELL ROAD REPRESENTATIVE SITE*

10 Effects to the red-cockaded woodpecker would be the same as for Alternative B
11 (long term, local, minor, and adverse [*may affect/not likely to adversely effect*]).

12 The Southern redback salamander could potentially be located in the bottomland
13 hardwood forested areas of this site. However, because this portion of the site would
14 remain undisturbed, effects to the Southern redback salamander would be negligible
15 and adverse.

16 Alternative D could potentially affect some of the state-listed plant species in
17 Appendix C, including Southern lady's slipper, bearded grass-pink, and nodding
18 pogonia, perfoliate tinker's-weed, and large whorled pogonia. A mitigative plant
19 survey would be completed prior to activities beginning. Any plant individuals or
20 communities identified in areas to be disturbed by construction would be relocated
21 to a nearby area of similar habitat that would not be disturbed. Were state-listed
22 plant species to be discovered onsite, with mitigation measures, effects to threatened
23 and endangered species would be long-term, local, minor, and adverse.

24 **Cumulative effects.** Other plans and projects with the potential to affect threatened
25 and endangered species would be the same as described in Alternative A. These
26 plans would affect threatened and endangered species through direct disturbance of
27 habitats and increased fragmentation over time from limited zoning regulations in
28 the parish, resulting in long-term, local and regional, minor, adverse impacts to
29 wildlife. Alternative D would contribute long-term, local, minor, adverse effects,
30 resulting in overall cumulative effects that would be long term, local and regional,
31 minor, and adverse in nature.

32 **Conclusion.** Effects to the red-cockaded woodpecker would be the same as for
33 Alternative B (long term, local, minor, and adverse [*may affect/not likely to adversely*
34 *effect*]). Effects to the Southern redback salamander would be negligible and adverse,
35 because bottomland hardwood habitat would not be disturbed. Were state-listed
36 plant species to be discovered onsite, with mitigation measures, effects to threatened
37 and endangered species would be long-term, local, minor, and adverse. Alternative D
38 would contribute long-term, local, minor, adverse effects, resulting in overall
39 cumulative effects that would be long term, local and regional, minor, and adverse in
40 nature.

1 **Impairment.** Alternative D would not have major adverse effects on threatened and
2 endangered species whose conservation is 1) necessary to fulfill purposes identified
3 in the established legislation or proclamation of Cane River Creole National
4 Historical Park and Cane River National Heritage Area; 2) key to the natural or
5 cultural integrity of the park and heritage area; or 3) identified as a goal in the park
6 and heritage area's general management plans or other relevant National Park
7 Service planning documents. Therefore, there would be no impairment of the park
8 or the heritage area's threatened and endangered species.

9 *IMPACTS OF ALTERNATIVE E, WATERWELL ROAD REPRESENTATIVE SITE,*
10 *PARTNERSHIP WITH LADOTD, THE PREFERRED ALTERNATIVE*

11 There would be no effects to threatened and endangered species under Alternative E
12 because no new construction activities would occur.

13 **Cumulative effects.** Cumulative effects would be the same as described for
14 Alternative C (long-term, local and regional, minor, and adverse). Alternative E
15 would make no contribution to these cumulative effects.

16 **Conclusion.** There would be no effects to threatened and endangered species under
17 Alternative E because no new construction activities would occur. Cumulative
18 effects would be the same as described for Alternative C (long-term, local and
19 regional, minor, and adverse).

20 **Impairment.** Alternative E would not have major adverse effects on threatened and
21 endangered species whose conservation is 1) necessary to fulfill purposes identified
22 in the established legislation or proclamation of Cane River Creole National
23 Historical Park and Cane River National Heritage Area; 2) key to the natural or
24 cultural integrity of the park and heritage area; or 3) identified as a goal in the park
25 and heritage area's general management plans or other relevant National Park
26 Service planning documents. Therefore, there would be no impairment of the park
27 or the heritage area's threatened and endangered species.

28 **SOILS**

29 *AFFECTED ENVIRONMENT*

30 The soils that predominate in the Cane River corridor, Roxana, Gallion, Moreland,
31 Latanier, and Armistead, are considered prime farmland. Based on the Department
32 of Agriculture definition, these soils are best suited to producing food, feed, forage,
33 fiber, and oilseed crops. The red coloring of the soils in the region gave the mighty
34 Red River both its name and its rusty hue.

