

Castle Nugent Farms

St. Croix, U.S. Virgin Islands

National Park Service
U.S. Department of the Interior

Southeast Regional Office
Atlanta, Georgia



Special Resource Study and Environmental Assessment
July 2010 Draft

This report has been prepared to provide Congress and the public with information about the resources in the study area and how they related to criteria for inclusion within the National Park System. Publication and transmittal of this report should not be considered an endorsement for a commitment by the National Park Service to seek or support either specific legislative authorization for the project or appropriation for its implementation.

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National Park Service
Southeast Regional Office
Planning and Compliance Division
Atlanta, Georgia 30303

www.nps.gov

Summary

In 2006 Congress directed the Secretary of the Interior to undertake a study of Castle Nugent Farms on the island of St. Croix, U.S. Virgin Islands. The Castle Nugent Farms Study Act (Public Law 109-317, October 11, 2006) directs the Secretary to study the suitability and feasibility of designating Castle Nugent Farms as a unit of the National Park System, and for other purposes. In fulfilling the requirements of the Act, the National Park Service (NPS) specifically set out to determine 1) if the resources present at Castle Nugent Farms are nationally significant, 2) if the site would be a suitable and feasible addition to the National Park System, 3) whether direct NPS management or alternative protection by other public agencies or the private sector is appropriate for the area, and 4) what management alternative would be most effective and efficient in protecting the area's resources and allowing for public enjoyment.

The Castle Nugent Farms study area is located along the southeastern shore of St. Croix, about three miles south of the island's principal town of Christiansted. The area consists of both terrestrial and submerged lands approximating 11,500 acres, of which three quarters are submerged lands. The non-submerged lands, or uplands, consist of approximately 2,900 acres. Pursuant to the findings in the Act, the study area is an intact historic landscape that includes numerous sites associated with pre-Columbian and post-European settlement, including 18th century cotton plantation structures. The study area also contains an offshore coral reef, pristine shoreline, dry forest and pasturelands that have a long-standing association with Senepol cattle breeding, and sensitive habitats where various threatened and endangered species live and breed. A shoreline of coral cobble beaches and small crescent bays with sea grass beds and coral patch reefs extends for approximately 4.5 miles. The marine areas extend out directly from the shore across the coral reef and sea grass meadows to the three-mile territorial limit.

The NPS has found that the site meets established criteria for inclusion in the National Park System, and that the potential inclusion of the area to the National Park System enjoys strong local support.

National Significance of Castle Nugent Farms

The NPS has determined that the Castle Nugent Farms area represents a nationally significant cultural landscape that provides a glimpse into the historic development of St. Croix in the 18th and 19th centuries when cotton plantations dotted the south shore of the island. The area conveys a strong stepping-back-in-time quality to a period when cotton was an important export crop for the economic and social development of the new Danish colony. The era of cotton

plantation agriculture on St. Croix, which depended on slave labor, was critical to the establishment of the Danish colonial system in the Caribbean.

Many of St. Croix's south shore plantations that produced cotton as their primary crop did not transition to the production of sugar cane as most other Virgin Islands estates did. In subsequent years, the lands continued to be used for agricultural purposes, including the raising of cattle that continues today. Largely because of this continuum, the agrarian landscape at Castle Nugent remains well intact from early colonial days. The fields, structures, ruins, and archeological resources provide an outstanding laboratory to study and interpret firsthand the cotton era on St. Croix.

Suitability

The resources of the Castle Nugent Farms area reflect the historical cotton era in the Virgin Islands better than any other collection of estates under public ownership within the U.S. Virgin Islands. The establishment of a national park unit at Castle Nugent Farms would provide the opportunity to preserve and protect an outstanding Caribbean cultural landscape and interpret the cotton era and related agricultural themes that have been instrumental in the development of St. Croix and the Virgin Islands. The historical estates that operated within the Castle Nugent lands span every period of the United States Caribbean colonial expansion, including the French, English, Danish eras; and continue into the American territorial period of today. Of particular importance, the estates include the remains of both French and Danish plantation systems in the Virgin Islands, neither of which are well represented in the National Park System.

Feasibility

The NPS finds the study area to be feasible to manage as a unit of the National Park System. The size and configuration of the area are comparable to existing units and capable of being efficiently managed. The resources, including coral reefs, cultural landscapes, historic structures, dry uplands, rare wetlands, and a cattle breeding and ranching operation, are similar to those managed by other units of the system, though their combination and expression in this location are unique, and would not place an undue burden on the managing agency. There are significant potential threats to the resources, namely commercial and real estate development, and there is strong local support for action to protect the resources. There is at least one willing seller within the study area (and potential additional willing sellers). The future costs are uncertain, but would likely feature high acquisition costs (if purchased; donation is also an option for acquisition) and moderate administration costs. Costs to develop facilities for visitor use and education have not been determined.

Alternatives for Management

Management alternatives are developed after the resources of a study area are determined to be eligible for potential inclusion in the National Park System. The alternatives further explore the feasibility of a potential new area by identifying partnership opportunities, staff or development requirements, and costs associated with operating a national park unit at the site. Drawing from stakeholder and public input, and a clear need for NPS management, the study team developed two management alternatives for the preservation, protection, and visitor enjoyment of resources within the Castle Nugent Farms study area, as well as a no action alternative. An alternatives summary is provided below.

Public sentiment has been overwhelmingly in support of creating a national park unit at Castle Nugent Farms. As part of the study, the NPS conducted public meetings to present management alternatives. The NPS received over 300 comments in favor of establishing a national park unit and only one comment in opposition. A recurring point made in comments was the outstanding opportunity the Castle Nugent Farms area offers to preserve an important remnant of the island's agricultural heritage. Other comments emphasized the site's unobstructed vistas from the hills to the sea as increasingly rare on St. Croix, the many potential low-impact recreational opportunities, the need to continue the breeding of the Senepol cattle, and the importance of protecting the wide variety of habitats and species at Great Pond, the undeveloped south shore, and the offshore coral reef ecosystem and associated fisheries.

	Alternative A No Action	Alternative B Castle Nugent NHS	Alternative C Castle Nugent NHS
Overall Management Framework	No action by the NPS or any other public entity.	Management of full range of cultural, natural, and recreational resources at Castle Nugent Farms, including extensive land and marine ecosystem and remnants of nine historical plantations. Partnership with Government of Virgin Islands to manage marine areas owned by territory.	Management of extensive range of cultural resources in study area. Preservation and protection of core historic resources that are vital to interpreting cotton plantation story.
Operations	None.	Optional stand-alone unit or operations supported from Christiansted National Historic Site.	Operations supported from Christiansted National Historic Site.
Acreage	None.	11,500 acres (2,900 terrestrial and 8,600 marine acres)	1,750 terrestrial acres
Visitor Experience	Public access restricted; no formal visitor programs due to private ownership and private development.	Widest variety of visitor experience opportunities.	Modest variety of visitor experience opportunities.
Initial Site Development and Facilities	None.	Visitor contact, parking and restroom amenities.	Visitor contact, parking and restroom amenities.
Cost Estimate (operations)	None	\$850,000 - \$1,150,000 annually	\$750,000 - \$850,000 annually

Most Effective and Efficient Alternative

Pursuant to Public Law 105-391, known as the National Parks Omnibus Management Act of 1998, this study also identifies the most effective and efficient alternative for protecting significant resources and providing for public enjoyment. The NPS has determined that Alternative B would be the most effective and efficient alternative. Alternative B proposes the most comprehensive approach to managing the natural and cultural resources of the study area. Alternative B has the most acreage of all the alternatives, and would thus provide the highest level of protection to the cultural landscape and the widest range of resource protection measures, visitor access, interpretive programs and recreational opportunities.

Under Alternative B, the land area of the park would be expansive, encompassing the approximately 2,900 acres that correspond to the study area and all the associated cultural and natural resources within that boundary. Although vast marine areas are also included within the proposed boundary of the most effective and efficient alternative, the NPS proposes that such areas should remain under U.S. Virgin Islands jurisdiction and management. The inclusion of the marine areas within the boundary would facilitate collaboration and partnering between the Government of the U.S. Virgin Islands and the NPS towards the protection of resources within a large coral reef ecosystem on the south shore of St. Croix. As the alternative with the largest acreage and greatest diversity of cultural and natural resources, Alternative B has the most potential to provide the widest variety of visitor experience opportunities. Efficient administration of Alternative B could be enhanced by sharing operational resources with Christiansted National Historic Site, an existing NPS unit on St. Croix that is only three miles from the Castle Nugent Farms study area.

Environmental Assessment

In order to comply with the National Environmental Policy Act (NEPA), an environmental assessment (EA) accompanies this special resource study. The act requires that federal agencies, before taking an action, discuss the environmental impacts of that action, feasible alternatives to that action, and any adverse environmental effects that cannot be avoided if the proposed action is implemented. The EA describes the potential environmental impacts of implementing each of the alternatives (i.e., the No Action alternative and the two action alternatives) on natural resources, cultural resources, visitor use and experience, site management/administration, and the socioeconomic environment. These impacts provide a basis for comparing the advantages and disadvantages of the two action alternatives. This document also fulfills the requirements of Section 106 of the National Historic Preservation Act of 1966, as amended, and has been prepared in accordance with the implementing

regulations of the Advisory Council for Historic Preservation (36 CFR Part 800).

NPS Policy requires that each special resource study identify an environmentally preferred alternative. The environmentally preferred alternative is determined by applying criteria set forth in NEPA, as guided by direction from the Council on Environmental Quality (CEQ). The CEQ has stated that the environmentally preferred alternative is the alternative that will promote the national environmental policy as expressed in NEPA, Section 101. The environmentally preferred alternative for the study is Alternative B, and the evaluation can be found on page 75.

This report will be distributed to the public for review and comment. Following the review period and any subsequent changes, the study will be transmitted to Congress. The analysis and findings contained in this study do not guarantee the future funding, support, or any subsequent action by the NPS, the Department of the Interior, or Congress. Identification of an environmentally preferred and most effective and efficient alternative should not be viewed as a positive or negative recommendation by the NPS for any future management strategy or action.

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Chapter 1 Introduction

Purpose and Need

In the National Park System General Authorities Act of 1970, Congress declared that areas comprising the National Park System are cumulative expressions of a single national heritage. Potential additions to the National Park System should therefore contribute in their own special way to a system that fully represents the broad spectrum of natural and cultural resources that characterize the nation.

New areas are typically added to the National Park System by an Act of Congress. However, before Congress decides to create a new park or add land to an existing park, it needs to know whether the area's resources meet established criteria for designation. The NPS is often tasked by Congress to evaluate potential new areas for compliance with these criteria and document its findings in a special resource study.

On October 11, 2006, Public Law 109-317 was enacted directing the Secretary of the Interior to conduct a special resource study for an area known as Castle Nugent Farms located on the island of St. Croix in the U.S. Virgin Islands. In fulfilling the requirements of Public Law 109-317, the NPS specifically set out to determine 1) if the resources present at Castle Nugent Farms are nationally significant, 2) if the site would be a suitable and feasible addition to the National Park System, 3) whether direct NPS management or alternative protection by other public agencies or the private sector is appropriate for the area, and 4) what management alternative would be most effective and efficient in protecting the area's resources and allowing for public enjoyment. See Appendix A to view Public Law 109-317.

This study summarizes an extensive process of research, outreach, and evaluation by a professional study team assembled for the above purposes. It is written to provide the Secretary of the Interior and Congress with information on the sites and resources at Castle Nugent Farms and contains alternatives for the management, administration, and protection of those sites and resources, as well as an evaluation of their appropriateness for inclusion in the National Park System. Cost estimates for annual operations are also provided.

The study team was comprised of staff from the NPS Southeast Regional Office's Planning and Compliance Division, Christiansted National Historic Site/Buck Island Reef National Monument/Salt River Bay National Historical Park and Ecological Preserve, and the Southeast Archeological Center, with additional input and advice from a host of local area professionals and interested

individuals. The study team included a cross-section of local and regional experts in natural and cultural resources management, administration, interpretation, and planning who are well-qualified to evaluate the potential of the study area for inclusion in the National Park System in accordance with established NPS criteria.



Map illustrating location of St. Croix and Castle Nugent Farms study area.

Overview of Castle Nugent Farms

The Castle Nugent Farms study area is located along the southeastern shore of St. Croix, about three miles south of the island's principal town of Christiansted. The area consists of both terrestrial and marine lands, of which three quarters are submerged lands. The terrestrial lands consist of approximately 2,900 acres. This terrain, which has been largely spared from modern intrusions, is mostly rolling and hilly with a mixture of tropical dry forest, native vegetation, and rangeland that offers picturesque views to the Caribbean Sea and to distant parts of the island. A shoreline of coral cobble beaches, small crescent bays, and sea grass lagoon extends for approximately 4.5 miles. The marine areas extend beyond the coral reef out three miles from the shore to the U.S. Virgin Islands territorial boundary.

The lands within the study area have strong historical associations to St. Croix's agricultural heritage, containing remnants of plantations that produced mostly cotton, but also sugar, indigo and the raising of cattle at later points in time. In particular, the NPS believes the resources of the study area reflect the cotton era of the Virgin Islands better than any other collection of estates under public ownership within the U.S. Virgin Islands. The setting at Castle Nugent Farms conveys a strong stepping-back-in-time quality to an era in St. Croix's past when cotton was an important export crop for the economic and social development of the new Danish colony.

Although relatively brief, the era of cotton plantation agriculture on St. Croix was critical to the establishment of the Danish colonial system in the Caribbean. Many of St. Croix's south shore plantations produced cotton as their primary crop and did not transition to the production of sugar cane as so many other Virgin Islands estates did. Subsequent years saw the lands continue to be used for agricultural purposes, including the breeding and rearing of a uniquely St. Croix breed of cattle—the Senepol—that continues today. Largely because of this continuum the agrarian landscape at Castle Nugent remains well intact from the earliest days of colonial exploitation.

The fields, structures, ruins, and archeological resources of the study area provide an outstanding laboratory to study and interpret firsthand the cotton era on St. Croix. The centerpiece of the area—the historic Castle Nugent estate—is an excellent example of an eighteenth century Danish cotton estate and the most intact plantation within the proposed boundary. The surviving estate structures include a large estate house dating to the 1730s, a rare cotton house that is believed to be the last of its kind standing on St. Croix, and two slave row houses, among other historic buildings. The study area also includes five pre-Columbian archeological sites, two of which are among the oldest sites on St. Croix.

The cultural resources at Castle Nugent Farms are complimented by abundant natural resources. The eastern end of the study area is dominated by Great Pond, which is the second largest salt pond in the U.S. Virgin Islands and considered by many local experts to be the most important wetland on the island of St. Croix. Great Pond and its adjacent bay provide critical habitat for both resident and migratory birds, reef fish and sea turtles. The pond is also rimmed by extensive black mangrove stands, which are under increasing threat in the U.S. Virgin Islands. One of the largest and healthiest fringing coral reef systems in the entire region lies just a few hundred feet offshore. The St. Croix coral reef system is one of the best developed systems in the Caribbean and the most extensive coral reef system on the Puerto Rican-Virgin Islands shelf.

As noted, the Castle Nugent Farms study area also has a long-standing association with cattle ranching. Large sections are still used to breed and raise Senepol cattle, which is a special hybrid breed developed on St. Croix in the early

twentieth century to withstand its tropical climate. For over 50 years the Castle Nugent Farms cattle ranch has been a fixture of St. Croix's economy and is one of the oldest ranches in the West Indies.

There are seven principal landowners within the study area. The majority of lands are under the ownership of a single family, which was instrumental in approaching U.S. Virgin Islands Delegate to Congress Donna Christensen to garner support for the introduction of Public Law 109-317. Land ownership is discussed in more detail in Chapter 3.

Study Methodology

By law (Public Law 91-383 §8 as amended by §303 of the National Parks Omnibus Management Act (Public Law 105-391)) and NPS policy, potential new units of the National Park System must 1) possess nationally significant resources, 2) be a suitable addition to the system, 3) be a feasible addition to the system, and 4) require direct NPS management or administration instead of alternative protection by other agencies or the private sector. A seven step study methodology was used to determine if the Castle Nugent Farms study area satisfies the required conditions.

Step 1: Evaluate National Significance, Suitability, and Feasibility

To be eligible for designation potential new areas must be nationally significant, a suitable addition to the National Park System, and feasible to manage and operate. To be considered nationally significant, an area must satisfy all four of the following standards:

- The area must be an outstanding example of a particular resource type.
- The area must possess exceptional value or quality in illustrating or interpreting the natural or cultural themes of our nation's heritage.
- The area must offer superlative opportunities for recreation, public use and enjoyment, or scientific study.
- The area must retain a high degree of integrity as a true, accurate, and relatively unspoiled example of the resource.

To be suitable as a new unit, an area must represent a natural or cultural theme or type of recreational resource that is not already adequately represented in the National Park System or is not comparably represented or protected for public enjoyment by another entity.

To be feasible as a new unit, an area's natural systems or historic settings must be of sufficient size and appropriate configuration to ensure long-term protection of the resources and to accommodate public use. It must have potential for efficient administration at reasonable cost. Important feasibility factors include landownership, access, threats to the resource, and staff and operational requirements.

A complete discussion of national significance, suitability, and feasibility is presented in Chapter 3.

Step 2: Initiate an Evaluation of Need for Direct National Park Service Management

If the resources meet the criteria for national significance, suitability, and feasibility, the study process continues with the determination of need for direct NPS management instead of alternative protection by another group.

Step 3: Assess Public Opinion and Ideas about Managing the Site

During a process called "scoping," information was obtained about the broad range of potential ideas, goals, and objectives that future visitors, park neighbors, local and territorial government agencies, island residents, and the general public would like to see achieved at the Castle Nugent Farms site. Scoping occurred throughout the planning process. A summary of stakeholder ideas and concerns is presented in Appendix C.

Step 4: Develop Management Alternatives

Working in conjunction with its many planning partners, the planning team drew upon the full range of stakeholder input to formulate management alternatives, each reflecting a different combination of resource protection, interpretation, management focus, and cost considerations. A discussion and comparison of each of the management alternatives is included in Chapter 4.



Public meetings were conducted to present findings of the study. *NPS*

Step 5: Analyze Potential Environmental Consequences Associated with each Management Alternative

An analysis of the consequences of each alternative on the fundamental resources of the Castle Nugent Farms area, other resources, visitor experience, management operations, and socioeconomic environment was prepared. The impact analysis focuses on those resources and values that would be affected by one or more of the alternatives. The analysis includes a description of the context, duration, and intensity of impacts on all the major resources and values affected by one or more of the alternatives. Direct and indirect impacts are described, as well as consideration of the effects of connected, similar, and cumulative actions. The environmental review contributed to the evaluation of the need for direct NPS management.

Step 6: Publish Study Report and Distribute for Public Review and Comment

As part of the overall effort to encourage public involvement in the decision-making process, solicitation of public comment on the special resource study will follow the requirements of NEPA. Comments are considered a critical aid in helping the NPS refine and reshape, if necessary, its findings so that they best represent existing and potential future conditions at the site. After public review, comments on the study will be collected, analyzed, summarized.

Step 7: Transmit Study Report to Congress

The study report and summary of public comments will be transmitted by the NPS to the Department of the Interior. The Department of the Interior will transmit the study and a recommendation to Congress. Any future action to designate a national park unit must be authorized by Congress.