35 Soils in the uplands to the west of the Cane River valley, Bellwood, Natchitoches,
36 Sacul, Briley, and Ruston, are predominately gently sloping to steep, loamy, sandy,
37 and clayey soils. They generally are well-drained and have low fertility. They are
38 considered best suited for woodlands and wildlife habitat. None of these soils are
39 considered prime agricultural lands.

1 *Lime Kiln Road Representative Site*

2 Soils at the Highway 6 and Lime Kiln Drive representative site are Natchitoches
3 sandy clay loam, 1-5; Natchitoches sandy clay loam, 5-12; Ruston fine sandy loam, 1-5;
4 and Sacul fine sandy loam, 5-12. Natchitoches soils are well drained but poorly suited
5 to most urban uses, due to slope and seepage. Ruston and Briley soils are both well
6 drained and moderately well suited to urban development. Sacul is well drained, but
7 poorly suited to urban development. Ruston fine sandy loam, 1-5, is considered
8 prime and agricultural land.

9 *Derry Representative Site*

10 The Derry representative site soils include Roxana very fine sandy loam, Moreland
11 silt loam, Moreland clay, and Moreland clay, occasionally flooded. The majority of
12 the area is Roxana, which is highly fertile and well drained. The other soil units are
13 poorly drained and considered poorly suited to urban uses because of wetness, very
14 slow permeability, very high shrink-swell ratio, and tendency to flood. The entire
15 area is considered prime agricultural land.

16 *Waterwell Road Representative Site*

17 Soils at the Waterwell Road site include Bellwood clay, 1-5 slope; Bellwood clay, 5-12
18 slope; Sacul fine sandy loam, 1-5; and Sacul fine sandy loam, 5-12. Sacul is well
19 drained, but poorly suited to urban development, while Bellwood is somewhat
20 poorly drained and poorly suited for homesites because of very slow permeability
21 and wetness. Sacul fine sandy loam, 1-5 is considered a prime and unique farmland
22 soil.

23 Because, at the most, only 10 acres of prime and unique agricultural lands, or 0.003
24 percent of the total prime and unique agricultural lands in Natchitoches Parish,
25 would be impacted under any of the alternatives prime and unique farmland has
26 been dismissed from further analysis. (Refer to “Prime and Unique Farmland“ in the
27 “Impact Topics Dismissed from Further Analysis” section for a more detailed
28 explanation for dismissal.)

29 *IMPACTS OF ALTERNATIVE A, NO ACTION/CONTINUE CURRENT*
30 *MANAGEMENT*

31 There would be no effects to soils under Alternative A, because the soils in each of
32 the representative sites would remain undisturbed.

33 **Cumulative effects.** Other plans and projects with the potential to affect soils
34 include the Natchitoches Rest Area, the master planning study of Waterwell Road
35 Corridor, and the curatorial storage facility. All of these projects would pave over
36 soil and/or disturb soil characteristics, albeit in small areas. The resulting effect
37 would be long term, local, minor, and adverse. Alternative A would make no
38 contribution to this cumulative effect.

1 **Conclusion.** There would be no effects to soils under Alternative A, because the
2 soils in each of the representative sites would remain undisturbed. Alternative A
3 would make no contribution to the cumulative effect of long term, local, minor, and
4 adverse.

5 **Impairment.** Alternative A would not have major adverse effects on soil resources
6 or values whose conservation is 1) necessary to fulfill purposes identified in the
7 established legislation or proclamation of Cane River Creole National Historical
8 Park and Cane River National Heritage Area; 2) key to the natural or cultural
9 integrity of the park and heritage area; or 3) identified as a goal in the park and
10 heritage area's general management plans or other relevant National Park Service
11 planning documents. Therefore, there would be no impairment of the park or the
12 heritage area's soil resources or values.

13 *IMPACTS OF ALTERNATIVE B, LIME KILN ROAD REPRESENTATIVE SITE*

14 Under Alternative B, 10 acres would be acquired by the National Park Service near
15 the intersection of Lime Kiln Road and Highway 6. Of these 10 acres, activities that
16 would affect soils would likely occur on less than 5 acres, including parking lots, the
17 visitor center, and an unpaved trail system. Long-term effects to soils would include
18 those areas permanently converted to impervious surfaces. This would result in
19 local, minor, adverse effects, because paving would cause a change to soil character
20 over a small area. Overall soil character would be changed for the long term in areas
21 not paved over as well, as activities would mix the distinct soil layers (topsoil and
22 subsoil layers), resulting in local, minor, adverse changes.

23 While mitigation measures would be used to minimize unnecessary impacts to soils
24 during construction activities, short-term disturbance effects to soils that would not
25 be paved over would be minor, local, and adverse.