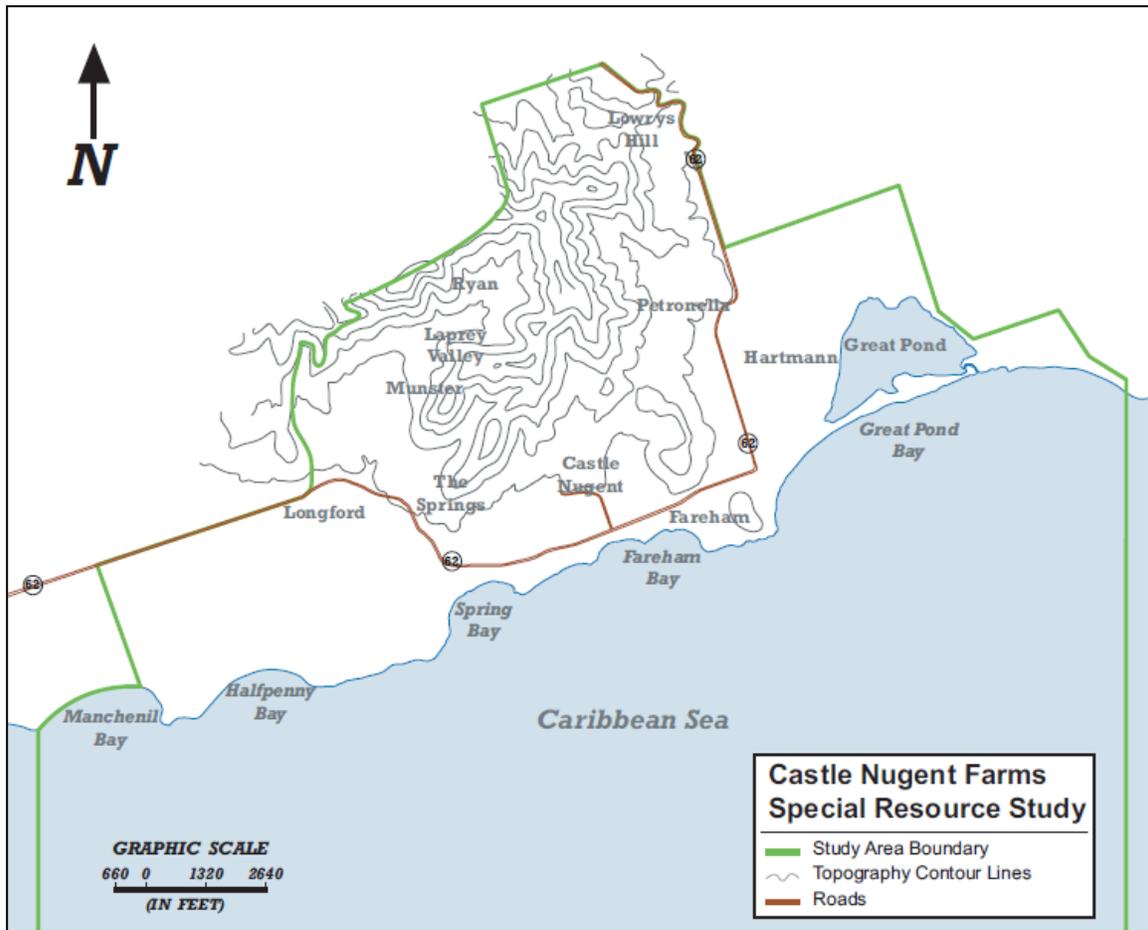
Study Limitations

A special resource study serves as one of many reference sources for members of Congress, the NPS, and other persons interested in the potential designation of an area as a new unit of the National Park System. The reader should be aware that the analysis and findings contained in this report do not guarantee the future funding, support, or any subsequent action by Congress, the Department of the Interior, or the NPS. Because a study is not a decision-making document, it does not identify a preferred NPS course of action.

Many projects that are technically possible to accomplish may not be feasible in light of current budgetary constraints and other NPS priorities. This is especially likely where acquisition and development costs are high, the resource may lose its significant values before acquisition by the NPS, or other protection action is

possible. Preliminary staffing and operational cost estimates are provided for each management alternative for comparison purposes only. Acquisition costs are unknown at this time and would be determined through the completion of future land appraisals that are outside the scope of this study.

Chapter 2 Description of the Study Area



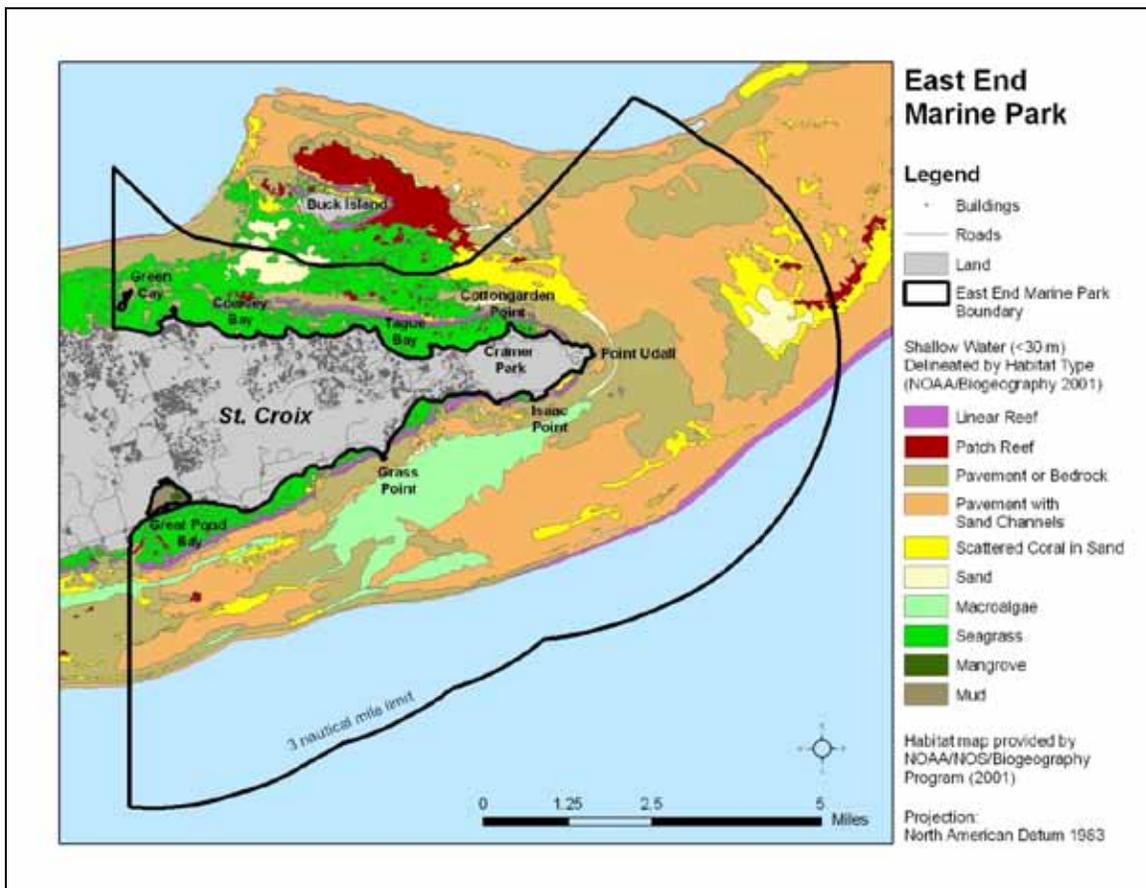
Map showing general boundary of the Castle Nugent Farms study area. The area extends offshore to the three-mile territorial boundary limit. NPS

Overview of the Castle Nugent Farms Study Area

Encompassing an impressive expanse of land and sea, the Castle Nugent Farms study area is located along the arid southeastern shore of St. Croix, about three miles south of the island's principal town of Christiansted. The area generally consists of 2,900 terrestrial acres that front the Caribbean Sea and 8,600 marine acres that extend directly offshore for a total distance of three miles. The terrain is mostly hilly and rolling, characterized by a mixture of tropical dry forest, native vegetation, and rangeland that offer sweeping vistas of the sea and distant parts of the island. The land slopes down to the sea from a ridgeline that rises as high as 750 feet. A coastline of coral cobble beaches, small crescent bays, and sea grass lagoons extends east-west for approximately 4.5 miles. Route 62 (also known as

the South Shore Road), a paved two-lane road, traverses the study area, providing convenient access.

The marine portion of the study area overlaps the western end of St. Croix's East End Marine Park, a 38,400-acre area that was established in 2003 as the first marine park in the Virgin Islands. The park, which is under the jurisdiction of the Government of the Virgin Islands, provides protection of submerged lands and coral reefs that extend from just east of Green Cay National Wildlife Refuge on the north shore of St. Croix, around the easternmost tip of the island (known as Point Udall), to the eastern edge of Great Pond. The marine areas of the Castle Nugent Farms study area continue from the overlap area to the west to Estate Granard at Halfpenny Bay.



Map showing boundary and habitats of East End Marine Park. The park extends into the Castle Nugent Farms study area at Great Pond Bay. VI DPNR

The terrestrial lands of the study area have strong historical associations to St. Croix's agrarian past. The lands possess various ties (including extensive physical remnants) to plantations that were smaller cotton, sugar, indigo and cattle plantations at earlier points in time. The lands are referred to mostly by the names of the original Danish plantations—also known as estates—that were

established there. These estates include Castle Nugent (the smaller plantation that carries the same name as this study), Laprey Valley, Longford, The Springs, Petronella, Hartmann (also known as Great Pond), Lowrys Hill, Fareham, and Munster. Due to their cultural significance, these properties are referenced by their historical names throughout this document. Although in different states of repair, the plantations as a whole contain a rich variety of surviving historic and prehistoric resources that include artifacts from pre-Columbian settlements and extant structural remains from several of the Danish-era plantations.

The property known today as Castle Nugent Farms is the core of the study area. This property encompasses approximately 1,750-acres of the entire 2,900-acre land area. The original Castle Nugent estate was first farmed as early as 1738. Over the centuries, the farm has had many owners, one of them being Christopher Nugent, who bought the farm in 1774 and gave the estate its name. The estates formerly known as Laprey Valley, The Springs, and Munster were included within the original Castle Nugent holdings in the late eighteenth and nineteenth centuries. The estates Fareham, Petronella, and Longford were added when Castle Nugent was purchased by Howard and Mary Wall in 1951. As director of the Cruzan Rum Factory, Wall played an important role in reorganizing the St. Croix sugar and rum business in the 1930s and 1940s. In purchasing the Castle Nugent property, Wall sought to use this area of the south shore as a cattle ranch. At that time, the breeding of cattle was a burgeoning staple on St. Croix and the open agricultural lands were ideally-suited to developing and breeding large herds. Today, large sections are still used to raise a special breed of cattle known as the Senepol breed.

At the time of the Wall purchase the condition of the historic Castle Nugent plantation complex was in a state of decline, having been largely neglected during the previous few decades. Consequently, beginning in the early 1950s, the Walls started rehabilitating various buildings. In 1974, the Castle Nugent property was passed on to their daughter, Caroline Gasperi. By this time the Walls had acquired much of the south shore area, including the estates at Cane Garden and Longford. Their total holdings amounted to roughly 2,400 acres, which is a little less than the approximate land area of this study.

The study area also contains a diversity of natural communities and habitats that have experienced relatively little disturbance since the colonization of the island. Two features of particular note greatly enhance the stature of the study area's natural environment: an area known as Great Pond and a substantial offshore coral reef ecosystem. Great Pond is a fringe, reef-protected salt pond and lagoon that contains extensive mangrove stands and serves as a haven for a multitude of birdlife, including federally listed threatened and endangered species, both resident and migratory. The coral reef system, which extends from the shoreline to only a few hundred feet offshore within territorial waters, is one of the largest and healthiest fringing coral reef systems in the entire region.

Overview of St. Croix

St. Croix is located roughly 40 miles south of St. Thomas and St. John and about 60 miles east-southeast of Puerto Rico. It is separated from Puerto Rico and the northern U.S. Virgin Islands by the 14,000-foot deep Virgin Islands Basin.¹ St. Croix is the largest of the Virgin Islands, covering approximately 84 square miles and measuring nearly 22 miles long by nearly six miles wide. It is the topographic high of a single landmass, and sits on the southern edge of the Greater Antillean Ridge.² For this reason, it is geologically more similar to the islands of the Greater Antilles (Puerto Rico, Hispaniola, and Cuba) than the Lesser Antilles.

St. Croix differs in many ways from the islands of St. Thomas and St. John, which are located approximately 40 miles to the north. The northern Virgin Islands are dominated by volcanic mountains with very steep slopes and rubble-filled guts; coastal plains are virtually absent. St. Croix, on the other hand, is comprised of two main physiographic regions consisting of two mountain ranges—one on the east end and one on the northwest side of the island—separated by a large central valley, and a broad gently rolling coastal plain on the south.³ During the Cretaceous to the Tertiary periods, the central valley separating the two mountain ranges was actually a basin structure that separated two distinct islands. As lands were uplifted and sediments deposited on the floor, eroded alluvium gradually filled the basin, becoming first a lagoon surrounded by a coral reef then an alluvial fan-covered valley. Over time these wide fans have continued to bury the marine sediments from Christiansted (located on the north-central coast) toward the southwest, while recent marine terraces have been exposed in coastal areas and in the south-central and southwestern regions of the island. The mountains have been cut by streams or water flowing down guts, resulting in steep slopes and valleys.

St. Croix has a dry, subtropical climate. There are two primary seasons—wet and dry—that are further divided into short and long wet and dry periods. The long dry season is typically between January and March or April, and a second, shorter dry season is typically in June and July. Throughout the Greater Antilles, the northern halves of the islands (windward side) are usually much wetter than the southern, leeward sides. The mountainous and steep slope areas are exposed to consistently warm temperatures and seasonal cycles of wet winters and dry summers, resulting in the development of soils that can vary greatly in type within a short distance.

Historical Background of St. Croix

Before Europeans came to the Americas, the Antilles were inhabited by Amerindian societies, early explorers and settlers who were the ancestors of today's South American Arawakan-speaking societies. The first inhabitants of St.

Croix were part of a larger migration of many groups of people out from the Middle and Lower Orinoco River Valley (in present day Venezuela) beginning ca. 1000 B.C. These peoples continued to travel up the island chain of the Lesser Antilles, reaching the Virgin Islands and Puerto Rico ca. 500 B.C. As horticulturalists they grew cassava, a variety of fruits, and likely brought cotton with them to make nets and hammocks. They also made finely decorated ceramics, fished and gathered shellfish. On some of the islands they encountered peoples whose ancestors had arrived some 2,000 years prior. Once on the islands, these peoples underwent numerous societal changes, interacted with their neighbors, and maintained contact with their South American homelands. Over time, they developed into the Taino chiefdoms that Christopher Columbus would encounter during his voyages to the Americas.



Carib warrior. *St. Croix Landmarks Society*

Columbus visited St. Croix on November 14, 1493 during his second voyage, and named the island Santa Cruz (“Holy Cross”). The explorers anchored off a natural bay west of Christiansted, known today as Salt River. A team of 25 men went ashore to obtain fresh water, and encountered a group of women and small boys. They were told that the island had been taken over by Island-Caribs; a debate remains among scholars concerning who these people actually were. Columbus’ crew took these people captive, and while they were returning to their fleet of 17 vessels they encountered a canoe containing four men, two women, and a boy. After a brief skirmish, the Spanish quickly overtook the small group of Amerindians, killing one and taking the rest captive. Thus, the first recorded armed conflict between native Amerindian peoples and Europeans occurred on St. Croix.

Spain made no effort to colonize Santa Cruz, though it did raid the island for slaves. By 1550, the Spanish Crown ordered the extermination of the island’s residents; however, in 1587 John White, who stopped at the island during his long voyage from England to the Roanoke colony in Virginia, reported seeing a few people and small villages. No European groups attempted to colonize the island until the 1630s, when several attempts were made by Dutch, French, and English settlers, all of which were quickly stopped by the Governor of Puerto Rico. The island continued to change hands among these European powers until 1650, when France took control. In 1653, King Louis XIV deeded the island to the Knights of Malta, but by 1665 control had been given to the French West India Company. This effort failed, and in 1674 the company’s control was dissolved and St. Croix was ruled directly by the French Crown.

Under the control of the French Crown, the island experienced a brief period of economic and agricultural prosperity. By the end of the 1680s, however, illegal trade, war, privateering, and piracy had made the small colony no longer economically feasible. In 1696, the French Crown removed the settlers to its other Caribbean island colonies, leaving behind the settlers' horses, cattle, and sheep, and burning their houses.



Slave village. *St. Croix Landmarks Society*

On June 13, 1733, King Christian IV of Denmark purchased the island and gave control to the Danish West India and Guinea Company. Under the leadership of Frederik Moth the town of Christiansted was established on the ruins of the small French settlement St. Jean. The settlement of St. Croix proceeded quickly. The island's forests, previously burned by French colonists, were once again destroyed in order to create cultivable lands.⁴ These lands were then subdivided into

oblong squares in order to provide equally sized and valued properties to investors; each square measured roughly 2,000 feet (east-northeast to west-southwest) by 3,000 feet (north-northwest to south-southeast), for a total of 150 Danish acres (40,000 square feet to the acre).⁵

By 1743, 264 plantations had been established on the island with roughly half growing cotton and half growing sugarcane. The average size of these plantations was approximately 120 Danish acres. Many of St. Croix's first planters in the Danish regime were from other Caribbean islands $\frac{3}{4}$ St. Eustatius, Virgin Gorda, and Tortola. Because so much of the cultivable land was devoted to sugarcane or cotton, most other provisions, like breadstuffs, salt-meat, and even salt-fish had to be imported.⁶

In 1747, the Danish West India and Guinea Company allowed the planters to have self rule and administration. By 1753, these planters had appealed to the Danish Crown to purchase the Company's Caribbean holdings, which occurred in 1754. With the crown directly involved, a long period of growth followed. Between 1760 and 1800, as a result of free-trade policies, St. Croix's population increased dramatically and great profits were realized from the production of sugar, molasses, rum, and cotton.

By 1803, the population of the island was roughly 30,000, with some 26,000 being slaves engaged in planting and processing sugar cane. The island's prosperity began to slow, however, with the cessation of Denmark's participation in the Atlantic slave trade in 1792. St. Croix had played an important role in the triangular trade route that connected Europe, Africa and the Caribbean in an exchange of human cargo, sugar and rum. Around this same time, competing beet sugar prices caused a sharp decline in the profitability of cultivating sugarcane. An increasing number of slave revolts in the first half of the nineteenth century led to the emancipation of slaves in 1848. Along with a series of hurricanes and droughts hitting the island during this period, St. Croix fell into economic decline.

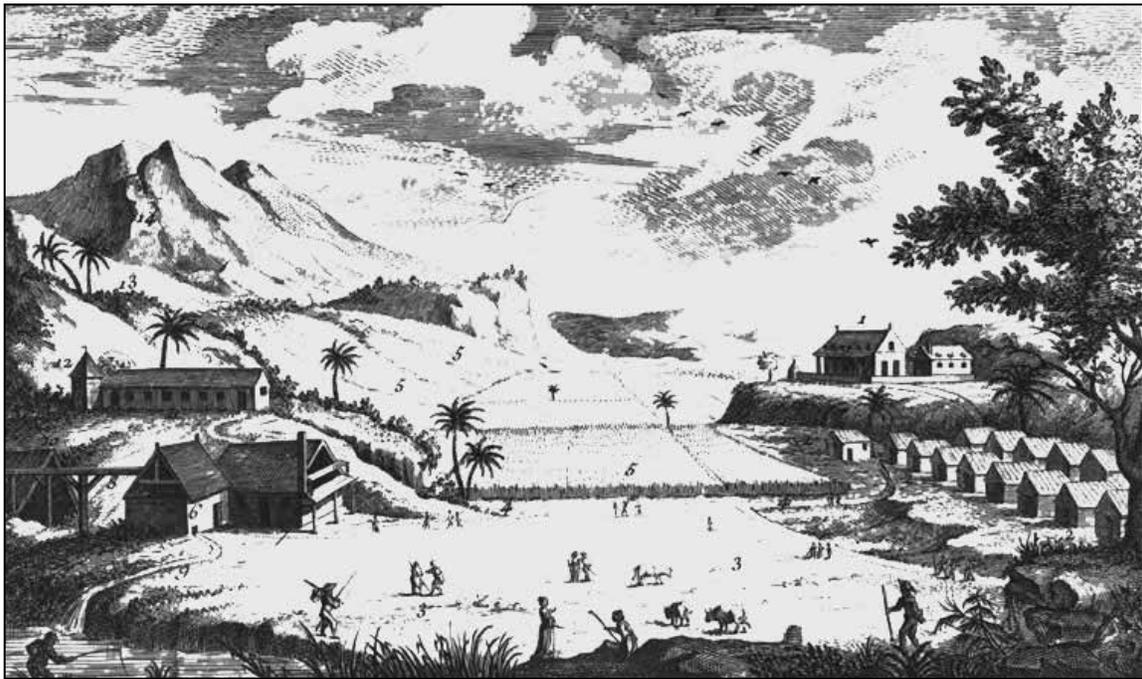


Illustration of typical plantation. *St. Croix Landmarks Society*

In 1917, the United States, fearing that Germany might seize the harbor at St. Thomas for use as a submarine base in World War I, bought the Virgin Islands from Denmark for \$25 million. By the late 1930s, in the midst of the Depression, St. Croix's agriculturally based economy was not improving. Economic insecurity continued until the 1950s, when tourism began to emerge as one of the island's leading industries. Tourism continued to fuel the local economy in subsequent years along with petroleum refining, textiles, electronics, rum distilling, pharmaceuticals, agricultural and business and financial services. Hovensa, one of the world's largest petroleum refineries, is located on the south side of the island, a few miles west of the Castle Nugent Farms study area. In 1998, the company became the owner and operator of the former Hess Oil Virgin Islands Corporation, which was established in the 1960's to diversify the economy of the islands.