26 **Cumulative effects.** Other plans and projects would be the same as described for
27 Alternative A. The resulting effect would be long term, local, minor, and adverse.
28 Alternative B would make a long-term, local, minor, adverse contribution to
29 cumulative effects, resulting in an overall cumulative effect that would be long term,
30 local, minor, and adverse.

31 **Conclusion.** Long-term effects to soils would include those areas permanently
32 converted to impervious surfaces and would result in local, minor, adverse effects.
33 Overall soil character would be changed for the long term in areas not paved over as
34 well, resulting in local, minor, adverse changes.

35 While mitigation measures would be used to minimize unnecessary impacts to soils
36 during construction activities, short-term disturbance effects would still be local,
37 minor, and adverse.

38 Alternative B would make a long-term, local, minor, adverse contribution to
39 cumulative effects, resulting in an overall cumulative effect that would be long term,
40 local, minor, and adverse.

1 **Impairment.** Alternative B would not have major adverse effects on soil resources or
2 values whose conservation is 1) necessary to fulfill purposes identified in the
3 established legislation or proclamation of Cane River Creole National Historical
4 Park and Cane River National Heritage Area; 2) key to the natural or cultural
5 integrity of the park and heritage area; or 3) identified as a goal in the park and
6 heritage area's general management plans or other relevant National Park Service
7 planning documents. Therefore, there would be no impairment of the park or the
8 heritage area's soil resources or values.

9 *IMPACTS OF ALTERNATIVE C, DERRY REPRESENTATIVE SITE*

10 Long-term and short-term impacts to soils under Alternative C would be similar to
11 those for Alternative B, except additional fill would be added underneath the visitor
12 center facility to raise the first floor elevation to 104.5 feet.

13 **Cumulative effects.** Cumulative effects would be the same as described for
14 Alternative B.

15 **Conclusion.** Long-term and short-term impacts to soils under Alternative C would
16 be similar to those for Alternative B (long term, local, minor, and adverse; short term,
17 local, minor, and adverse). Cumulative effects would be the same as described for
18 Alternative B (long term, local, minor, and adverse).

19 **Impairment.** Alternative C would not have major adverse effects on soil resources
20 or values whose conservation is 1) necessary to fulfill purposes identified in the
21 established legislation or proclamation of Cane River Creole National Historical
22 Park and Cane River National Heritage Area; 2) key to the natural or cultural
23 integrity of the park and heritage area; or 3) identified as a goal in the park and
24 heritage area's general management plans or other relevant National Park Service
25 planning documents. Therefore, there would be no impairment of the park or the
26 heritage area's soil resources or values.

27 *IMPACTS OF ALTERNATIVE D, WATERWELL REPRESENTATIVE SITE*

28 Long-term and short-term impacts to soils under Alternative D would be similar to
29 those for Alternative B.

30 **Cumulative effects.** Cumulative effects would be the same as described for
31 Alternative B.

32 **Conclusion.** Long-term and short-term impacts to soils under Alternative D would
33 be the same as those described for Alternative B (long term, local, minor, and
34 adverse). Cumulative effects would be the same as described for Alternative B (long
35 term, local, minor, and adverse).

36 **Impairment.** Alternative D would not have major adverse effects on soil resources
37 or values whose conservation is 1) necessary to fulfill purposes identified in the
38 established legislation or proclamation of Cane River Creole National Historical
39 Park and Cane River National Heritage Area; 2) key to the natural or cultural

1 integrity of the park and heritage area; or 3) identified as a goal in the park and
2 heritage area's general management plans or other relevant National Park Service
3 planning documents. Therefore, there would be no impairment of the park or the
4 heritage area's soil resources or values.

5 *IMPACTS OF ALTERNATIVE E, WATERWELL ROAD REPRESENTATIVE SITE,*
6 *PARTNERSHIP WITH LADOTD, THE PREFERRED ALTERNATIVE*

7 There would be no effect to soils under Alternative E, because no new facilities
8 would be constructed.

9 **Cumulative effects.** Cumulative effects would be the same as described for
10 Alternative B, except that the Natchitoches Rest Area would no longer be considered
11 under cumulative effects (as it is part of the alternative) and there would be no
12 contribution from Alternative E because soils would not be affected under this
13 alternative.

14 **Conclusion.** There would be no effect to soils under Alternative E, because no new
15 facilities would be constructed. Cumulative effects would be the same as described
16 for Alternative B (long term, local, minor, and adverse), although Alternative E
17 would make no contribution to cumulative effects.

18 **Impairment.** Alternative E would not have major adverse effects on soil resources or
19 values whose conservation is 1) necessary to fulfill purposes identified in the
20 established legislation or proclamation of Cane River Creole National Historical
21 Park and Cane River National Heritage Area; 2) key to the natural or cultural
22 integrity of the park and heritage area; or 3) identified as a goal in the park and
23 heritage area's general management plans or other relevant National Park Service
24 planning documents. Therefore, there would be no impairment of the park or the
25 heritage area's soil resources or values.

26 **WETLANDS AND FLOODPLAINS**

27 *AFFECTED ENVIRONMENT*

28 **Wetlands**

29 The National Wetlands Inventory of the U.S. Fish and Wildlife Service indicates
30 palustrine wetlands (dominated by trees and shrubs) of both permanent and
31 seasonal flooded areas are the type of wetlands that predominate the study area.
32 Riverine (river channel) and lacustrine (dammed river channel lacking trees or
33 shrubs) wetland areas exist, but to a much lesser extent (USFWS 1987).

34 The area along Cane River Lake primarily consists of channelized, riverine wetlands
35 of permanently flooded open water. The minor portion of Cane River Lake, north of
36 the city of Natchitoches, is primarily channelized, lacustrine wetlands of diked,
37 permanently flooded open water. Small isolated patches of palustrine, seasonally

1 flooded broad-leaved deciduous wooded wetlands do exist within the 300-meter
2 corridor adjacent to the river. Only the Waterwell Road site has wetlands identified
3 by the National Wetlands Inventory (forested and emergent wetlands along the Big
4 Henry Branch), identified through aerial photograph interpretation. An additional
5 wetlands analysis conducted at I-49 and Waterwell Road for the Natchitoches Rest
6 Area project also identified emergent, scrub/shrub, and forested wetlands as
7 occurring in the area along Henry's Branch, through on the ground wetland surveys
8 (LaDOTD 2005).

9 Floodplains

10 The floodplains of the Cane River National Heritage Area are mainly in a wide band
11 along the Red River and also in narrow bands along the major tributaries of the Red
12 River. They make up nearly two-fifths of the parish. The width of the floodplain is
13 less than 4 miles at its narrowest point just north of Natchitoches and more than 16
14 miles at its widest point. Most of the floodplain acreage is in cultivated crops such as
15 soybean, cotton, and corn. Most of the area along Cane River Lake lies within the
16 100- or 500-year floodplain.

17 Executive Order 11988 requires federal agencies to avoid, to the extent possible,
18 adverse impacts associated with the occupancy and modification of floodplains and
19 to avoid development in floodplains whenever there is a practical alternative. If a
20 proposed action is found to be in the applicable regulatory floodplain, the
21 responsible agency shall prepare a floodplain assessment, known as a statement of
22 findings.

23 Federal Emergency Management Agency floodplain maps for the area including
24 Cane River National Heritage Area were revised in 1998. There is no constructed
25 flood protection for heritage area lands west of Cane River. Of the sites being
26 considered in this environmental assessment, only the Derry and Waterwell
27 representative sites have a portion in the 100-year floodplain.

28 *IMPACTS OF ALTERNATIVE A, NO ACTION/CONTINUE CURRENT* 29 *MANAGEMENT*

30 Continuing current management would have no effects on wetlands or floodplains,
31 because park and heritage area offices are located in existing buildings.

32 **Cumulative effects.** Other plans and projects with the potential to affect wetlands
33 and floodplains include the Natchitoches Rest Area and zoning regulations. These
34 plans would affect wetlands through the creation of a dammed lake and the flooding
35 of wetlands, a long term, local, moderate, adverse effect. Floodplains would be
36 protected by floodplain ordinances for Natchitoches Parish and the city of
37 Natchitoches, a long term, regional, moderate, beneficial effect. Alternative A would
38 make no contribution to cumulative impacts.

1 **Conclusion.** Continuing current management would have no effects on wetlands or
2 floodplains, because no park and heritage area offices are located in existing
3 buildings. Cumulative effects to wetlands would be long term, local, moderate, and
4 adverse, from the flooding of a wetland at the new Natchitoches Rest Area.
5 Cumulative effects to floodplains would be long term, regional, moderate, and
6 beneficial, from the protection to floodplains from city and parish ordinances.