Today, St. Croix remains one of three main islands, along with St. Thomas and St. John that comprise the U.S. Virgin Islands. St. Croix is the largest of the three islands with an area of approximately 84 square miles. The population of St. Croix was estimated at 50,139 during the 2000



Christiansted harbor with Christiansted NHS in foreground.
St. Croix Tourism

Census. As an unincorporated United States territory, the U.S.

Virgin Islands have one non-voting delegate to the U.S. House of Representatives. Residents are U.S. citizens, but have no vote in national elections, and pay taxes to the Virgin Islands Bureau of the U.S. Internal Revenue Service.

Cultural Resources of the Study Area

The study team conducted on-site investigations and historical research of resources within and associated with the Castle Nugent Farms study area. Research was done primarily at local repositories, including the St. Croix Landmarks Society and the Virgin Islands State Historic Preservation Office. This work revealed that the study area contains a wide variety of cultural resources dating from numerous periods in the history and prehistory of St. Croix. Although this initial research reinforced the study area's high level of significance, there clearly remains the need to conduct additional historical research and prehistoric and historic archeological investigation beyond the scope and time constraints of this study in order to understand in greater detail the resources and associated cultural themes at Castle Nugent Farms. The assessment below is only intended as a broad overview of the study area's historic and archeological resources. There remain many gaps and questions that would need to be addressed through future research.

Historical Estates

There are nine historical estates that comprise the Castle Nugent Farms study area, including the remains of plantations that produced cotton, sugar cane, and indigo, in addition to breeding and raising cattle. The nine estates are Castle Nugent, Fareham, Longford, Petronella, Lowrys Hill (also known as Lowry Hill), Laprey Valley, The Springs, Munster, and Hartmann. The following discussion provides a "thumbnail" sketch of each of these historic properties.



Oxholm Map, ca. 1804, showing estates in the vicinity of the south shore. *St. Croix Landmarks Society*

Castle Nugent

The Castle Nugent estate possesses most of the key elements of a Danish colonial plantation. The estate is well-maintained, and conveys impressive historic character. All of the existing buildings, except one constructed in the 1920s, date to the late eighteenth and early nineteenth centuries. The complex is the most intact plantation complex within the study area, and is unique among St. Croix estates by possessing a building traditionally associated with eighteenth century cotton production, a cotton house (also known as a gin house). The history of the property spans from the mid-eighteenth century up to the present day with strong ties to cotton and sugar production, and the breeding of cattle.



Great House, Castle Nugent Estate. *NPS*

There are numerous remaining historical structures within the complex that convey a relatively modest scale and design. The core consists of a great house and ancillary buildings associated with a mid- to late-eighteenth century cotton estate that was established there. In addition to the cotton house, the estate possesses two masonry slave row houses, one that was rehabilitated into a residence and one that is in ruin. The great house was built ca. 1770 on the foundations of an earlier ca. 1730s house. The gallery of the great house is located on the west side. This configuration, which is typical of houses of this era, protected the main façade of the house from the brunt of heavy rains that often

approach from the east. The house has an unobstructed and commanding 270-degree view of the estate, vast pasture lands, a stone mill ruin at neighboring Fareham Estate, and the Caribbean Sea.

Specific historic buildings and cultural resources associated with Castle Nugent include:

- Masonry great house ca. 1770, with later rehabilitation.
- Cotton house, ca. 1760-1780, rehabilitated for residential use in the 1950s; this cotton house is one of the only standing cotton houses left on St. Croix, and in the Virgin Islands.
- Masonry chapel that was possibly an earlier utilitarian building, ca. 1780.
- Masonry slave rowhouses, ca. 1780-1810.
- Vaulted cistern, ca. 1750s.
- Archeological remains of other buildings described on estate inventories in 1785, 1794, and 1805 that are no longer standing, including field slave wattle-and-daub houses. In 1785, there were reportedly several wattle-and-daub slave houses, enough for 40 slaves.
- Guesthouse, ca. 1920, is located on the presumed site of an animal-powered crushing mill.
- Fields and pastures that have been in continuous use for either cotton or sugar agriculture or cattle grazing for over 225 years.



Cotton House, Castle Nugent Estate. NPS

Fareham Estate (includes Prospect and Prospect Hill Estates)

Fareham Estate is first described in 1738 in association with Madam Isabella Poul. While sugar cane and other goods were grown in the eighteenth and early nineteenth centuries, by 1857 Fareham is listed as a stock estate. In 1816, there were 61 slaves reported to be on the estate, and by 1847 there were only eight. The estate remained separate from Castle Nugent until 1956, when the Wall family assumed ownership.

Cultural resources associated with Fareham Estate include:

- Standing mill and an unidentified agricultural building constructed of stone and coral block, dating to the mid- to late-eighteenth century.
- Prehistoric archeological village site, dating to ca. 400 – 1200 A.D.

Longford Estate

Longford Estate was established by 1740. The estate was assembled to its present size by 1797. Sugar cultivation ended in 1868, but began again in 1903. In 1904, cotton began to be grown on the estate; a cotton factory was built soon thereafter. Cotton cultivation ceased to be profitable after 1909, and in 1915 the factory closed. A sisal factory was built in 1908, but closed in 1921.

From 1755 through 1797, two of the most respected and distinguished landowners on St. Croix were partners in the ownership of Longford Estate — Robert Tuite and Christopher McEvoy. The Tuite family were Irish Catholics who moved from Montserrat to St. Croix in 1749. Nicolas Tuite is credited with bringing to St. Croix knowledge of large-scale, slave-based sugar agriculture. Christopher McEvoy, who resided at Whim Estate on St. Croix, was regarded as one of the most distinguished planters on the island.⁷

Cultural resources associated with Longford Estate include:

- Nine standing plantation structures, of which seven are intact.
- Standing mill ruins, including a steam tower.
- Prehistoric archeological village site dating to ca. 300 B.C. - 900 A.D.

Petronella Estate

Petronella was first owned by Thom Daniels in 1737. Christopher McEvoy became a partial owner in 1774, and continued to be involved until sometime between 1784 and 1797. In 1854, Petronella was listed under joint ownership with the estates of Sally's Fancy, Sight, Lowrys Hill, and Prospect Hill. Through the twentieth century the estate was known for its dairy production.



Petronella Estate. NPS

Cultural resources associated with Petronella Estate include:

- Standing and intact plantation structures.
- Remains of a slave village consisting of 19-20 houses.

Lowrys Hill Estate

Lowrys Hill Estate is first listed in the historical documentation for St. Croix in 1737. By 1854, it had been incorporated into Petronella Estate.

Cultural resources associated with Lowrys Hill include:

- Ruins of the great house, rehabilitated slave quarters, smokehouse/cook house (partially reconstructed), steam mill ruins, and horse mill ruins.
- Prehistoric stone artifacts that indicate the possible presence of an archeological site.

Laprey Valley Estate (also spelled La Prevalais or Prevallois; includes Ryan Estate)

Laprey Valley Estate was first established sometime in the 1730s. In 1774, the estate was purchased by Christopher Nugent, and was incorporated into Castle Nugent sometime thereafter. In 1816, the estate is listed as a 75-acre plot with 36 slaves. An archeological survey would be necessary to identify any buried cultural and archeological resources.

Cultural resources associated with Laprey Valley include:

- Ruins of a plantation complex, including a slave village, wells, and processing structures.



Laprey Valley and The Springs. NPS

The Springs Estate (also known as Howell Plantage)

The Springs, originally known as Howell Plantage, was first established in 1737. It was not consolidated into any of the neighboring estates until 1851, at which time it became part of Munster Estate. An archeological survey would be necessary to identify any buried cultural and archeological resources.

Cultural resources associated with The Springs include:

- A mill (animal) and other structural archeological ruins.
- Possible archeological remains of a Free Black settlement.

Munster Estate

An estate was established at the location of Munster by William Farrington in 1737. However, the name Munster does not appear until publication of the 1804 Oxholm map. An inventory conducted in the 1780s listed 12 structures at this estate. In 1851, Munster was combined with The Springs, and was known as Vallade's Stock Farm. There are no known structural or other cultural resources existing at Munster Estate. An archeological survey would be necessary to identify any buried cultural resources.

Hartmann Estate

The first reference to Hartmann Estate is in 1749. According to the 1754 Beck map, the land was owned by Baron de Breton. On a 1767 map of St. Croix, the tracts that comprise Hartmann Estate are referred to for the first time as Hartmann's Pl. (Plantage), though two of the tracts were not purchased by Isaac Hartman until 1774. One item of interest is the occupation of Tract # 57 that is listed in 1774 as rented or owned by Thomas Howell, "a free negro." This person was possibly a freed slave from The Springs (also known as Howell's Plantage). An archeological survey would be necessary to identify any buried cultural and archeological resources.

Cultural resources associated with Hartmann include:

- Prehistoric archeological site (small village), dating to ca. 600 – 1400 A.D.
- Possible buried remains of historic structures that are illustrated on late eighteenth and early nineteenth century maps.

French Plantations

Based on maps dating to the French colonial period (1650-1696), there were likely four French habitations located within the Castle Nugent Farms study area: Courtebotte, possibly located at Lowrys Hill; Parisien, likely located at the Castle Nugent, Laprey Valley, or The Springs estates; and Corteri and Gobé, located somewhere in the vicinity of the Longford estate.

Prehistoric Archeological Sites

The estates that comprise the Castle Nugent Farms study area include five archeological sites, four of which are some of the oldest archeological sites on St.

Croix, and possibly some of the oldest ceramic-era archeological sites in the Virgin Islands.

Great Pond

Just east of Great Pond, on St. Croix's south coast, is the Great Pond archeological site. Great Pond represents the largest site of indigenous habitation on the east end of St. Croix. It is long and narrow, covering roughly 17.5 acres (almost 71,000 square feet), and is located near fringing mangroves, low sand ridges, and the barrier coral reef. The site was visited by several archeologists in the first half of the twentieth century, and has been described as consisting of a series of shallow deposit sheet middens, linear shell middens and mounds. It is considered to have been occupied from the Late Saladoid through early Ostionoid periods (ca. 300 – 700 A.D. and 700 – 900 A.D., respectively) based on ceramic attributes. It is not known if Great Pond was one large village, a series of small hamlets, or represents several successive occupations, possibly as a result of seasonal use during the summer dry season when sea turtles are nesting. There are no known radiometric dates from the site. The site was listed on the National Register of Historic Places in 1976.

The terrace where the site is situated is actively eroding, but has not been subjected to any significant development. The area is similar in many respects to the location of the Halfpenny and Manchenil sites (discussed below), and is rich in clays exposed in the nearby gut.

Halfpenny and Manchenil

The Halfpenny and Manchenil sites are a pair of sites located on the south-central shore of the island, on either side of Granard Gut. Together, they encompass nearly 25 acres, and though originally believed to be two separate sites, it is now believed that they indeed represent one large, multicomponent occupation. A salt pond used to be located nearby, but was eliminated as a result of development in the 1950s.

Halfpenny is generally regarded as the earlier of the two sites, dating from the Late Saladoid and Early Ostionoid periods (ca. 500 – 900 A.D.) to the Late Ostionoid (ca. 1100 – 1500 A.D.), and consists of shallow shell middens. The site was visited by archeologists in 1982 and limited excavations were undertaken in 1987.

The neighboring Manchenil site (ca. 1100 – 1500 A.D.) most likely forms a site pair with Halfpenny that grew as a result of either increasing populations or a return to the area of previous inhabitants after a brief absence. The Manchenil site has received more archaeological attention than the Halfpenny site, and was excavated by noted archeologist Gary Vescelius in 1951.

Today, the Halfpenny site has been disturbed by residential development while the Manchenil site remains largely undisturbed except for beach erosion. There are no known radiometric dates from either site.

Longford

The Longford site is one of the most discussed and little studied archaeological sites on the island. Located on the inland coastal plain on the south side of the island, the site encompasses just over six acres and is believed to correspond to the Late Saladoid through Early Ostionoid transitional period (ca. 600 – 800 A.D.).

In 1924, the site was visited by archeologist Gudmond Hatt of the Danish National Museum, who collected numerous artifacts. It is not known how many artifacts Hatt collected since an analysis has never been conducted on those materials. Hatt drew a rough sketch of the site and illustrated two horseshoe-shaped middens that faced the ocean. Unfortunately, the middens that once stood at the site were bulldozed in the 1950s, but there is the possibility that the bases of the middens are still largely undisturbed.

Milord Point

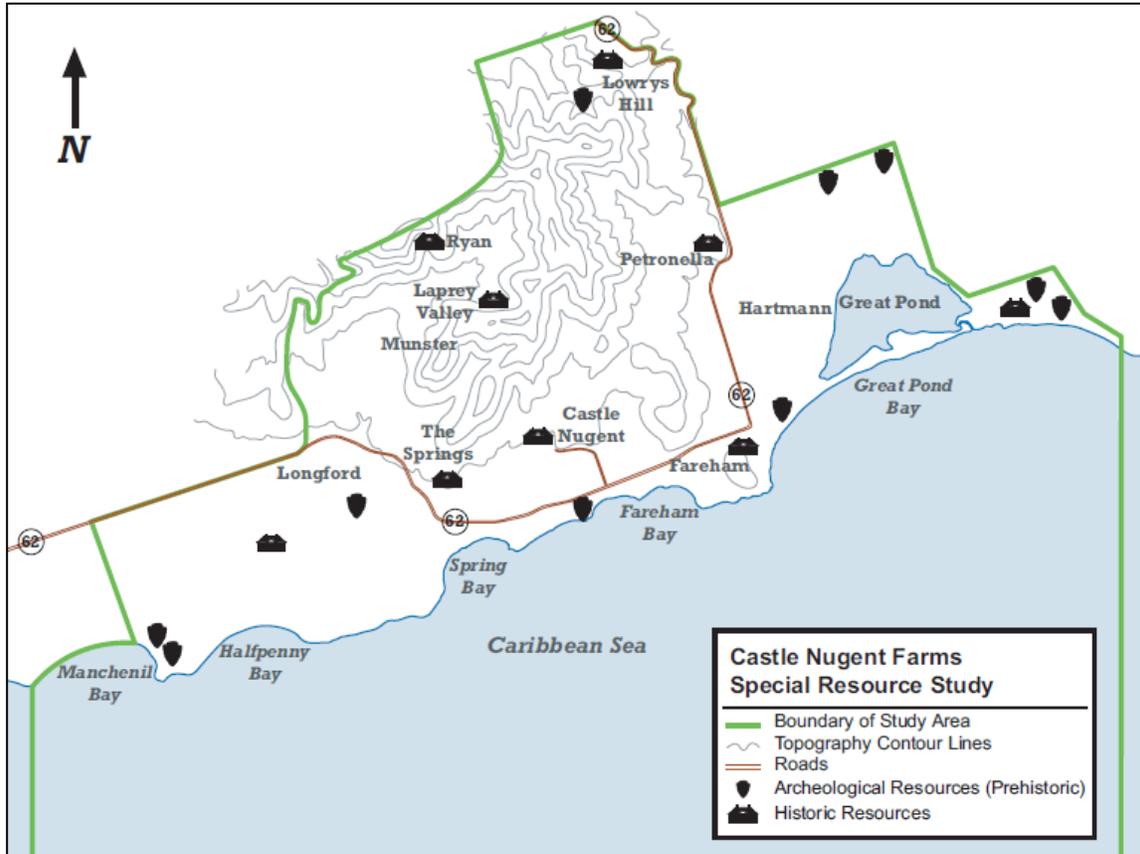
The Milord Point site is located on the south side of St. Croix, just west of Great Pond and on the west side of Great Pond Bay. In 1951, the site was investigated by Gary Vescelius during a Yale University/Museum of St. Croix archeological survey, and was described as a large shell midden. Based on ceramic typology the site has been dated to ca. 500 – 1200 A.D., or from the Late Saladoid through Ostionoid periods. There has been some confusion over the years as to the exact location of this site; some archeologists in the early twentieth century identified a large prehistoric village at Petronella. An archeological survey conducted in the vicinity of Estate Petronella produced no prehistoric artifacts. It is currently believed, therefore, that these earlier archeologists were actually referring to the Milord Point site.

This site was visited again in the early 1980s, when several burials were encountered in test excavation pits just uphill from the shoreline site. Pottery and marine shells have been recovered in addition to human remains. It was estimated to measure roughly 1,000 feet by 800 feet in size, but shallow in depth. There are no known radiometric dates for the site.

Hartman

The Hartman site consists of a small shell midden and deposits of prehistoric ceramic sherds covering about 1,600 square feet. A fragment of a polished,

groundstone celt has also been found at the site. The site was first reported in the 1970s, but was not visited by an archeologist until 1982. All of the finds were isolated, and it appears likely that the Hartman site was actually part of the much larger Milord Point site, or the Great Pond site. An archeological survey would identify any buried cultural resources.



Map showing the general location and distribution of cultural resource sites within the study area.
NPS

Cotton Agriculture on St. Croix

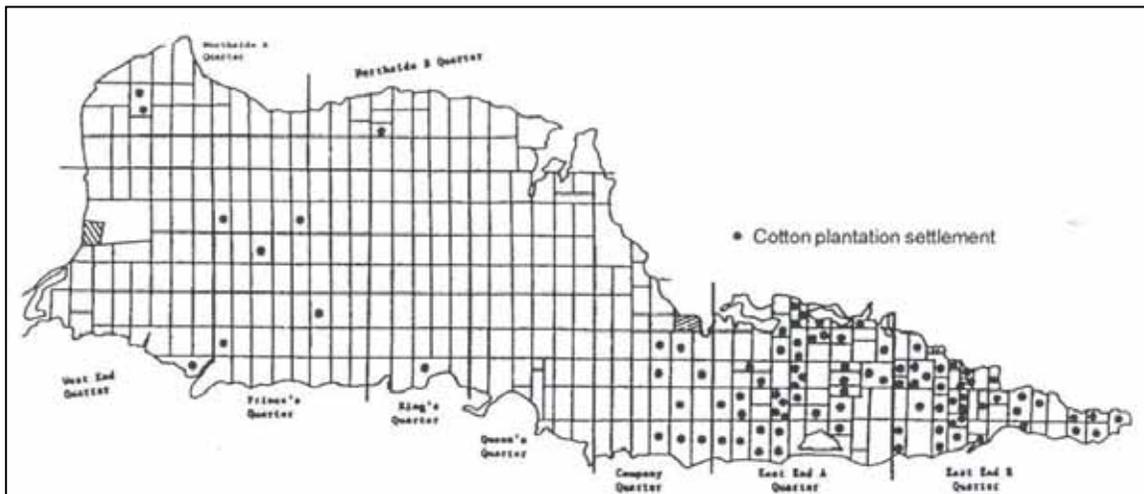
Cotton was a vital and integral part of the establishment of plantation agriculture in the Virgin Islands and throughout the Caribbean. According to Historian George F. Tyson in his article *On the Periphery of the Peripheries: The Cotton Plantations of St. Croix, Danish West Indies, 1735-1815*, between 1750 and 1800, West Indian cotton plantations dominated the Atlantic market place. They produced two-thirds of the raw material consumed by the expanding English textile industry and supplied the bulk of the European imports.⁸

Cotton was an important export crop and contributed significantly to the economic and social development of the new Danish colony on St. Croix. However, cotton quickly exhausted soil fertility, and the industry as a whole was short-lived in the agricultural history of the West Indies. On St. Croix, cotton

plantations existed from 1735 until the first quarter of the nineteenth century, when drought, insect infestation, and soil exhaustion took their toll.