7 **Impairment.** Alternative A would not have major adverse effects on wetland or
8 floodplain resources or values whose conservation is 1) necessary to fulfill purposes
9 identified in the established legislation or proclamation of Cane River Creole
10 National Historical Park and Cane River National Heritage Area; 2) key to the
11 natural or cultural integrity of the park and heritage area; or 3) identified as a goal in
12 the park and heritage area's general management plans or other relevant National
13 Park Service planning documents. Therefore, there would be no impairment of the
14 park or the heritage area's wetland or floodplain resources or values.

15 *IMPACTS OF ALTERNATIVE B, LIME KILN ROAD REPRESENTATIVE SITE*

16 **Wetlands**

17 According to 1987 1:24,000 National Wetland Inventory maps, no wetlands exist at
18 this representative site (USFWS 1987). Therefore, there would be no effects on
19 wetlands from Alternative B.

20 **Floodplains**

21 According to FEMA maps, the representative site located at Highway 6 and Lime
22 Kiln Road is not in the 100-year floodplain. Therefore, activities under Alternative B
23 would have no effect on floodplains.

24 **Cumulative effects.** Cumulative effects to wetlands would be the same as described
25 for Alternative A. Effects to floodplains would also be the same as described for
26 Alternative A. Alternative B would make no contribution to cumulative effects for
27 either wetlands or floodplains.

28 **Conclusion.** No wetlands are located at the representative site, therefore,
29 Alternative B would have no effect on wetlands. Activities under Alternative B would
30 have no effect on floodplains, as the representative site is not in the floodplain.
31 Cumulative effects to wetlands and floodplains would be the same as described for
32 Alternative A (long term, local, moderate, and adverse for wetlands; long term,
33 regional, moderate, and beneficial for floodplains). Alternative B would make no
34 contribution to cumulative effects for either wetlands or floodplains.

35 **Impairment.** Alternative B would not have major adverse effects on wetland or
36 floodplain resources or values whose conservation is 1) necessary to fulfill purposes
37 identified in the established legislation or proclamation of Cane River Creole
38 National Historical Park and Cane River National Heritage Area; 2) key to the
39 natural or cultural integrity of the park and heritage area; or 3) identified as a goal in

1 the park and heritage area’s general management plans or other relevant National
2 Park Service planning documents. Therefore, there would be no impairment of the
3 park or the heritage area’s wetland or floodplain resources or values.

4 *IMPACTS OF ALTERNATIVE C, DERRY REPRESENTATIVE SITE*

5 **Wetlands**

6 According to 1987 1:120,000 National Wetland Inventory maps, no wetlands exist at
7 the Derry representative site (USFWS 1987). Therefore, there would be no effects on
8 wetlands from Alternative B.

9 **Floodplains**

10 The entire representative site under Alternative C would be in the 100-year
11 floodplain. Alternative C would involve adding impervious surfaces to the 100-year
12 floodplain, by constructing a visitor facility, an entry road, and a daytime parking lot.
13 This would result in approximately 2.4 acres of impervious surfaces added to the
14 floodplain of the Cane River.

15 Additional fill would be added underneath the visitor center to raise the first floor
16 elevation of the building to a minimum of 104.5 feet. This would reduce the risk of
17 the visitor center flooding.

18 The Cane River and Red River floodplains are expansive, given the low elevations of
19 the land in the region. The activities of this alternative would increase impervious
20 surfaces to the 100-year floodplain, but would not appreciably change floodplain
21 function or values, given this large extent. Effects may be detectable on a local scale.
22 Therefore, overall effects to floodplains under Alternative C would be long term,
23 local, minor, and adverse.

24 **Cumulative effects.** Cumulative effects to wetlands would be the same as described
25 for Alternative A. Alternative B would make no contribution to cumulative effects for
26 wetlands. Effects to floodplains from other plans and projects would also be the
27 same as described for Alternative A. Alternative C would contribute long term, local,
28 minor, adverse effects to cumulative effects on floodplains, resulting in an overall
29 cumulative effect of long term, minor, and beneficial to floodplains.

30 **Conclusion.** Because no wetlands occur at the Derry representative site, no effects
31 to wetlands would occur. As the entire Derry site is in the 100-year floodplain, effects
32 to the floodplain would occur from the creation of impervious surfaces, although
33 they would be small and local, resulting in long term, minor, adverse effects to
34 floodplains under Alternative C. Cumulative effects to wetlands would be the same
35 as described for Alternative A (long term, local, moderate, and adverse). Cumulative
36 effects to floodplains would be long term, minor, and beneficial, with Alternative C
37 contributing long term, local, minor, adverse effects from the construction of a
38 building and parking lots in the floodplain.