The majority of all cotton growing estates on St. Croix were located in the driest areas of the island – primarily the southeast quadrant. The majority of these estates were established on the rolling coastal plains and small knolls of the leeward side of the island, where they were shielded from north blustery winds by the northside mountain range. Three types of cotton were grown, two of which were likely varieties of *Gossypium barbadense* (also known as Creole or Sea Island cotton), a perennial found throughout the Caribbean (types Great Lock and Year Round). It is believed that *Gossypium barbadense* was first domesticated along the coast or waterways of northwestern South America, along coastal Peru and Ecuador sometime around 5,000 years ago.⁹ *Gossypium barbadense* was eventually developed into the familiar Sea Island variety that became the staple of the southeastern United States plantation economy of the eighteenth and nineteenth centuries. The third type, Tortola, was a variety of *Gossypium hirsutum var. marie-galante* (also known as upland cotton). *Gossypium hirsutum* likely originated in the Yucatan peninsula, and the oldest archeobotanical remains have been recovered from the Tehaucan Valley, Mexico, dating to around 4,000 to 5,000 years ago. The range for *Gossypium hirsutum var. marie-galante* spans from northern and northeastern South America, including Costa Rica and Panama. Today, cultivars of *Gossypium hirsutum* comprise over 90 percent of the world's annual cotton crop.¹⁰

Several of the best-documented and best-known Virgin Islands cotton growing estates of the eighteenth century are located within the Castle Nugent Farms study area. These estates represent only a handful of the original 264 cotton and sugar estates established on the island of St. Croix after 1733, when the Danish West Indies Company first purchased the island from the French crown. The



Distribution of cotton plantations on St. Croix ca. 1767. George F. Tyson

original estates comprised roughly 370 parcels (or tracts) that were divided and subdivided between 1733 and 1770, by which time the majority of estates had been established.

In 1737, there were only 43 cotton estates; however, by 1740 this number had risen to 113.¹¹ By 1750, the 370 parcels had been divided into 231 plantations, of which 105 grew cotton, 95 grew sugar, and 31 that were primarily provisioning and stock estates.¹² Tyson has documented the significance of cotton agriculture to the early history of the island. As both a relatively inexpensive start-up crop and one that was well-suited to the drier climate found on the southeast side of St. Croix, Tyson explains the importance of cotton on St. Croix during its heyday:

During the eighteenth century, cotton played a vital role in the slave-based plantation economies of nearly every Caribbean colony. In most places it ranked, at one time or another, second only to sugar as an export crop. In some colonies it was the leading commodity.

Despite their important contributions to local Atlantic market systems, Caribbean cotton estates have received scant attention from Caribbean scholarship, which has been preoccupied with the predominant sugar plantations and the social relations they engendered.¹³

Between 1750 and 1767, 33 cotton estates on St. Croix converted to sugar agriculture, leaving 95 cotton estates in operation. By 1792, there were only 41 cotton estates. According to Tyson, at this time only ten of the largest cotton growers controlled 56 percent of all landholdings, and 70 percent of all cotton lands.¹⁴ Two of the largest estates were Castle Nugent and Fareham. Most planters during this period devoted only 20 to 25 percent of their lands to cotton production; at The Springs estate, nearly 60 percent of the cropland was devoted to cotton. By 1815, estates producing cotton had virtually disappeared from the economy of St. Croix. Cotton had lost much of its economic and social significance within the Crucian plantation system, and had been replaced largely by sugar.¹⁵

Estate	Number of Slaves	Acres in Cotton	Acres in Provision	Acres in Pasture	Unused Acres	Total Acres
Munster	29	80	22	30	18	150
Fareham	31	82	0	118	0	200
Castle Nugent	36	70	48	92	15	225
Springs	25	45	10	15	5	75
The Springs	24	30	13	17	15	75

Year 1792 listing of estates in Castle Nugent Farms study area with number of slaves, acres and use.
George F. Tyson

Cattle Breeding

Cattle breeding is an integral part of the agricultural history of the Castle Nugent Farms study area. The Castle Nugent Farms cattle ranch has been in continuous operation for more than 50 years, and is one of the oldest ranches in the West Indies. Today, large areas are still used to breed and raise Senepol cattle under an agreement between the Gasperi family and the University of the Virgin Islands Agriculture Experiment Station.

The story of the Senepol cattle (also known as Nelthropp Cattle, Cruzan Breed and St. Croix Cattle) – from the first arrival of 60 N’Dama heifers and two to four short horn bulls on St. Croix around 1880 by George Elliot of Longford Estate, and their subsequent breeding and development by the Nelthropp family of Granard Estate in the first quarter of the twentieth century – is centered around the Granard, Castle Nugent and Longford estates.¹⁶



Senepol Cattle, Castle Nugent. NPS

The Senepol breed is a direct descendant of *Bos taurus*, with characteristics that have been cross-bred from both longhorn (N’Dama) and shorthorn (Red Poll) humpless cattle. Senepol are a medium-sized beef breed, and were developed to specifically handle the tropical Caribbean climate, primarily because most cattle brought to the region originated in temperate climates. Because of the environmental and heat stresses of

the Caribbean, their reproduction potential would break down. The crossing of N’Dama cattle, with their tolerance of heat and resistance to insects, and the gentleness, quality meat, and high milk production of the Red Poll led to a highly successful breed that has been exported throughout the Caribbean, Brazil, Panama, and elsewhere in South America, the “sun belt states” (from Florida to Texas), Australia, and Zimbabwe. Both cattle and embryos continue to be sold and shipped around the world.

The Senepol breed was created on the lands comprising the Castle Nugent Farms study area, primarily at the Longford and Castle Nugent Estates. In 1949, when the Gasperi family purchased Castle Nugent Estate, there were 2,000 head of cattle. Prior to Hurricane Hugo in 1989, six to seven families were required to operate the ranch and dairy at Petronella. The demand from islanders for both beef and dairy products from the Longford, Castle Nugent, and Petronella estates

could not be met. After the hurricane devastated the island, the dairy was closed and demands for local beef decreased.

In 2006, the Gasperi family signed an agreement with the University of the Virgin Islands that allowed the university to assume ownership of the remaining Senepol herds. Although the family removed itself from the cattle operation, the university has continued breeding programs while also providing breeding research and cattle stock to producers and researchers in the region, including the University of Puerto Rico. Today, the cattle at Castle Nugent Farms are the only remaining herds of Senepol on St. Croix, making the operation the largest continuously running cattle breeding and raising effort in the Virgin Islands.

Natural Resources of the Study Area

The terrestrial and submerged lands within the Castle Nugent Farms study area include an outstanding ecological diversity of natural communities and habitats, ranging from moist and dry forests to woodlands, shrublands, sandy and rocky beaches, wetlands, and coral reefs. The following discussion is intended to highlight the study area's most significant natural resources. Two outstanding natural features—an area known as Great Pond and an offshore coral reef system—substantially increase the importance of the study area and are discussed in more detail below.

Great Pond

The eastern end of the study area is dominated by Great Pond, which is the second largest salt pond in the Virgin Islands and the most important wetland on the island of St. Croix. Great Pond and its adjacent bay provide critical habitat for both resident and migratory birds, reef fish and sea turtles. The pond is also rimmed by one of the largest and most substantial black mangrove stands left in the entire Virgin Islands.



View facing southeast over Petronella Estate, Hartmann Estate, and Great Pond in the distance. *NPS*

The Great Pond area has been in agricultural use since colonial times. Vast upland areas ringing the pond have been heavily grazed and thus there is limited natural vegetation. The pond supports an abundance of wildlife and receives runoff from more than 1000 surrounding acres. Mangroves are primarily concentrated on the southern and eastern shores closest to an inlet with more open salt flats to the west. Approximately 100 houses have been built in the upland watershed (adjacent to the study area), primarily to the northeast. Like all lagoons in the U.S. Virgin Islands, Great Pond is owned by the Government of the Virgin Islands. Approximately 300 acres surrounding the pond is currently owned by Golden Resorts, LLLP.

The pond is enclosed on the south by a vegetated baymouth bar that is approximately 3,600 feet long with a maximum width of 350 feet. The bar is the most heavily wooded area of the site and separates Great Pond from Great Pond Bay. A narrow inlet connects the pond to Great Pond Bay at the pond's southeast corner. Dense mangrove colonies are present at the eastern portion of the bar while the western end has a more varied littoral flora. There are large tamarinds, manchineels, genips, black olives, and mangroves on the pond side of the baymouth bar. The seaside has more seagrapes, Haiti-haitis, and buttonwood mangroves. There are several white mangrove stands that grow along the shoreline. At low water levels, mudflats are exposed around much of the pond, particularly along the western border. Mudflats are surrounded on the west and north sides by gently sloping, fallow pastures of dry grassland with mixed thorny scrub. Several patch reefs and seagrass beds exist in the lagoon.

Great Pond is one of the most important bird habitats for both migrant and resident bird species in the U.S. Virgin Islands. There are several federally and locally listed threatened and endangered species that use the area, especially the pond, as a primary habitat and feeding ground. White crowned pigeons (*Columba leucocephala*) nest and roost in the stands of trees on the northern side of the pond. The least tern (*Sternula antillarum*), a ground nesting bird, nests on the western fringes of the pond and in some of the eroded gullies. The black-crowned night heron (*Nycticorax nycticorax*), great blue heron (*Ardea herodias*), great egrets (*Casmerodius albus*), and snowy egrets (*Egretta albus*) have been known to nest on the baymouth bar and all are listed on the Endangered Plants and Animals of the Virgin Islands. Brown pelicans (*Pelecanus occidentalis*), which until recently were on the Federal Threatened and Endangered species list, use the offshore area for foraging and have been seen roosting on the trees in the baymouth bar. Peregrine falcons (*Falco peregrinus*) have been seen hunting around the pond and have been seen roosting in the trees of the baymouth bar and in the western pastures. The beach at Great Pond is also active with sea turtle-nesting. The offshore reef affords protected back reef waters for extensive turtle or sea grass meadows.

There are no federally listed threatened or endangered plant species found at Great Pond. The area is mostly clear due to many years of cattle grazing. The pond is colonized by a variety of wetland species that are protected by virtue of being in a jurisdictional wetland. Virgin Islands law also protects mangroves and permits are required for their trimming or removal.

Great Pond is part of Unit # VI-07 of the Caribbean Barrier Resource System (CBRS) as set forth in the Federal Coastal Barrier Improvement Act of 1990. CBRS VI-07 includes all of Great Pond and extends south into the Caribbean Sea past the barrier reef. As a result of the establishment of the St. Croix East End Marine Park, Great Pond is classified as a no-take area. Consequently, commercial and recreational fishing is prohibited.

In 1991, Great Pond was as designated an *Area of Particular Concern*, a *Significant Natural Area* and an *Area of Preservation and Restoration* by the Coastal Zone Management Commission, Virgin Islands Department of Planning and Natural Resources (DPNR). The Virgin Islands Coastal Zone Management Act of 1978 stipulates that certain areas of the Virgin Islands are of greater significance, whether for economic, cultural, or environmental reasons, and are nominated as Areas of Particular Concern. As part of the Coastal Zone Management Program, the Government of the Virgin Islands developed criteria for areas that are nominated as being of particular concern. On St. Croix, nine areas have been designated Areas of Particular Concern and two of those areas are located within the Castle Nugent Farms study area. In addition to Great Pond, the offshore reef (discussed below) is included as part of the St. Croix Coral Reef System. The boundary of the Great Pond Area of Particular Concern includes all of Great Pond and extends further to the east and west.

Mangroves

Mangrove wetlands exist within the Castle Nugent Farms study area and are considered a significant natural community that is protected by numerous federal and territorial agencies, including the U.S. Army Corps of Engineers and the Virgin Islands DPNR. The black mangrove stands at Great Pond are extensive and provide many benefits to the ecosystem within the study area. The mangroves help stabilize coastal sediment, buffer harmful effects of terrestrial runoff, regulate water temperature on tidal flats, and provide habitat for a diverse assemblage of terrestrial and aquatic organisms. They also trap various organic materials, and distribute important nutrients to nearby marine habitats. Mangroves serve as nursery grounds for commercially and recreationally important fishes in the Virgin Islands. The mangrove wetlands of the Virgin Islands have been impacted by natural and anthropogenic forces. Natural stressors include sea level rise and coastal erosion, hypersalinity, and hurricanes. Anthropogenic stressors include filling wetlands, drainage, or alteration for development.

Coral Barrier Reef

Coral reefs are the most complex, species-rich marine ecosystems. Reefs are formed by corals, which are animals that secrete a calcium carbonate skeleton. Coral reefs provide essential fish habitat, support threatened and endangered species, and protect marine mammals and turtles. In addition, coral reefs reduce wave action and protect the coastline from erosion and flooding. Coral reefs are being threatened mainly from human activity, including coastal development, over-fishing, over exploitation of marine resources, marine pollution, and increased terrestrial runoff.

The St. Croix coral reef system is one of the best developed reef systems in the Caribbean and the most extensive coral reef system on the Puerto Rican-Virgin Islands shelf. The reef system includes algal ridges, shallow and deep reefs, bank-barrier reefs, narrow fringing reefs, and patch reefs.



View of offshore reef from Castle Nugent Estate. NPS

The fringing reef within the Castle Nugent Farms study area is part of the southeastern St. Croix reef system that extends from Great Pond Bay eastward to the fringing reefs enveloping Point Udall, on the easternmost side of the island. This system is part of a 4000-5000 year old, 23 mile long bank-barrier reef that rings virtually the entire east end of St. Croix.¹⁷ From the shoreline in some areas, you can walk almost a half-mile out to the reef. The reef system presents an impressive sight, especially when viewed from the uplands and along the shoreline.

Patches of mixed coral reef occur landward of the reef crest. Within the shallow reef zone are live and dead coral stands or patch reefs, elkhorn coral, fire coral, starlet coral, brain coral and mustard coral. Seaward of the reef the area is characterized by a deep reef zone interspersed with pavement. Located along the southeastern shelf edge is a deep reef that extends to water depths of 100-160 feet.¹⁸ All of the territory's corals suffered widespread bleaching in an epic 2005 event when the sea's temperatures exceeded normal levels.

There are concerns for the future of coral reef ecosystems in the Caribbean region. Although there are over 93 million acres of coral reef submerged lands under U.S. jurisdiction worldwide, few have been properly studied to assess their overall health, and evidence is overwhelming that coral reefs and associated ecosystems are deteriorating at a rapid rate throughout the world. In 2006, elkhorn coral and staghorn coral were officially designated as threatened species

by the National Oceanic and Atmospheric Administration/National Marine Fisheries Service.¹⁹ This listing was made on the basis of the following facts:²⁰

- Drastic and historic reductions (97 percent) in abundance of these species throughout their ranges, including the Florida Keys, Dry Tortugas, U.S. Virgin islands, and Jamaica.
- Potential to restrict broad geographic ranges due to local extirpations.
- Limited sexual recruitment in some areas and unknown in most areas, and unsuccessful settlement of larvae.
- Decreases in fertilization success as densities of adults decline, and rapid mortality of new recruits at most locations.

The factors causing reductions in the abundance of these two species of coral throughout the Caribbean include hurricanes, disease, sedimentation, anthropomorphic abrasion and breakage, competition, predation, contaminants, loss of genetic diversity, African dust, elevated carbon dioxide levels, and sponge boring.²¹ More recently, elevated water temperatures have shown to cause high mortalities. It was estimated that elkhorn and staghorn corals would become extinct in approximately 30 years.

Threatened and Endangered Species

The Endangered Species Act of 1973 was enacted to protect plant and animal species considered to be in danger of extinction. The Endangered Species Act affords legal protection to species listed as endangered and threatened, including protection of their habitats. The act requires federal agencies to undertake affirmative actions to protect and restore populations of listed threatened and endangered species, and to prevent proposed and candidate species from being listed.

An endangered species is defined as any species that is in danger of extinction throughout all or a significant portion of its range. A threatened species is defined as any species that is likely to become endangered within the foreseeable future throughout all or a significant portion of its range. Due to habitat loss and species fluctuations, the lists of protected species are constantly changing. In addition to federal protection from the Endangered Species Act, the Legislature of the Virgin Islands enacted the Indigenous and Endangered Species Act (Title 12 Chapter 2) in 1990 "to protect, conserve, and manage indigenous fish, wildlife, and plants, and endangered or threatened species for the ultimate benefit of all Virgin Islanders, now and in the future".

The institution responsible for the management of marine resources in the Virgin Islands is the DPNR. Within DPNR, there are other divisions that have responsibilities relating to the marine environment, including the Division of Fish and Wildlife (DFW). The DFW cooperates with both the U.S. Fish and Wildlife Service and National Marine Fisheries Service to monitor and protect endangered and protected species. The U.S. Virgin Islands currently contains ten species with Federal endangered or threatened status (five reptiles, three birds, two plants). Territorially endangered species include 28 animals (one reptile, 22 birds, three mammals, one fish, and one coral) and 49 plant species.

Detailed T&E species surveys were not conducted for this study. However, in addition to the threatened elkhorn and staghorn coral, a general survey of the study area indicates that the lands appear to contain a number of T&E species, including three sea turtle species, marine mammals such as the Bottlenose Dolphin, the Brown Pelican (recently delisted), the Peregrine Falcon, and the Roseate Tern. There also exist locally protected plants and animals, such as Ironwood (*Lignum vitae*) and Satinwood (*Zanthoxylum flavum*). The area includes the last known points of observance for the White-tailed tropicbird (*Phaethon lepturus*) at Estate Fareham. Also, as noted, the mangroves surrounding Great Pond are one of the largest mangrove communities still intact and undisturbed in the Virgin Islands.

Current threats to sea turtles include nest poaching, and illegal harvest of turtles as well as indirect impacts of humans. The introduction of animals such as hogs, mongooses, dogs and goats destroy nests and eggs and harass nesting turtles. Development of coastal areas, recreational and commercial boating activity, incidental take from the fishery industries, ingestion of or entanglement in marine debris, and inadequate local protection and enforcement of laws are all modern day threats to sea turtles in the Caribbean. Other human impacts on turtles include damage to coral reefs and seagrass beds by visitor use and boat-related damage, raw sewage discharges in Puerto Rico and the U.S. Virgin Islands, oil spills, and other forms of pollution in the marine environment. Natural threats include beach erosion, hurricanes, and predation on hatchlings by natural predators such as birds, crabs, and large fish.

Scientific Name	Common Name	Federal Status
<i>Chelonia mydas</i>	Green Turtle	Threatened
<i>Dermochelys coriacea</i>	Leatherback Turtle	Endangered
<i>Eretmochelys imbricata</i>	Hawksbill Turtle	Endangered
<i>Falco peregrinus</i>	Peregrine Falcon	Endangered
<i>Sterna dougallii</i>	Roseate Tern	Threatened
<i>Tursiops truncatus</i>	Bottlenose Dolphin	Threatened

Federally Listed Endangered or Threatened Species that Utilize Habitats within the Castle Nugent Farms Study Area.

Coastal Zone Management

Castle Nugent Farms includes extensive areas that fall under the administration and oversight of the U.S. Virgin Islands coastal zone management program. In 1978, the Virgin Islands Legislature enacted the Virgin Islands Coastal Zone Management Act as a means of regulating development and managing coastal resources in the Territory. The Virgin Islands Coastal Zone Management Program (VICZMP), which was approved by NOAA in 1979, was established to carry out the mandates and objectives of the act.

The program works to protect coastal land and waters, such as beaches, bays, lagoons, wetlands, dunes, and bluffs (all of which are found within the Castle Nugent Farms study area). Through planning, permitting, public education, and other management techniques, the program reduces conflict among competing uses for the territory's coastal land and water resources, including coral reefs. The coastal zone extends seaward to the outer limits of the United States Territorial Sea. In the Virgin Islands, the coastal zone is composed of two parts, a first tier and a second tier. The VICZMP regulates all development within the first tier of the Virgin Islands coastal zone. The first tier comprises a relatively narrow strip along the coast, excluding all Federal land, and all offshore islands and cays. The second tier includes other portions of the island not included in the first tier.

Under the VICZMP, permits are required for any development activity in the first tier of the coastal zone including alteration of the shoreline or submerged lands, construction of new structures for commercial or private use, discharge or disposal of waste materials, enlargement or expansion of existing structures, land clearing, grading, or excavation, and placement of permanent or temporary structures on submerged lands (e.g., moorings, docks, etc.).

Chapter 3 Resource Evaluation

Proposals for new parks are carefully analyzed in special resource studies to ensure that only outstanding examples of the nation's cultural, natural, and recreational resources are considered for addition to the National Park System. Potential new park areas must meet criteria for national significance, suitability, and feasibility. They must also require direct NPS management, instead of alternative protection by other public agencies or the private sector.

National Significance

For the resources of the Castle Nugent Farms study area to be considered nationally significant, they must meet the following standards:

- **Resource Quality** – Represent an outstanding example of a particular resource type.
- **Interpretive Value** - Possess exceptional value or quality in illustrating or interpreting the natural or cultural themes of our nation's heritage.
- **Potential for Use** - Offer superlative opportunities for recreation, public use and enjoyment, or scientific study.
- **Integrity** - Retain a high degree of integrity as a true, accurate, and relatively unspoiled example of the resource.

Pursuant to NPS Management Policies, the cultural resources of the study area were further evaluated by applying the National Historic Landmarks nomination criteria contained in 36 CFR Part 65.²² After extensive examination, research, and evaluation of the resources at Castle Nugent Farms, the NPS has determined that the study area meets the four criteria for national significance.

Resource Quality

The NPS has determined that the Castle Nugent Farms study area contains a cultural landscape that represents a continuum of land use spanning over 300 years in the history of St. Croix and the Virgin Islands. The area is an excellent example of an historic vernacular landscape that both illustrates peoples' values and attitudes toward the land and reflects patterns of settlement, use, and development over time. Although reshaped over time, the historic mix of farm, subtropical dry forest, scrubland, and Caribbean shoreline remains intact. Unlike St. John and St. Thomas, where there is hardly any coastal plain but, instead very

steep slopes, terracing was required in order to create lands amenable to plantation agriculture. St. Croix, on the other hand, has a large, gently rolling to flat coastal plain that did not require terracing. The landscape of the Castle Nugent Farms study area consists of both gently inclined open coastal plain broken by occasional bullies and knolls. There are several natural storm water channels and dry channels that provide an environment well-suited to cotton and sugar production, and cattle breeding. The development of the Senepol breed of cattle adds to the significance of the cultural landscape at Castle Nugent Farms.

The historic estates here were foremost cotton producers. Although the era of cotton plantation agriculture was brief on St. Croix, especially when compared to the southeastern United States, it was critical in the establishment of the Danish colonial system in the Caribbean and provided the foothold on which sugar agriculture could later thrive and succeed. While each estate made attempts to switch to sugar cane when cotton fell out of favor, they were only minimally successful. The quality of the resources at Castle Nugent Farms would be integral to identifying interpretive opportunities at the site, which is discussed in more detail in the following section. For example, the physical remains of the plantations provide outstanding potential in understanding the layout and historic operation of the estates, including the lifestyle of plantation owners, their employees, and their slave and free labor. See Appendix B for the official NPS determination of national significance of the Castle Nugent Farms cultural landscape.

Interpretive Value

The NPS “thematic framework” for history and prehistory is a conceptual tool used to evaluate the significance of cultural resources within or outside the National Park System. The framework provides an outline of major historical themes and concepts and helps identify those cultural resources that best embody America’s past.

Service-wide interpretive themes, theme topics, and theme sub-topics provide a framework that connects interpretation at all National Park System units directly to the overarching mission of the NPS. The thematic framework is composed of eight broad thematic categories that incorporate the broader concepts of people, time, and place to help define and understand their interconnections.

- Theme I: Peopling Places
- Theme II: Creating Social Institutions and Movements
- Theme III: Expressing Cultural Values
- Theme IV: Shaping the Political Landscape
- Theme V: Developing the American Economy
- Theme VI: Expanding Science and Technology

- Theme VII: Transforming the Environment
- Theme VIII: Changing the Role of the United States in the World Community

The Castle Nugent Farms study area relates to the following two interpretive themes as defined by the NPS thematic framework: Peopling Places and Developing the American Economy.

Peopling Places

Castle Nugent Farms contains abundant evidence of prehistoric migration and colonization. The area has particularly strong ties to broad patterns of St. Croix, Caribbean, and United States history, first as a French colonial, then a Danish colonial possession, and finally as an American territory. The colonization of the island, first by South American Amerindian migrants thousands of years ago, followed by European exploration and settlement, the establishment of plantation agriculture and the subsequent involvement with the Atlantic slave trade are all demonstrative of these associations.

The resources at Castle Nugent Farms represent numerous periods in the history of St. Croix, the Virgin Islands, and the Caribbean, spanning nearly 2,000 years of human occupation of the island. The ancient, prehistoric villages of St. Croix are illustrative of patterns of migration and colonization. This is unique in United States history in that the migration came from the south, from the Orinoco River Valley of Venezuela up the island chain of the Lesser Antilles to the Virgin Islands and Puerto Rico. The networks of interaction, exchange and communication that were maintained amongst these early settlers are evidenced through archeological artifacts, of materials made of non-local materials that were brought to the islands. Through geochemical techniques researchers have discovered that not only were exotic materials brought to St. Croix, but that materials from St. Croix, like ceramics, were moved off-island, to far-away places.²³

The study area includes four of the oldest archeological sites on St. Croix and possibly some of the oldest ceramic-era archeological sites in the Virgin Islands. The Great Pond and Halfpenny archeological sites both date to at least 500 A.D., while the Manchenil site is a later prehistoric occupation, 1100-1500 A.D., that may have been occupied during Columbus' visit to Salt River Bay in 1493. The Longford site is one of the most discussed and little studied archeological sites in the entire Virgin Islands. Longford is a ceramic type site and dates to at least 400 A.D. The Milord Point site dates to ca. 500-1200 A.D.

The arrival of Europeans to the island, first in 1493 and later in the mid-seventeenth century, is indicative of local participation in the colonial expansion

efforts of the Baroque period. The establishment of a plantation economy, first under French, then Danish colonial rule, reflects the growing desires of European nobility to expand and control wealth through international trade. The resources of the Castle Nugent Farms study area demonstrate participation in these activities, centered on settlement, agriculture, and trade.

Developing the American Economy

The study area contributes to the theme “Developing the American Economy” through the participation of all the estates within the study area in both cotton and sugar agriculture. The Castle Nugent, Longford, and Petronella estates also participated through the breeding and global distribution of a unique and successful breed of cattle. Additionally, the presence of slave communities at each of these plantations illustrates participation in the Atlantic slave trade of the eighteenth century.

The plantation economies of the seventeenth, eighteenth, and nineteenth centuries were international in scale. The cotton that was grown on the estates was integral to early Danish efforts to establish a firm hold within the world market, and these efforts were furthered with the expansion of sugar agriculture.

Other Interpretive Themes

Tiering off from these broad framework themes are several more narrowly defined themes that could be developed as part of a park interpretive program.

Exploitation of Resources. The estates reflect colonial attempts to exploit the resources of the Caribbean. Because this area was better suited to cotton production, when the market fell and other estates on the islands turned to sugar, the estates on the arid southeastern side of St. Croix lagged. Later, following the Caribbean-wide decline in market value of sugar production in the second half of the nineteenth century, many of the one-time cotton producing estates successfully transitioned to cattle.

Life on a Plantation. There is great potential to educate visitors about the workings of a Caribbean cotton plantation. Visitors could see the physical layout of a plantation itself, observe architectural and landscape features of plantation life, and learn about social relationships among plantation owners, residents, and slaves.

Slavery. Early on the Danish colonial plantation system was infamous for its cruelty toward slaves; however, by the end of the eighteenth century several laws had been enacted that served to protect the rights of enslaved persons. The slaves of the Danish West Indies were emancipated in 1848, some 20 years before the Emancipation Proclamation of the United States. The history of slavery and the

associated historic plantation resources that remain could provide the opportunity to develop an interpretive program around the important theme of slavery and Freed Blacks at Castle Nugent Farms.

Cattle Breeding for the World Market. The pivotal role that Castle Nugent Estate and Longford Estate served in the conception, development, and breeding of Senepol cattle was key to allowing other plantations in the Virgin Islands and across the Caribbean to begin grazing cattle. As the Senepol breed was further developed and refined, the influence of this breed was felt as far away as Florida, Texas, and even Brazil and several West African nations.

Potential for Use

Recreation

The lands within the Castle Nugent Farms study area offer outstanding opportunities for recreation, public use and enjoyment, and scientific study. Featuring expansive open fields, hills, offshore marine areas, and convenient accessibility to the site, the study team identified a wide range of potential recreational opportunities, including:

- Hiking/self-guided nature tours
- Picnicking
- Bike riding
- Fishing
- Kayaking
- Birding
- Star gazing/astronomy
- Horseback-riding on dedicated trails
- Controlled backcountry or other forms of camping
- Boating
- Snorkeling
- Swimming

This list only represents some possible amenities that could be available to the public; of these recreational amenities there currently is no place on St. Croix for controlled camping in a natural setting. If a national park unit is established at Castle Nugent Farms, then appropriate and suitable visitor recreational opportunities would be determined through the development of a general management plan and subsequent planning efforts for the new park.

Scientific Study: Historical and Archeological Research

The resources of the Castle Nugent Farms study area also offer outstanding opportunities for further historical and archeological study. The area includes five archeological sites, four of which are some of the oldest archeological sites on St. Croix. These sites could reveal valuable information about the early inhabitants of St. Croix. More specifically, archeological inquiry could reveal much in regards to prehistoric life and activities of the residents of St. Croix's south shore. Questions that may be addressed include inter-island exchange networks, with both neighboring islands of the northern Virgin Islands, Vieques, and Puerto Rico, and exchange relations with the South American-Orinoco homeland, settlement patterns, food acquisition and preparation, and religious beliefs.

Archeological inquiry can reveal much about the lives of those who lived on habitations, or plantations dating to the French colonial period (1650-1733). Numerous tobacco, cotton, sugar and indigo plantations were established during French rule. However, the story of French settlement across St. Croix, and within the Castle Nugent Farms study area, is largely unknown. During the French era of occupation, there was at least one habitation, and possibly as many as five habitations, that stood in the Castle Nugent Farms study area: Courtebotte (Lowrys Hill), Parisien (Castle Nugent, Laprey Valley, or The Springs), and Corteri and Gobé (Longford area).

The estates within the study area can also potentially yield information regarding the lives of the early Danish colonial period, both slave and European, and the activities associated with plantation agriculture of the eighteenth century. Further historical and archeological research could help to illuminate the daily activities of other little-studied groups, including African slaves and Freed Blacks. For example, it is known that there was a slave village at Petronella Estate that consisted of 19 to 20 houses. Even though they are not standing, and the current landowner has never observed any standing ruins of these structures, evidence of their presence and the lives of their occupants are likely buried beneath the ground surface.

In Laprey Valley the remains of the deep wells used by the slaves of the Ryan and Nugent estates are intact, and archeological survey would likely produce evidence of the locations of the villages themselves. Archeology could also provide information on ethnicity and the retention of traditional lifeways, and the development of creolized traditions, such as foodways and religious beliefs, and social status within the slave community itself.

Scientific Study: Senepol Cattle

Cattle breeding is an important part of the history of Castle Nugent Farms. The Gasperi family cattle ranch has been in continuous operation for more than 50 years, and is one of the oldest ranches in the West Indies. On January 1, 2006, under an agreement with the family, the University of the Virgin Islands assumed ownership of the Senepol herd at Castle Nugent Farms. The university is currently responsible for scientific research in charting the progress and development of the Senepol breed.

The university's research program, which is funded through U.S. Department of Agriculture grants, provides the opportunity to continue the presence of the Senepol breed at the property and incorporate the cattle into a potential park operation. If the Senepol program is continued a wide range of opportunities could conceivably arise for further scientific study on the herd to improve the animal's quality and productivity.

Scientific Study: Natural Resources

The biological diversity and complexity within the study area affords outstanding opportunities for scientific research. As noted, the area contains several threatened and endangered species that would greatly benefit from the preservation and protection of native habitats and areas that could otherwise be lost to modern encroachment and development.

Great Pond. The Great Pond and its associated alluvial plain has been extensively researched and studied since the 1960s, and today is considered an Area of Particular Concern and an Area for Preservation and Restoration by the Government of the Virgin Islands. The alluvial plain, in addition to the coral reef, and inland valleys that contain both dry and limited moist forests, have great scientific potential because they have not been impacted by development, except for land clearing during the colonial period, after which the lands were eventually converted to cattle grazing.

Coral Reefs. There are also considerable opportunities to enhance scientific study on the offshore coral reef system. Within the past few decades, coral diseases and hurricanes have significantly impacted reef systems in the Caribbean. Preservation and protection of the reef would facilitate better monitoring of the effects of these past events and would present opportunities to study the re-generation and re-growth of the reef system.

Integrity

The Castle Nugent Farms study area is unusual among St. Croix and the Virgin Islands' cultural and natural landscapes for its well-preserved and unencumbered

viewshed, agricultural setting, and its strong associative value both with the cotton production era and as a representative example of a cattle breeding ranch.

A variety of historic structures and ruins enhance the distinctiveness of the cultural landscape, including the standing mill and ruins of Estate Fareham, the standing and intact structures of Castle Nugent and Petronella, the ruins of the great house at Lowrys Hill (that may date to the French colonial period), and the ruins of a free black settlement at The Springs.

The centerpiece of the area is Castle Nugent, which has a high level of historical integrity. It is a representative example of one of the few cotton plantations to have survived on the island, dating to the earliest part of the Danish colonial period (ca. 1730), and the era of mid- to late-eighteenth century plantation agriculture. The estate buildings include a rare cotton house, the last one of its kind standing on St. Croix. The modest nature of the estate's architecture, including the great house, stands in contrast to the grander sugar estates dispersed throughout the island.

The great house at Castle Nugent consists of a rectangular central structure covered with a pyramid roof, and two wings, one to the north and one to the east. The northern ell is hipped-roofed, while the eastern ell has a gabled roof. The interior of the great house contains original wooden finishes, including pine plank ceilings and floors, and trim moldings. The vaulted cistern dates to ca. 1770.

Just south of the main house is the cotton house, built ca. 1750, which served as both a cotton storage building and a gin house. To the northwest of the great house is a masonry rubble structure commonly referred to as "the chapel," though its original function was likely an office; the "chapel" was built ca. 1780, and is a rectangular structure with a gabled roof and a bell tower at the north end. Continuing to the north are the remains of two of three slave row houses, one in ruin and one rehabilitated into a modern residence. These row houses were built ca. 1780-1800, and, based on the distribution of bays and openings, each likely contained four to six residential units. All of these structures, including the slave row houses, are constructed of masonry and masonry rubble, covered in lime plaster, and several have standing gable ends. A guest house, also referred to as a "cattle mill house," was built ca. 1920 possibly on the remains of an animal-driven sugar mill that dates to ca. 1790s.

In total, Castle Nugent includes several preserved buildings that are associated with mid-eighteenth century cotton agriculture on St. Croix. These structures are also associated with some sugar production in the late eighteenth and early nineteenth centuries, and with cattle grazing and breeding activities of the twentieth century.

National Significance Summary

The Castle Nugent Farms area represents a nationally significant cultural landscape that provides a glimpse into the historic development of St. Croix in the 18th and 19th centuries when cotton plantations dotted the south shore of the island. The area conveys a strong stepping-back-in-time quality to a period when cotton was an important export crop for the economic and social development of the new Danish colony. Although relatively brief, the era of cotton plantation agriculture on St. Croix, which depended on slave labor, was critical to the establishment of the Danish colonial system in the Caribbean.

Many of St. Croix's south shore plantations that produced cotton as their primary crop did not transition to the production of sugar cane as most other Virgin Islands estates did. In subsequent years, the lands continued to be used for agricultural purposes, including the raising of cattle that continues today. Largely because of this continuum, the agrarian landscape at Castle Nugent remains well intact from early colonial days. The fields, structures, ruins, and archeological resources provide an outstanding laboratory to study and interpret firsthand the cotton era on St. Croix, including the lifestyle of cotton plantation owners and their workers, both enslaved and free, and other prehistoric archeological resources that have remained undisturbed and largely protected by the cattle ranch operation.

Suitability

The National Park System includes sites that represent major themes and facets of the nation's natural and cultural history. The determination of suitability for inclusion in the System requires an evaluation of how a particular type of resource is currently represented in existing units of the National Park System or in other areas managed by federal, state, or local governments and the private sector. If a resource type is adequately represented in existing units, or in other areas that are comparably managed for protection and public use by other entities, it is not considered suitable for addition to the National Park System.

Criteria for Suitability

Adequacy of representation is determined on a case-by-case basis by comparing the potential addition to other comparably managed areas representing the same resource type, while considering differences or similarities in:

- Quality of historic resources
- Quantity and/or combination of resource values
- Rarity of the historic resources
- Historic character

- Interpretive and educational potential
- Similarity to resources already protected in the national park system or in other public or private areas
- Ownership

Pursuant to NPS policy, the comparison must result in a determination of whether the proposed new area would expand, enhance, or duplicate resource protection or visitor use opportunities found in other comparably managed areas.

For the evaluation of suitability, the resources and potential interpretive themes of the Castle Nugent Farms study area are compared to sites inside and outside the National Park System to judge whether they are adequately represented in the system or if similar resources are already protected by others.

Comparison of Castle Nugent Farms Study Area to Other Local and Regional Sites Listed in the National Register of Historic Places

St. Croix

Whim Plantation (12 acres). One of the most prosperous sugar plantations of the seventeenth, eighteenth and nineteenth centuries, Whim Plantation, located on the west end of St. Croix, also processed sugar cane from nearby plantations. Records dating back to 1751 give the original owner as Patrick Donough. Christopher Mac Evoy, Jr., a Danish sugar planter, inherited the plantation from his Scottish father in 1794 and enlarged the estate. After changing hands several times, Whim became the property of the Government of the Virgin Islands. Today it is operated as a museum and headquarters of the St. Croix Landmarks Society. The Whim Great House and dependencies stand as an excellent example of a Danish neo-classical sugar plantation that was designed and adapted for the West Indian climate. Additional standing structures include an old slave quarters and a windmill.



Whim Plantation. VI DPNR

Estate St. George Historic District (16 acres). The Estate St. George Historic District is located on the west end of St. Croix and is representative of a successful late eighteenth century sugar plantation. Owned by the Heyliger family during the era known as the "Golden Age of Sugar" (1770 to 1782), the estate

continued to process sugar until 1916. After the closing of the Bethlehem Sugar Central in 1930, the estate became a cattle ranch. Today, the district is operated as the St. George Village Botanical Garden and includes restored and stabilized remains of a factory, blacksmith shop, overseers house, early nineteenth century slave/worker village, lime kiln, cemetery and water system with wells and an aqueduct. The estate is also the location of a well-known, but little researched, prehistoric village that may date to ca. 400 B.C.

Slob Historic District (acreage N/A). The Slob Historic District, currently operated as a U.S. Virgin Islands territorial park, began as a large sugar plantation in the mid-eighteenth century. Owned by the Bodkin family until 1784, the estate boasted a factory building, water mill tower, great house, and slave village. Following emancipation in 1848, the fortunes of the estate declined and much of the rich land was converted for sheep and cattle grazing. The plantation was burned as part of the Labor Revolt of 1878, when workers across the island rioted against low wages permitted under labor laws that followed emancipation. Today, visitors can see the great house which has survived with some alterations to its eighteenth century appearance. The district also includes five late eighteenth century and two early nineteenth century slave cottages in the slave village, which is the birthplace of Cyril King, the island's first native-born governor. Also surviving are the stables and a factory building dating to the 1840s.

St. John – Virgin Islands National Park

Hermitage Plantation (50-100 acres). The Hermitage Plantation was devoted to the cultivation of cotton and the raising of cattle. Hermitage Plantation is located on the North side of Borck Creek, one of the several secondary inlets of Coral Bay on the east end of St. John. The plantation post-dates 1780 but by 1800 was already a well developed site with several buildings. It was then exclusively dedicated to the cultivation of cotton. Sometime during the mid-nineteenth century it became a cattle farm and continued as such into the early decades of the twentieth century. Ruins of most of the existing 15 structures appear to date from the nineteenth century. The plantation house, warehouse and shop contain architectural elements pre-dating 1800, during the plantation's cotton production era.

Annaberg Plantation (400-500 acres). Annaberg Plantation is the most prominent and widely visited plantation site in Virgin Islands National Park. Annaberg is one of several plantations on St. John that were owned in the 1720s and 1730s by Frederick Moth, the first Danish Governor of St. Croix, who later became the Governor General of the Danish West Indies. By the early nineteenth century, Annaberg had become the scene of one of St. John's largest efforts of sugar production that resulted in molasses and rum as important export products. The historic district's extensive ruins include a windmill tower, factory, slave quarters, oxpounds, stable, cookhouse, bake oven, and other structures associated with

sugar production. The ruins are stabilized and interpreted. Annaberg Plantation is located east of Mary Point and is accessible by the North Shore and Leinster Bay roads on St. John's north shore.