1 **Impairment.** Alternative C would not have major adverse effects on wetland or
2 floodplain resources or values whose conservation is 1) necessary to fulfill purposes
3 identified in the established legislation or proclamation of Cane River Creole
4 National Historical Park and Cane River National Heritage Area; 2) key to the
5 natural or cultural integrity of the park and heritage area; or 3) identified as a goal in
6 the park and heritage area's general management plans or other relevant National
7 Park Service planning documents. Therefore, there would be no impairment of the
8 park or the heritage area's wetland or floodplain resources or values.

9 *IMPACTS OF ALTERNATIVE D, WATERWELL ROAD REPRESENTATIVE SITE*

10 **Wetlands**

11 Two large wetlands (forested wetlands surrounding an emergent wetland) do exist
12 along the Big Henry Branch 1,000 feet from the I-49 Waterwell Road exit in the
13 southeast corner, where the Waterwell Road representative site is located, as
14 indicated on 1:24,000 1987 National Wetland Inventory maps (USFWS 1987).
15 However, no construction activities would occur in the wetlands and mitigation
16 measures would be used upslope of the wetlands to prevent sediment and potential
17 contaminants (such as fuel) from reaching the wetlands. Therefore, effects to
18 wetlands would be negligible and adverse under Alternative D.

19 **Floodplains**

20 A small portion of the representative site at Waterwell Road would be in the 100-year
21 floodplain, along the banks of the Big Henry Branch. However, because the majority
22 of the 10 acres would not be in the 100-year floodplain, the visitor center and
23 associated development (parking lot, entrance road) could be sited so as to avoid the
24 floodplain. Construction activities would, therefore, occur near the floodplain, but
25 not in it, causing no effects to floodplains under Alternative D.

26 **Cumulative effects.** Cumulative effects to wetlands would be the same as described
27 for Alternative A. Effects to floodplains would also be the same as described for
28 Alternative A. Alternative B would make no contribution to cumulative effects for
29 floodplains, although it would contribute negligible, adverse effects for wetlands.

30 **Conclusion.** Effects to wetlands would be negligible and adverse, due to
31 construction activities near a large wetland complex. No effects to floodplains would
32 occur, as construction could be sited outside of the 100-year floodplain. Cumulative
33 effects to wetlands and floodplains would be the same as described for Alternative A,
34 with Alternative D contributing negligible, adverse effects to wetlands and no effects
35 to floodplains.

36 **Impairment.** Alternative D would not have major adverse effects on wetland or
37 floodplain resources or values whose conservation is 1) necessary to fulfill purposes
38 identified in the established legislation or proclamation of Cane River Creole
39 National Historical Park and Cane River National Heritage Area; 2) key to the
40 natural or cultural integrity of the park and heritage area; or 3) identified as a goal in

1 the park and heritage area’s general management plans or other relevant National
2 Park Service planning documents. Therefore, there would be no impairment of the
3 park or the heritage area’s wetland or floodplain resources or values.

4 *IMPACTS OF ALTERNATIVE E, WATERWELL ROAD REPRESENTATIVE SITE,*
5 *PARTNERSHIP WITH LADOTD, THE PREFERRED ALTERNATIVE*

6 **Wetlands**

7 Because no new facilities would be constructed under Alternative E, there would be
8 no effects to floodplains.

9 **Floodplains**

10 Because no new facilities would be constructed under Alternative E, there would be
11 no effects to floodplains.

12 **Cumulative effects.** Cumulative effects to wetlands would be the same as described
13 for Alternative A. Effects to floodplains would also be the same as described for
14 Alternative A. Alternative E would make no contribution to cumulative effects for
15 either wetlands or floodplains.

16 **Conclusion.** No effects to either wetlands or floodplains would occur under
17 Alternative E. Cumulative effects would be the same as described for Alternative A
18 (long term, local, moderate, and adverse for wetlands; long term, regional, moderate,
19 and beneficial for floodplains)..

20 **Impairment.** Alternative E would not have major adverse effects on wetland or
21 floodplain resources or values whose conservation is 1) necessary to fulfill purposes
22 identified in the established legislation or proclamation of Cane River Creole
23 National Historical Park and Cane River National Heritage Area; 2) key to the
24 natural or cultural integrity of the park and heritage area; or 3) identified as a goal in
25 the park and heritage area’s general management plans or other relevant National
26 Park Service planning documents. Therefore, there would be no impairment of the
27 park or the heritage area’s wetland or floodplain resources or values.

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