Cinnamon Bay Plantation (100-150 acres). Cinnamon Bay Plantation is located on the north shore of St. John. Established in 1717, the plantation is one of the earliest sugar plantation settlements on St. John. In 1733, the owner, Daniel Jensen, played a pivotal role in the slave rebellion which swept the island and sent nervous waves of unrest throughout the Caribbean. The ruins of the former plantation buildings are clustered around the North Shore Road, and include a factory building, plantation house, cook house, slave quarters, two cemeteries, a warehouse, horse mill, and a "Bagasse Shed," where crushed cane stalks were dried before use as a fuel in the boiling process of the cane juice. Most of the structures have been stabilized.

Catherineberg Plantation (100-150 acres). Catherineberg Plantation (also known as Hammer Farm, Jockumsdahl, or Herman Farm) is located on the relatively level plateau of the eastern center of St. John, roughly 700 feet above sea level. The ruins of the former plantation buildings are grouped approximately 500 feet north of the Centerline Road. Catherineberg is linked with many of the families associated with the early settlement of St. Thomas and St. Croix, including the de Nully, Beverhout and Heyliger families. A thriving sugar plantation from the eighteenth through much of the nineteenth centuries, the farm eventually converted to grazing cattle for local consumption. Ruins and buildings that remain from the plantation-era include eighteenth century factory buildings, the windmill tower and horse mill. Some restoration of the historic buildings has been undertaken.

Dennis Bay (100 acres). Dennis Bay Plantation is located on the flat and arable lands of a small peninsula that separates Trunk Bay and Hawks Nest Bay, on St. John's north shore. The plantation was established by 1728, and was devoted to sugar cane cultivation. The plantation buildings include a windmill tower and a horsemill, both post-dating 1800, that are situated on a high bluff on the west side of the peninsula; additional and possibly older buildings are clustered along the shoreline of Dennis Bay. These include the plantation house, factory building, still, horsemill, oxpound and stable, slave village with five masonry cabins, small masonry bridge, walls, gate posts, drinking troughs, two wells, and ruins of a masonry aqueduct used to transport cane juice from the windmill to lower elevations of the factory. The aqueduct and masonry cabins are unique for St. John plantations. The plantation house is the best preserved example of the traditional type within the Virgin Islands National Park; however, the plantations structures are mostly in ruins.

Jossie Gut Historic District (200-300 acres). The Jossie Gut Historic District is located in the Reef Bay Valley, on the south side of St. John. The district contains

a factory, large horsemill, oxpound, stable, storage building, and the fragmentary remains of a dam across the tributary gut with sluices and a cistern for collection and distributing surface runoff. Jossie Gut Sugar Factory is significant for its remains of a surface water collecting and distributing system and for its association with Hans Henrik Berg, who was Governor of the Danish West Indies in the mid-nineteenth century. The sugar factory is a nineteenth century structure. The plantation appears to have produced a good amount of sugar during the first half of the nineteenth century. It was owned and operated by Governor Berg from the 1820s until his death in 1862. The horsemill is in a fair state of preservation and some of the factory walls still stand. All other buildings and structures have been partially destroyed by erosion and deterioration.

Lameshur Plantation (200-300 acres). Lameshur Plantation is located on the south shore of St. John behind Little Lameshur Bay. The remains of the buildings and structures of the plantation are clustered in two groups. One is located along the shoreline of the central and western section of the bay and the hillside north of it. The condition of the remains is poor and in some cases so deteriorated that their original functions are no longer apparent. The ruins of the plantation represent a wide range of land uses from the agricultural pursuits of cultivation of cotton and sugar cane to bay oil production.

L'Esperance plantation (100 acres). L'Esperance Historic District is significant for both its unusual layout as a sugar plantation and for its ownership by Governor Eric Bredal. In 1719, Governor Bredal led the Danish colonization of St. John in the face of British opposition. L'Esperance Plantation is located on a high ridge, within St. John's interior. It was a premier location for agriculture, with fertile soil, a permanent spring, and relatively high precipitation. It is a small, compact site with large buildings, including two horsemills, factory, free-standing cistern, storage building, great house, cook house, service building, cemetery, stone bridge, retaining walls, staircases and stone fencing. L'Esperance produced sugar in the early 1830s but discontinued cultivation of cane by the 1840s.

L'Esperance was developed early in the eighteenth century, and is notable for the high quality of masonry workmanship in both the great house and service buildings. It is also noted for the use of non-local volcanic sandstone as a building material, likely imported from the Leeward Islands. The masonry remains of the Great House, the south horsemill and the service building are in fair condition. All other structures are badly deteriorated.

Brown Bay Plantation (200-300 acres). Brown Bay Plantation is located on the dryer northeastern shore of St. John. In addition to the masonry remains of a horsemill, sugar factory, and great house, the site has the masonry footing of two wood-framed buildings and four unidentified masonry structures, two small cabins, three wells and two large cemeteries. The plantation was not brought under cultivation until the late eighteenth century; it is presumed that the

majority of the buildings date to the nineteenth century. The sugar factory and associated structures were built between 1780 and 1800. However, sugar production proved to be unsuccessful and the plantation was converted to cotton sometime in the early nineteenth century. By the mid-nineteenth century the plantation turned grazing cattle for local consumption.

Comparison Conclusion

Overall differences between the estates comprising the Castle Nugent Farms study area and those local and regional sites described above:

- The focus of most of the St. John plantations was sugar production. Only four – Hermitage Plantation, Lameshur Plantation, More Hill, and Brown Bay Plantation – grew cotton at some point in their history.
- The lands that comprise the Castle Nugent Farms study area are mostly gently undulating to flat coastal plains which rise sharply to an elevation of over 700 feet above sea level. Therefore, little transformation of the environment through terracing was necessary for agricultural endeavors, whether for planting cotton, sugar cane, or cattle grazing. This is a unique circumstance that separates the Castle Nugent Farms study area from the other Virgin Islands plantations within the National Park System. In this way, the natural landscape was preserved and retained, becoming a part of the cultural landscape.
- The majority of the St. Croix estates listed in the National Register of Historic Places were also focused on sugar.
- While several of the above estates grazed stock cattle (Cinnamon Bay, Hermitage, Hammer Farm, Brown Bay), they did not breed cattle and were not active in the distribution of these breeds throughout the Caribbean.
- When compared to the other St. Croix estates listed in the National Register, those comprising the Castle Nugent Farms study area are still within a rural, agricultural setting. All of the others have been partially or wholly subsumed into urban development, and thus their rural integrity and character has been compromised to some extent.
- The structures located at Castle Nugent, Petronella, and Longford are not in ruin. Rather, they are mostly rehabilitated buildings dating to the mid-to late eighteenth century that are part of viable, working farms and ranches. Consequently, there is great potential to restore the structures back to their late eighteenth and early nineteenth century historical appearance.

Comparison of Castle Nugent Farms Study Area to Other NPS Units

Beyond the Caribbean region, there are other park units in the National Park System that contain similar resources and themes as those found at Castle Nugent Farms. However, when the unique history and cultural and natural resources of the Castle Nugent Farms study area are taken into consideration, none of the NPS units assessed by the study team closely parallel the resources and themes represented at Castle Nugent Farms. A summary and comparison of these units indicates that the establishment of a park unit at Castle Nugent Farms would not be replicating a resource type that is already adequately represented in the National Park System.

- *Kingsley Plantation, Timucuan Ecological and Historic Preserve.* A late eighteenth century Sea Island cotton plantation, located on Fort George Island, Florida. English. Encompasses roughly 60 acres.
- *Magnolia and Oakland Plantations, Cane River National Historical Park.* Eighteenth and nineteenth century cotton plantations in Natchitoches, Louisiana. French. The two sites encompass roughly 207 total acres.
- *Melrose Plantation, Natchez National Historical Park.* Nineteenth century cotton plantation, Natchez, Mississippi. English. Encompasses approximately 132 acres.
- *Stafford and Rayfield Plantations, Cumberland Island National Seashore.* Early to middle nineteenth century Sea Island cotton plantation ruins on southeast coast of Georgia. English.

Similarities to Castle Nugent Farms area

- Cotton production.
- Main structures are still standing and in good condition at nearly all of these units.
- French colonial association at Cane River National Historical Park.
- Prehistoric archeological sites at Timucuan Ecological and Historic Preserve and Cumberland Island National Seashore.

Differences

- English colonial association only at Kingsley Plantation, Cumberland Island National Seashore, and Melrose Plantation.
- Castle Nugent Farms study area is an example of historic Danish plantation.
- Presence of historic herd of cattle at Castle Nugent Farms, with global distribution.

Summary of Suitability

The resources of the Castle Nugent area reflect the historical cotton era in the Virgin Islands better than any other collection of estates under public ownership within the U.S. Virgin Islands. The establishment of a national park unit at Castle Nugent Farms would provide the opportunity to preserve and protect an outstanding Caribbean cultural landscape and interpret the cotton era and related agricultural themes that have been instrumental in the development of St. Croix and the Virgin Islands. The historical estates that operated within the Castle Nugent lands span every period of the United States Caribbean colonial expansion, including the French, English, Danish eras; and continue into the American territorial period of today. Of particular importance, the estates include the remains of both French and Danish plantation systems in the Virgin Islands, neither of which are well represented in the National Park System.

Feasibility

An area that is nationally significant and meets suitability criteria must also meet feasibility criteria to qualify as a potential addition to the National Park System. To be considered feasible, an area's natural systems or historic settings must be of sufficient size and shape to ensure long-term protection of resources and accommodate public use. The area must also have potential for efficient administration at a reasonable cost.

In evaluating feasibility for the Castle Nugent Farms study area, the NPS considered a variety of factors, including the following:

- Access
- Size and boundary configuration
- Land ownership
- Current and potential threats to the resources
- Operational requirements

- Level of local and general public support

The feasibility evaluation also considers the ability of the NPS to undertake new management responsibilities in light of current and projected availability of funding and personnel.

Access

The study area is very accessible by vehicle due primarily to the crossing of Route 62, a paved two-lane road, through the southern portion or edge of the property. Route 62 connects with other primary roads on the island. Castle Nugent Farms is located only three miles southeast of the principal town of Christiansted, which has an abundance of commercial establishments and tourist opportunities, including Christiansted National Historic Site. The Henry E. Rohlsen Airport is approximately six miles west of the study area. Frederiksted, the island's other principal town, is approximately twelve miles west of the study area on St. Croix's western shore.

Size and Boundary Configuration

At 2,900 acres, the lands of the Castle Nugent Farms study area are somewhat expansive, but certainly comparable to existing units in the National Park System. Given the long history of the NPS in managing large areas, the size and configuration of the Castle Nugent Farms area does not present any unusual problems from a management and operational standpoint.

Potential boundaries of a new park would seemingly provide for a largely straightforward and contiguous configuration. The overall 2,900 land acres, which could conceivably represent the federal portion of a future park boundary, runs in an elongated shape along lower pasture lands, parallels the shoreline, and rises northward in the center portion as it climbs up the hills to a 750-foot ridge. This configuration could provide the opportunity for "ridge to reef" resource management, conservation and restoration that would further coral reef protection along the south shore of St. Croix.

Marine areas extending out as far as the three mile territorial limit could be included within the park boundary. However, the study team believes that it would not be necessary to transfer jurisdiction of such areas to federal ownership since the submerged lands are already under territorial ownership and are therefore afforded protections due to this status. Including the submerged lands within an authorized park boundary would, however, further affirm the importance of the offshore resources and facilitate cooperative efforts between the Government of the Virgin Islands and the NPS for the future protection of the submerged lands.

The NPS currently administers three park units on St. Croix: Christiansted National Historic Site, Buck Island Reef National Monument, and Salt River Bay National Historical Park and Ecological Preserve. Two units are smaller in size than the Castle Nugent Farms study area and one is larger.

Christiansted National Historic Site commemorates the urban colonial development of the Virgin Islands and contains several colonial structures in the heart of the capital of the former Danish West Indies on St. Croix. First designated as Virgin Islands National Historic Site on March 4, 1952, the park was renamed in 1961. The total size of the park is just over 27 acres.

Buck Island Reef National Monument features the finest coral reef gardens in the Caribbean, including over 5,000 acres of critical habitat for the first two species of marine invertebrates, elkhorn and staghorn corals, listed under the Endangered Species Act. Buck Island has one of the first underwater interpretive snorkel trails affording visitors a rare glimpse of coral grottoes, sea fans, and multitudes of reef fish. The island's coral sand beaches and tropical dry forests are nesting areas for four species of endangered and threatened sea turtles, brown pelicans and the globally endangered St. Croix Ground Lizard. The park was established by presidential proclamation on December 28, 1961, and expanded in 2001 with the addition of 18,135 acres of submerged lands. This increased the total size of the park to just over 19,000 acres, all of which are federally-owned in a fully protected marine area. The island encompasses the park's terrestrial lands and totals 176 acres.

Salt River Bay National Historical Park and Ecological Preserve has seen over 2000 years of human habitation and contains the only known site where members of the Columbus expedition set foot on what is now U.S. territory. It preserves upland watersheds, mangrove forests, and estuarine and marine environments, including rare access to a submarine canyon. The park was authorized on February 24, 1992. The total size is 1,015 acres, of which 760 acres are nonfederal.

Land Ownership

The NPS can seek to acquire lands within a park's congressionally authorized boundary by donation, exchange, or purchase from willing sellers. Within the Castle Nugent Farms study area there are seven principal owners of lands. The largest owner of terrestrial lands is the Gasperi family, who own approximately 1,750 acres. The Gasperis have long stated a willingness to sell their land for the purposes of establishing a national park unit. Warren Mosler is the owner of approximately 400 acres at Longford, located at the western portion of the area. It is not known whether he would be a willing seller of his property. Mr. Mosler purchased his property from the Gasperis in 2006 and some of the property's vegetation, including mangrove stands, has been cleared in anticipation of future residential development.

The Golden Gaming LLC owns approximately 300 acres at Estate Hartmann, adjacent to Salt Pond (which is owned by the Government of the Virgin Islands). Golden Gaming is in the process of trying to get approval to construct the Wyndham St. Croix Golf Resort & Casino. This development would be part of a proposed \$250 million complex that would include a conference center, 25,000-square-foot casino, 18-hole golf course, spa and fitness center, four restaurants, lounges, and retail stores. Lawsuits and controversy have slowed the progress of the development since Golden Gaming first announced the plans in 1999. The project has been controversial because of concerns about potential harm to the ecosystem at Great Pond. Many of the delays have also centered on securing necessary financing and permits for the project.

Robert White is the owner of approximately 50 acres at Lowrys Hill, located at the ridgeline just west of Route 62. Mr. White has been a supporter of the study and has indicated a willingness to include his property in a future park unit. Cora Christian owns approximately 100 acres near Longford. It is not known whether she would be a willing seller of her property. The "Howard M. Wall" Boy Scout Camp, owned by the Boy Scouts of America, is a 20-acre site at the west end of Great Pond Bay. The scout camp is a gifted deed from Mr. Wall to the Boy Scouts. It is expected that the camp would continue to operate at this location even if a national park unit is established.

The approximately 8,600 submerged acres are under the jurisdiction of the Government of the Virgin Islands. Additionally, as noted, the government has jurisdiction over the approximately 200 submerged acres at Great Pond.

Current and Potential Threats to the Resources

If the lands within the Castle Nugent Farms study area are not included as part of the establishment of a national park unit, then it appears that the most likely future use of the land would be for the purpose of commercial and residential development. Such land use would pose the following existing and potential threats to the area's resources.

- Loss of nationally significant cultural landscape
- Potential loss of extant historic structures
- Potential loss of archeological resources (known and unknown)
- Inability to advance potential for further study (cultural and natural)

- Potential loss of educational and interpretive opportunities (cultural/ethnographic and natural)
- Discontinuation of Senepol cattle operation and University of the Virgin Islands research and development program
- Runoff pollution from development; potential increase in erosion and sedimentation; degradation of coral reef resources
- Potential introduction and increase in non-native and exotic vegetation
- Proliferation of artificial lights; loss of night sky observation opportunities
- Loss of opportunity for ecological, habitat, and species restoration (includes resident and migratory birds, juvenile fish, and sea turtles)
- Potential loss of intact watershed
- Loss/adverse impacts on wetlands, salt ponds, seagrass meadow, mangroves (entire Great Pond Bay Area of Particular Concern)) and fishery- nursery habitat and adult fishery (fish, conch, and lobster)
- Adverse impacts to rare, threatened and endangered species – resident and migratory
- Potential loss of scenic qualities, such as historic pasture lands, viewshed, vistas, dark skies
- Potential loss of local area cultural uses for camping, fishing, and recreation due to reduced access to shoreline resources

Acquisition, Development, and Operational Requirements

The NPS can seek to acquire lands within a park's congressionally authorized boundary by donation, exchange, or purchase from willing sellers. The focus of acquisition at Castle Nugent Farms would be the terrestrial land areas within any authorized boundary. All of the terrestrial lands within the study area are currently in private ownership. Therefore, acquisition of such lands would need to be authorized if a park unit is established. Donated property would increase the feasibility of managing an area as a national park due to the absence of acquisition costs. The submerged lands encompassing Great Pond and offshore areas are owned by the Government of the Virgin Islands. Acquisition would not

be necessary or advised for these lands given that these areas are already under public ownership and are afforded protections due to this status. However, including the submerged lands within an authorized park boundary would further affirm the importance of the resources of those areas.

A new National Park System unit would have start-up and ongoing operational costs. For the purposes of this study, the NPS has developed cost estimates that are based on very broad needs typically associated with the operational requirements of a new park unit. If a new unit is established at Castle Nugent Farms, the NPS would develop a general management plan that would guide future management of the area, and would include more detailed start-up and longer term cost estimates for operations and facilities development.

Level of Local and General Public Support

Public sentiment has been overwhelmingly in support of creating a national park unit at Castle Nugent Farms. This high level of support is primarily due to wide-ranging public concern that the study area will be developed for residential and commercial purposes if a national park unit is not established. Many supporters are island residents or frequent visitors to St. Croix. Consequently, there is a great deal of familiarity with the geography of the island and concern over the rate of modern development that is rapidly replacing rural landscapes.



View of the undeveloped shoreline, which was cited by the public as an important reason for preserving the Castle Nugent Farms area. *NPS*

Many comments from the public stressed that the establishment of a national park unit was an opportunity to preserve a remnant of the island's historic agrarian past. Respondents referred repeatedly to the Castle Nugent area's impressive viewshed with unobstructed vistas from the hills to sea as an increasingly rare characteristic on St. Croix. Other expressions of support for a new national park unit included protection of wildlife, public access to the historic rangelands, continuation of heritage agriculture with the breeding of the Senepol cattle, and maintaining the undeveloped quality of the south shore beaches. Numerous comments were in favor of establishing a national park unit due to the variety of bird and other animal life around the Great Pond area as well as along the undeveloped beach and reef.

Many respondents pointed to the development density of the neighboring island of St. Thomas and the associated problems that have emerged, such as traffic congestion, loss of open space, and pollution. Preservation of the area at Castle

Nugent Farms was seen by many as an opportunity to offset similar development pressures on St. Croix. Comments focused on the great potential of Castle Nugent Farms as a historic site and its use as an interpretive and educational resource for St. Croix. Respondents were concerned that leaving Castle Nugent Farms at risk to development pressures would further disconnect current and future St. Croix residents and visitors from the rich history of the island. See Appendix C for a summary of public comments.

Feasibility Summary

In summary, the NPS finds the study area to be feasible to manage as a unit of the National Park System. The size and configuration of the area are comparable to existing units and capable of being efficiently managed. The resources, including coral reefs, cultural landscapes, historic structures, dry uplands, rare wetlands, and a cattle breeding and ranching operation, are similar to those managed by other units of the system, though their combination and expression in this location are unique, and would not place an undue burden on the managing agency. There are significant potential threats to the resources, namely commercial and real estate development, and there is strong local support for action to protect the resources. There is at least one willing seller within the study area (and potential additional willing sellers). The future costs are uncertain, but would likely feature high acquisition costs (if purchased; donation is also an option for acquisition) and moderate administration costs. Costs to develop facilities for visitor use and education have not been determined.

Need for NPS Management

The need for NPS management is the final criterion for the potential establishment of a unit of the National Park System. The criterion requires a finding that NPS management would be superior to other potential alternative management arrangements by other entities.

NPS management is the best option for the protection of the terrestrial lands at Castle Nugent Farms. The Gasperi family, the principal property owners of the core 1,750 acres that includes the historic Castle Nugent estate complex, has expressed a strong desire for the establishment of a federal park at Castle Nugent Farms. The family initially approached Donna Christensen, Virgin Islands Delegate to Congress, about their interest in the preservation and protection of their property. In the course of this study, the Gasperis did not express any interest in transferring their property to the Government of the Virgin Islands or another entity. Furthermore, the Government of the Virgin Islands has not expressed any interest in acquiring additional property in the study area (i.e. terrestrial lands).

The NPS is well-suited to administer a new park unit on St. Croix due to an established and long-standing park operational presence on the island. Currently, there are three units on St. Croix—Christiansted National Historic Site, Buck Island Reef National Monument, and Salt River Bay National Historical Park and Ecologic Preserve—under NPS operation. Existing operational infrastructure could be expanded through additional staffing and other resources to support a new NPS unit. Located in nearby Christiansted, the headquarters for the existing NPS units has sufficient infrastructure to provide administrative support to a new park unit that could consist of the size and configuration of the study area acreage, or a smaller area. Existing communications systems at the headquarters are also sufficient to support operations of a new park unit.

No other entity on St. Croix has the capacity to manage the wide range and diversity of resources found at Castle Nugent Farms. Although the Government of the Virgin Islands manages a handful of small historic sites, it does not have the necessary budget, staffing, and operational resources to acquire and manage an expansive cultural and natural area the likes of which would be required at Castle Nugent Farms. However, the NPS and the Government of the Virgin Islands could collaborate on certain park programs, especially if marine areas owned by the territory are included within an authorized boundary. There is precedent for collaboration between the NPS and the territory. At Salt River Bay National Historical Park and Ecologic Preserve, the Virgin Islands Department of Planning and Natural Resources manages the Salt River Bay Marine Reserve and Wildlife Sanctuary, which includes marine areas within the park that are owned by the territory.

Given its established operational presence and infrastructure, the NPS offers a superior management option. With the NPS as the lead management entity, opportunities to pursue partnerships with the Government of the Virgin Islands, and other entities that share NPS stewardship goals, could further ensure the preservation, protection, and interpretation of the resources at Castle Nugent Farms. Potential partnerships are discussed in more detail in Chapter 4.

Chapter 4 Management Alternatives

Management alternatives are developed after the resources of a study area are determined to be eligible for potential inclusion in the National Park System. Drawing from stakeholder and public input, the study team developed two management alternatives for the preservation, protection, and visitor enjoyment of resources within the Castle Nugent Farms study area. Almost all of the public comments indicated that the action alternatives represented a reasonable approach to managing the resources of the study area. This chapter also describes a “no action” alternative.

Each alternative includes a general description of how resources would be interpreted for visitors, what future preservation and development needs would be undertaken, how management would be accomplished, and estimated operational costs. The alternatives are not mutually exclusive. While each alternative could stand on its own, certain elements could be combined to better serve resource protection and interpretation objectives.

Under the action alternatives, many projects that are technically possible to accomplish may not be feasible in light of current budgetary constraints and other NPS priorities. This is especially likely where acquisition and development costs are high, the resource may lose its significant values before acquisition by the NPS, or other protection action is possible.

Preliminary cost estimates for staffing and operations are provided for each alternative for comparison purposes only. It is recommended that a more comprehensive cost estimate be prepared prior to initiating any of the more detailed findings described in this study.

Mitigation Measures

Mitigation measures are specific actions designed to minimize, reduce, or eliminate impacts of alternatives and to protect resources and visitors. The purpose of this special resource study is to evaluate Castle Nugent Farms’ potential for consideration as a new unit of the National Park System. This phase of the study focuses on the evaluation of alternative management scenarios. If the site were to become a new unit of the National Park System, additional planning and implementation proposals would be fully vetted through additional NEPA and National Historic Preservation Act compliance activities. This is where specific actions would be outlined to minimize, reduce, or eliminate impacts of alternatives and to protect resources and visitors, as well as also ensuring full compliance with NEPA, the National Historic Preservation Act, and NPS policy.

Alternative A - No Action

Alternative A, the no action alternative, represents a scenario where no action would be taken by the NPS or any other public entity to acquire property within the Castle Nugent Farms study area for the purposes of establishing a unit of the National Park System. Under NEPA, the NPS is required to include the no action alternative for comparison purposes. Consequently, Alternative A is included primarily as a baseline for comparing the consequences of implementing each of the other alternatives.

New programs, activities, or site development beyond the existing conditions are not considered in the no action alternative. Furthermore, a cost estimate is not included in the No Action alternative because future acquisition and development is not proposed. Thus, no federal funds would be expended under this alternative.

For the purposes of this study, under Alternative A the following conditions and trends are presumed to continue.

Visitor Experience

The properties within the study area would remain in private ownership. Consequently, public access would presumably be prohibited or very limited at best. Interpretative, educational, and recreational opportunities that are characteristic of a national park unit would not be available due to the lack of access for the general public.

Site Development

Infrastructure and facilities to provide visitor services and opportunities would not be provided in the No Action alternative. The existing buildings within the study area would continue to serve as residences, support buildings, and other uses for the property owners. Limited pedestrian access would continue to discourage casual visitors from entering the site.

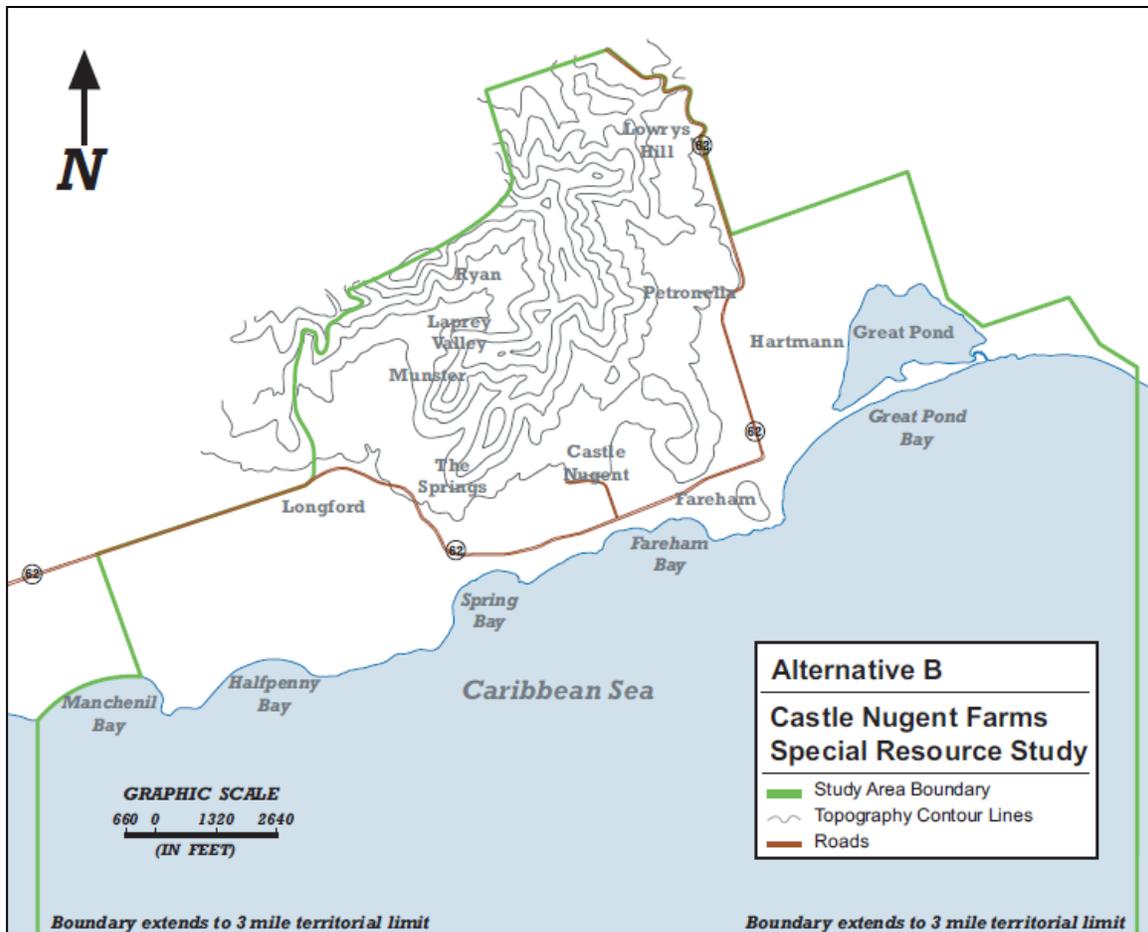
Resource Preservation and Protection

As discussed in Chapter 3, if the current management of the study area continues, it is likely that the future use of the lands within the study area would be for the purpose of commercial and residential development. Such land use would pose several threats to the area's cultural and natural resources and scenic values. Development could lead to the loss of the cultural landscape, historic structures, archaeological resources, and educational opportunities. Impacts to natural resources such as diminished quality of wetlands and meadows, pollution of the coral reef system, and an increase in exotic vegetation are likely.

Alternative B - Castle Nugent National Historic Site, 11,500 acres

Alternative B represents a consolidation of two alternatives that the NPS presented to the public during June 2009. As further described below, the only difference between the alternatives was the operational approach of a stand-alone unit versus one that would share resources with existing NPS operations on St. Croix.

Alternative B would establish Castle Nugent National Historic Site. The new park would focus on the full range of cultural, natural, and recreational resources at Castle Nugent Farms as described in this study. Under Alternative B, the land area of the park would encompass the approximately 2,900 acres that corresponds to the study area. Thus, the land area would generally stretch from Lowrys Hill and Laprey Valley to the Caribbean Sea and Manchenil Bay to Great Pond Bay. Vast marine areas totaling approximately 8,600 acres are also included within the boundary of Alternative B. The boundary would extend offshore directly to the south, out to the three mile line of territorial-owned waters.



Operations and Site Development

The national historic site proposed under Alternative B could either operate as a stand-alone unit or with management and administrative support from Christiansted National Historic Site. In the latter scenario, there is precedence for sharing resources due to the presence of existing NPS operations on St. Croix. Currently, three NPS units—Christiansted National Historic Site, Buck Island Reef National Monument, and Salt River Bay National Historical Park and Ecological Preserve—are under the operational and administrative oversight of one superintendent. NPS staff are largely shared between the three NPS units, and provide administrative and functional support to accomplish management objectives for the three units, including resource protection, visitor services, interpretation and education, law enforcement, emergency services, public health and safety, and maintenance.

If Congress did not desire to establish a stand-alone unit at Castle Nugent Farms, then the existing NPS operational infrastructure could be expanded through additional staffing and other resources to support a new NPS unit. The headquarters at Christiansted is 15 minutes away by vehicle and has sufficient infrastructure to provide administrative support to a new park unit of the size and configuration of Alternative B. Existing communications systems at the headquarters are also sufficient to support operations.

Development needs and their costs have not been determined for Alternative B. The alternative's needs for resource protection, visitor services, and other operational needs would be determined through a general management plan, which would guide future management of the area. The plan would ensure protection and preservation of cultural, natural, recreational, and scenic resources, describe visitor experience and use, and plan for facility development for the next 15 to 20 years.

Visitor Experience

Alternative B has the most acreage and greatest diversity of cultural and natural resources. Consequently, this alternative has the most potential to provide the widest variety of visitor experience opportunities. Overarching visitor experience goals and the type and appropriateness of visitor use opportunities to be implemented would be determined and described in the general management plan.

The Servicewide interpretive themes discussed in Chapter 3—*Peopling Places* and *Developing the American Economy*—would provide the framework for developing interpretive and educational programs for park visitors. The additional sub-themes *Exploitation of Resources*, *Life on a Plantation*, *Slavery*, and *Cattle Breeding*

for the World Market would also be excellent storylines to develop and provide for visitors.

Under this alternative, the study team identified potential activities and programs that could be made available to visitors, including:

- Guided ranger- and volunteer-led interpretive programs
- Park-in-classroom educational activities (for example, develop a lesson plan on cotton plantation agriculture during the Danish colonial era)
- Historical and archeological research and demonstration programs at selected sites in the park

Interpretation programs available at the site for school groups and special events could be provided by trained volunteers. Self-guided programs would include visitor center exhibits, multi-media exhibits (slide/video style in multi-use viewing area), and interpretive walking trails with wayside exhibits.

Alternative B would also offer the widest variety of potential recreational opportunities. The study team believes potential opportunities could include but not be limited to:

- Hiking
- Birding
- Star gazing/astronomy
- Horseback-riding on dedicated trails
- Controlled back country or other forms of camping
- Boating
- Snorkeling
- Swimming
- Picnicking
- Limited mountain bike riding
- Fishing
- Kayaking

Actual allowable activities and uses would be determined in the general management plan.

Resource Preservation and Protection

Due to the inclusion of the highest number and diversity of cultural and natural resources, encompassing essentially all of the resources described in Chapter 2,

Alternative B would provide for a high level of resource preservation and protection. Among the many resource protection opportunities that could be envisioned under this alternative are the following:

- Potential for preservation, restoration, or adaptive use of existing historic buildings at Castle Nugent Estate, Longford Estate, and Petronella Estate for park operations, including interpretation, visitor contact, law enforcement, and maintenance purposes.
- Preservation of a large watershed, including Great Pond and environs, and extensive barrier coral reef system that includes the largest and last intact mangrove and estuarine/coral reef area on St. Croix and the Virgin Islands.
- Preservation of over 1,000 acres of Caribbean dry forest, including extensive uplands.
- Preservation and protection of 4.5 miles of unspoiled shoreline.
- Natural resources would be intensely managed to maintain the historic character of the cultural landscape.
- Archeological resources would be monitored and protected. Archeological investigations would be conducted at an appropriate level prior to any construction activity.
- Recovered artifacts would be documented and stored at an NPS curatorial storage facility. Stored artifacts would eventually be available for public exhibition and interpretation.

Cost Estimate

Alternative B proposes funding and staffing by the NPS. Other sources of funding would be used if available. However, viable alternative sources have not yet been identified.

- Staffing and operational costs (unit attached to Christiansted National Historic Site) - \$850,000 to \$950,000 per year
- Staffing and operational costs (stand-alone NPS unit) - \$1,050,000 to \$1,150,000 per year
- Development of facilities for visitor use, education, etc - costs unknown at this time

The study team does not propose nor foresee the need for federal ownership of marine areas within the boundary, which would minimize or eliminate staffing and operational needs in those areas.

For this alternative, the NPS projects the following full-time equivalent positions:

- (1) GS-11 district ranger
- (2) GS-9 law enforcement rangers
- (1) GS-9/11 cultural resource specialist
- (2) GS-5 interpretive rangers (seasonal)
- (1) WL-9 work leader
- (1) WG-7 mechanic
- (3) WG-5 trail workers
- (1) GS-9/11 terrestrial ecologist
- (1) GS 7/9 botanist/vegetation technician
- (1) GS 5/6/7 biological science technician
- (2) GS-4/5 administrative clerks

Under this alternative, additional support could be provided from staff that is shared among the three NPS units on St. Croix, especially if the unit is attached to Christiansted National Historic Site. Likewise, some of the staff additions above could be shared with other park units, as determined by the park's management staff. If the national historic site is a stand-alone unit, then positions in addition to those above would likely include at least a GS-13 superintendent and a GS-11 administrative officer. These two positions would increase staffing costs by approximately \$200,000 annually.

Facilities and related construction needs for operating the national historic site would be addressed through the general management planning process. For initial operations and visitor use (prior to completion of the general management plan) there would be the need to upgrade certain existing infrastructure to NPS standards. Visitor contact, parking and restroom amenities would be necessary for initial start-up operations, but could be kept to a minimum footprint until appropriate visitor and vehicle capacity is determined through the general management planning process.

Partners

Establishment of a park unit would provide the opportunity to develop various partnership programs. Due to the high level of public support for the establishment of a park at Castle Nugent Farms, there presumably would be great potential for developing a park volunteer program to supplement operations.

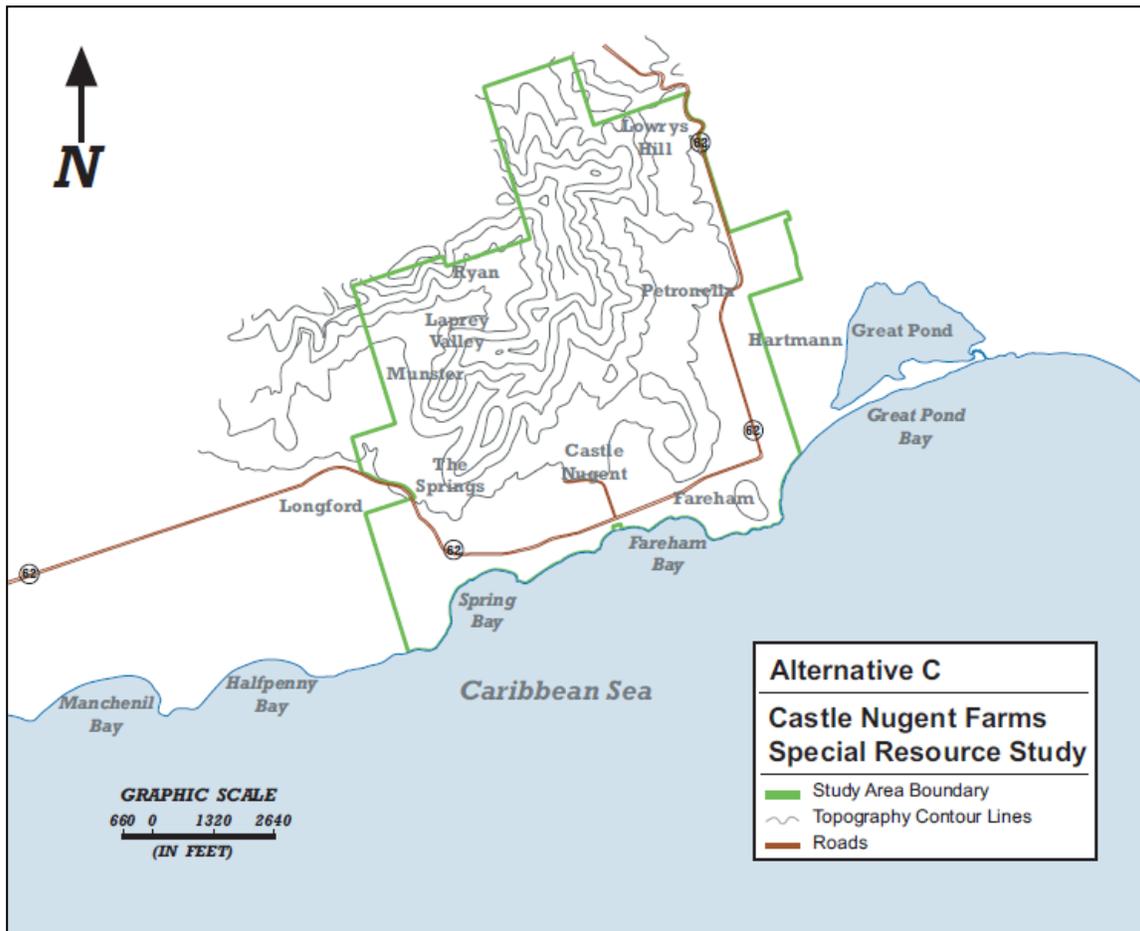
The study team identified potential partnerships that include:

- The Government of the Virgin Islands. Potential partnership to manage Great Pond, mangroves surrounding Great Pond, offshore submerged lands, and surrounding lands.
- The University of the Virgin Islands. Through a cooperative agreement, could manage grazing lands for the Senepol breeding and research program. Currently, the university is on a year-to-year agreement with the Gasperi family.
- The St. Croix Environmental Association and the Nature Conservancy. Potential to develop environmental and natural resource educational and interpretive programs.
- The St. Croix Landmarks Association and the St. Croix Archeological Society. Potential to develop cultural resource, history, and archeology educational and interpretive programs.
- Community volunteer program to provide assistance for interpretive and outreach program activities.

Alternative C - Castle Nugent National Historic Site, 1,750 acres

During June 2009, the NPS presented this Alternative C to the public as Alternative D. As described above, the alternatives B and C that were presented at those meetings have been combined to form Alternative B in this study.

Alternative C would also establish a national historic site, but the boundary would be much smaller than in Alternative B. Alternative C envisions a new NPS unit that would total approximately 1,750 terrestrial acres only. The boundary would generally extend from Lowrys Hill and Laprey Valley to the shoreline, and from Spring Bay to Fareham. The southern boundary would extend along the shoreline for approximately 1.5 miles, but would not contain any offshore areas. The boundary of this alternative corresponds with the land that is currently under the ownership of the Gasperi family.



Although the acreage is considerably less than the amount in Alternative B, the NPS believes this alternative would still provide sufficient resource protection, interpretation and recreational opportunities, but only for the core of the overall study area. This designation would provide preservation and protection of significant historic resources that are vital to interpreting the cotton plantation story on St. Croix. Other resources of the study area, such as Great Pond and the intact cultural landscape outside the core would be at risk to private development. Certain recreational opportunities and shoreline access could also be restricted due to potential development.

Operations and Site Development

The national historic site proposed under Alternative C would operate with management and administrative support from Christiansted National Historic Site. A stand-alone NPS unit is not an option under this alternative. The headquarters at Christiansted is 15 minutes away by vehicle and has sufficient infrastructure to provide administrative support under this alternative. Existing communications systems at the headquarters are also sufficient to support the operations of a 1,750-acre national historic site at Castle Nugent Farms.

As with Alternative B, development needs and their costs have not been determined for Alternative C. The alternative's needs for resource protection, visitor services, and other operational needs would be determined through the development of a general management plan that would guide the future management of the area.

Visitor Experience

Although not offering as great a potential as Alternative B, Alternative C would still provide significant opportunities for a wide variety of visitor opportunities and programs. Like Alternative B, the Servicewide interpretive themes discussed in Chapter 3—*Peopling Places* and *Developing the American Economy*—would provide the framework for developing interpretive and educational programs for park visitors. The additional sub-themes *Exploitation of Resources*, *Life on a Plantation*, *Slavery*, and *Cattle Breeding for the World Market* would also be excellent storylines to offer to visitors. The primary interpretive emphasis in Alternative C would be the era of cotton plantation agriculture on St. Croix, with the compound at Castle Nugent serving as the centerpiece of the visitor experience with interpretive and educational programs on the history of the Castle Nugent estate and other south shore plantations.

Although not as extensive as Alternative B, the acreage in Alternative C would offer an impressive array of potential recreational opportunities. Such opportunities could include but not be limited to:

- Visitor access and interpretation of core area cultural resources
- Birding
- Star gazing/astronomy
- Horseback-riding on dedicated trails
- Controlled back country or other forms of camping
- Hiking/self-guided nature tours
- Picnicking
- Limited mountain bike riding

Uses such as boating, kayaking, fishing, snorkeling, and swimming would still be possible in the Virgin Islands-administered offshore areas. The NPS would work with the Government of the Virgin Islands to promote and support these activities. Actual allowable activities and uses would be determined in the general management plan.

Resource Preservation and Protection

Due to its smaller boundary and acreage, Alternative C does not provide the scope of resource preservation and protection potential as Alternative B. Nevertheless, there are numerous protection opportunities that could be envisioned under this alternative, including the following:

- Potential preservation, restoration, or adaptive use of existing historic buildings at Castle Nugent Estate and Petronella Estate for park operations, including interpretation, visitor contact, law enforcement, and maintenance purposes.
- Preservation of a portion of the watershed system that connects into areas under the jurisdiction of the Government of the Virgin Islands at Great Pond and offshore submerged areas (commercial and/or residential development of adjacent areas within the watershed would likely increase erosion and sedimentation).
- Modest potential for further historical and archeological study. The boundary would include cultural resources at Castle Nugent, Fareham, Petronella, The Springs, Munster, and Laprey Valley.
- Preservation of several hundred acres of Caribbean dry forest.

Alternative C does not include any submerged lands and excludes both the offshore barrier reef and Great Pond and its environs, including the extensive cultural resources associated with Hartmann Estate. Thus, a significant amount

of the resource preservation and protection that is envisioned under Alternative B would not be feasible under Alternative C.

For instance, the resources of the Great Pond area would be under considerable threat to development if the plans for the Golden Gaming LLC's resort complex are allowed to proceed. Significant historic and archeological resources at Longford, Machenil Bay, and Hartmann Estate (as described in Chapter 2) are excluded from the boundary of Alternative C, so the preservation and protection of those resources would not be ensured.

Cost Estimate

Alternative C proposes funding and staffing by the NPS. Other sources of funding would be used if available. However, viable alternative sources have not yet been identified.

- Staffing and operational costs - \$750,000 to \$850,000 per year
- Development of facilities for visitor use, education, etc. – costs unknown at this time

For this alternative, the NPS projects the following full-time equivalent positions:

- (1) GS-11 district ranger
- (2) GS-9 law enforcement rangers
- (1) GS-9/11 cultural resource specialist
- (2) GS-5 interpretive rangers (seasonal)
- (1) WL-9 work leader
- (1) WG-7 mechanic
- (2) WG-5 trail workers
- (1) GS-9/11 terrestrial ecologist
- (1) GS 7/9 botanist/vegetation technician
- (1) GS 5/6/7 biological science technician
- (1) GS-4/5 administrative clerk

Additional support could be provided from staff that is shared among the three NPS units on St. Croix. Likewise, some of the staff additions above could be shared with other park units, as determined by the park's management staff.

Facilities and related construction needs for operating a 1,750-acre national historic site as proposed in Alternative C would be addressed through the general management planning process. For initial operations and visitor use (prior to completion of the general management plan) there would be the need to upgrade certain existing infrastructure to NPS standards. As in Alternative B, the Gasperi-

owned lands that contain existing dirt and gravel roads and trails that would need improvement. Visitor contact, parking and restroom amenities would also be necessary for initial start-up operations, but could be kept to a minimum until appropriate visitor and vehicle capacity is determined through the planning process.

Potential Partners

Under Alternative C, potential partners would be similar to Alternative B; however, there likely would not be as much impetus to partner on resource protection with the Government of the Virgin Islands due to the exclusion of the submerged areas in this alternative. Great Pond, the offshore reef, the mangrove stands and substantial areas of the southside watersheds are not included within the proposed boundary in Alternative C. Excluding these resources would present fewer options for pursuing partnership ventures.

Alternatives Summary

	Alternative A No Action	Alternative B Castle Nugent NHS	Alternative C Castle Nugent NHS
Overall Management Framework	No action by the NPS or any other public entity.	Management of full range of cultural, natural, and recreational resources at Castle Nugent Farms, including extensive land and marine ecosystem and remnants of nine historical plantations. Partnership with Government of Virgin Islands to manage marine areas owned by territory.	Management of extensive range of cultural resources in study area. Preservation and protection of core historic resources that are vital to interpreting cotton plantation story.
Operations	None.	Optional stand-alone unit or operations supported from Christiansted National Historic Site.	Operations supported from Christiansted National Historic Site.
Acreage	None.	11,500 acres (2,900 terrestrial and 8,600 marine acres)	1,750 terrestrial acres
Visitor Experience	Public access restricted; no formal visitor programs due to private ownership and development.	Widest variety of visitor experience opportunities.	Moderate variety of visitor experience opportunities.
Initial Site Development and Facilities	None	Visitor contact, parking and restroom amenities.	Visitor contact, parking and restroom amenities.
Cost Estimate (operations)	None	\$850,000 - \$1,150,000 annually	\$750,000 – \$850,000 annually

Other Alternatives Considered

The owners of the majority of the lands within the study area – the Gasperi family – have expressed their interest in the establishment of a national park unit for their lands. Given the determination of national significance of the cultural landscape at Castle Nugent Farms and the presence of established NPS operations on St. Croix, the study team focused on alternatives under the administration of the NPS. Other management entities, such as the Virgin Islands government, non-profit organizations, and private companies, were not considered because they do not have the capacity to manage the wide range and diversity of resources found at Castle Nugent Farms. As discussed in the alternatives, there are a host of potential partnership options that the NPS could explore in order to supplement park operations and programs if an NPS unit is established.

The study team evaluated various boundary configurations within the study area. The team believes the two action alternatives represent the smallest and largest suitable and feasible park configurations for managing the resources at Castle Nugent Farms. The NPS acknowledges that the alternatives are not mutually exclusive and that Congress could opt to establish a different configuration than those presented in this study.

Most Effective and Efficient Alternative

The NPS has determined that Alternative B would be the most effective and efficient alternative. Alternative B proposes the most comprehensive approach to managing the natural and cultural resources of the study area. Alternative B has the most acreage of all the alternatives, and would thus provide the potential for the widest range of resource protection measures, visitor access, interpretive programs and recreational opportunities.

Under Alternative B, the land area of the park would be expansive, encompassing the approximately 2,900 acres that correspond to the study area and all the associated cultural and natural resources within that boundary. Although vast marine areas are also included within the proposed boundary of the most effective and efficient alternative, the NPS proposes that such areas should remain under the jurisdiction of the Government of the Virgin Islands. The inclusion of the marine areas within the boundary would facilitate collaboration and partnering between the Government of the Virgin Islands and the NPS towards the protection of resources within a large ecosystem on the south shore of St. Croix. As the alternative with the largest acreage and greatest diversity of cultural and natural resources, Alternative B has the most potential to provide the widest variety of visitor experience opportunities. As noted above, efficient

administration of Alternative B could be enhanced by sharing operational resources with Christiansted National Historic Site, which is only three miles from the Castle Nugent Farms study area.

Environmentally Preferable Alternative

The NPS has determined that Alternative B would be the environmentally preferable alternative. The environmentally preferable alternative is determined by applying criteria set forth in NEPA, as guided by direction from the CEQ. The CEQ has stated that the environmentally preferred alternative is the alternative that will promote the national environmental policy as expressed in Sections 101 and 102 of NEPA. This includes alternatives that:

- Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations.
- Ensure for all Americans safe, healthful, productive, and esthetically and culturally pleasing surroundings.
- Attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences.
- Preserve important historic, cultural and natural aspects of our national heritage and maintain, wherever possible, an environment that supports diversity and variety of individual choice.
- Achieve a balance between population and resource use that will permit high standards of living and a wide sharing of life's amenities
- Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

Both Alternative B and Alternative C would achieve the requirements of Sections 101 and 102 of NEPA. By permanently protecting nationally significant resources in the study area, both would (a) fulfill stewardship responsibilities to succeeding generations, (b) ensure culturally and aesthetically pleasing surroundings, (c) attain a wide range of beneficial uses of the environment without degradation or undesirable consequences, (d) preserve important historic, cultural and natural aspects of our national heritage and maintain an environment that supports diversity and variety of individual choice, and (e) achieve a balance between population and resource use that will permit high standards of living and a wide sharing of life's amenities. Because it would protect significantly larger area,

Alternative B would do all of these things to a greater extent than Alternative C. Therefore, Alternative B is the environmentally preferable alternative.

Chapter 5 Environmental Consequences

Overview

Before taking an action, NEPA requires federal agencies to discuss the environmental impacts of that action, feasible alternatives to that action, and any adverse environmental effects that cannot be avoided if the proposed action is implemented. This chapter describes the potential environmental impacts of implementing each of the alternatives (i.e., the No Action alternative and the two action alternatives) on natural resources, cultural resources, visitor use and experience, site management/administration, and the socioeconomic environment. These impacts provide a basis for comparing the advantages and disadvantages of the two action alternatives. This analysis of environmental consequences consists largely of a qualitative assessment of the effects of the three alternatives with respect to five major impact topics. This document also fulfills the requirements of Section 106 of the National Historic Preservation Act, as amended, and has been prepared in accordance with the implementing regulations of the Advisory Council for Historic Preservation (36 CFR Part 800).

The first part of the chapter discusses the methodology used to identify impacts and includes definitions of terms. The impact topics are then analyzed with reference to each of the three alternatives. The discussion of each impact topic includes a description of the positive and negative effects of the alternatives, a discussion of cumulative effects, if any, and a conclusion. The conclusion includes a discussion of whether, and to what extent, the alternatives would impair site resources and values.

Assessment Methodology

Generally, the methodology for resource impact assessments follows direction provided in the CEQ Regulations for Implementing NEPA, Parts 1502 and 1508. The impact analysis and the conclusions in this part are based largely on a review of existing literature, information provided by experts within the NPS and other agencies, and professional judgment.

The impacts from the three alternatives were evaluated in terms of the context, duration, and intensity of the impacts, as defined below, and whether the impacts were considered beneficial or adverse to site resources and values.

Context

Each impact topic addresses effects on resources inside and outside the proposed boundary; to the extent those effects are traceable to the actions set forth in the alternatives.

Duration and Intensity of Impacts

Impacts are analyzed in terms of their duration (short- or long term) and intensity (negligible, minor, moderate, or major). The duration of impacts is defined as follows:

Short term Impacts – Those that would occur within one year of an action.

Long term Impacts – Those that would continue to exist after completion of an action.

The criteria used to define the intensity of impacts associated with the analyses are described below.

Impact Topic	Negligible	Minor	Moderate	Major
Cultural Resources	The impact would be at the lowest level of detection or barely perceptible and not measurable. For purposes of section 106, the determination of effect would be <i>no adverse effect</i> .	The impact would not affect the character defining features of an archeological site, historic structure, or cultural landscape listed on or eligible for the National Register of Historic Places. For purposes of section 106, the determination of effect would be <i>no adverse effect</i> .	The impact would alter a character defining feature(s) of an archeological site, historic structure, or cultural landscape but would not diminish the integrity of the resource to the extent that its national register eligibility would be jeopardized. For purposes of section 106, the determination of effect would be <i>no adverse effect</i> .	The impact would alter a character defining feature(s) of an archeological site, historic structure, or cultural landscape, diminishing the integrity of the resource to the extent that it is no longer eligible to be listed on the national register. For purposes of section 106, the determination of effect would be <i>adverse effect</i> .
Natural Resources	Soils, vegetation, and wildlife would not be affected or the effects would be at or below the level of detection, and the changes would be so slight that they would not be of any measurable or perceptible consequence to populations of plants and animal	Effects to soils, vegetation, and wildlife would be detectable, although the effects would be localized, and would be small and of little consequence to populations of plants and animal species. Effects on soil productivity or fertility would be small, as would the area affected.	Effects to soils, vegetation, and/or wildlife would be readily detectable, but localized, with consequences at the population level for plants and/or animals. The effect on soil productivity or fertility would be readily apparent and result in a change to the soil character over a relatively	Effects to soils, vegetation, and/or wildlife would be obvious and would have substantial consequences for populations of plants and animals. The effect on soil productivity or fertility would be readily apparent and would substantially change the

Impact Topic	Negligible	Minor	Moderate	Major
Natural Resources (cont'd)	species. Any effects to soil productivity or fertility would be slight and no long term effects to soils would occur.		wide area.	character of the soils over a large area.
Visitor 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.	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 be able to 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.
Facilities, Operations, and Administration	Site operations would not be affected or the effect would be at or below the lower levels of detection, and would not have an appreciable effect on site operations.	The effect would be detectable, but would be of a magnitude that would not have an appreciable effect on site operations.	The effects would be readily apparent and would result in a substantial change in site operations in a manner noticeable to staff and the public.	The effects would be readily apparent and would result in a substantial change in site operations in a manner noticeable to staff and the public and be markedly different from existing operations.
Socioeconomic Conditions	No effects would occur, or the effects to socioeconomic conditions would be below or at the level of detection.	The effects to socioeconomic conditions would be detectable. Any effects would be small.	The effects to socioeconomic conditions would be readily apparent. Any effects would result in changes to socioeconomic conditions on a local scale.	The effects to socioeconomic conditions would be readily apparent and would cause substantial changes to socioeconomic conditions in the region.

Impact Types

Impacts would be beneficial or adverse. In some cases, impacts would be both beneficial and adverse. The CEQ regulations and the NPS’s Conservation Planning, Environmental Impact Analysis and Decision-making (Director’s Order #12) call for a discussion of the appropriateness of mitigation, as well as an analysis of how effective the mitigation would be in reducing the intensity of a potential impact, e.g. reducing the intensity of an impact from major to moderate or minor. The preferred alternative assumes that site managers would apply mitigation measures to minimize or avoid impacts. If appropriate mitigation

measures were not applied, the potential for resource impacts would increase and the magnitude of those impacts would rise.

Direct versus Indirect Impacts

Direct effects would be caused by an action and would occur at the same time and place as the action. Indirect effects would be caused by the action and would be reasonably foreseeable but would occur later in time, at another place, or to another resource.

Cumulative Impacts

Regulations implementing NEPA issued by the CEQ require the assessment of cumulative impacts in the decision making process for federal actions. Cumulative impacts are defined as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non federal) or person undertakes such other actions" (40 CFR 1508.7). Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

The cumulative impacts analyzed in this document consider the incremental effects of the three alternatives in conjunction with past, current, and future actions at the site. Cumulative impacts were determined by combining the effects of a given alternative with other past, present, and reasonably foreseeable future actions. Cumulative impacts were assessed in the context of the study area itself and the island of St. Croix as a whole. Past and reasonably foreseeable actions contributing to cumulative impacts include:

- Increased conversion of forest and grass lands on St. Croix to housing, roads, and commercial and industrial land uses.
- Deterioration of water quality due to the influx of sediment, sewage and other pollutants.
- More ecosystem degradation resulting from poor land clearing and landscaping practices that negatively impact plants, wildlife, soil, and water resources.
- Increased runoff causing severe erosion and more frequent flooding.
- Decreased water seepage into the ground (infiltration), reducing the island's critical fresh water supply.

- Increased emissions of toxic chemicals by businesses and industries into St. Croix's air, soil, and water.

The cumulative impact analysis and conclusions in this document are qualitative and general, reflecting the preliminary nature of this study. The analysis is based on information available in the literature, data from NPS studies and records, and information provided by experts within the NPS. Unless otherwise stated, all impacts are assumed to be direct and long-term.

Impacts of Alternative A: No Action

Impacts on Cultural Resources

Under this alternative, the Castle Nugent Farms study area would remain in private ownership and would be subject to future development activity. While such development might or might not occur, if it did, the possibility exists that:

- Archeological resources at ten or more sites could be disturbed or destroyed by land disturbing activities;
- Structures associated with nine historic estates could be demolished or modified in such a way as to diminish or destroy their integrity;
- The historic cattle ranching operation could end or be substantially reduced; and
- The cultural landscape associated with the historic plantation era in the study area could be degraded or eliminated entirely.

Even if the study area were not developed, monitoring and maintenance of cultural resources would be entirely at the discretion of private landowners. The risk of adverse impacts to cultural resources is greater under this alternative than under the two action alternatives. Impacts to cultural resources could potentially be moderate to major, long term, and adverse.

Section 106 Summary: After applying the Advisory Council on Historic Preservation's criteria of adverse effects (36 CFR Part 800.5, *Assessment of Adverse Effects*), the NPS concludes that implementation of Alternative A (No Action) could have an adverse effect on historic properties in the study area.

Impacts on Natural Resources

As is the case with cultural resources, natural resources would be vulnerable under this alternative if the properties comprising the study area were to be developed. At the present time, the most likely development scenario in the study area is the construction of private, gated residential communities. In addition, a casino has been proposed for the Great Pond area.

Development in the study area could result in various adverse effects on natural resources, including:

- Runoff pollution from development, resulting in adverse impacts to water quality, coral reefs, wetlands, and other biotic and vegetative communities;
- Introduction and increase in non-native and invasive plants and animals;
- Loss of species that are threatened, endangered, or of special concern; and
- Loss of critical mangrove and shoreline habitat.

In addition to these direct impacts, maintaining the status quo would mean that there was no full-time staff and a dedicated funding source for monitoring the health of natural systems in the terrestrial portion of the study area. Overall, impacts to natural resources could potentially be moderate to major, long term, and adverse.

Impacts on Visitor Experience

The study area is currently closed to entry except at the invitation of private landowners. This situation would remain unchanged under Alternative A. Although waysides or other interpretive media could be installed along public rights of way by local authorities, for all intents and purposes opportunities for meaningful interpretation of the site would be very limited. Development of the study area could adversely affect the experience of some persons who drive through or otherwise use the area. Impacts could result from:

- Potential development of private property for residential or commercial uses;
- Loss of scenic qualities, such as historic pasture lands, viewshed, vistas, and dark skies; and

- Loss of local cultural uses of the area, e.g., camping, fishing, and recreation, due to reduced access to the shoreline.

Impacts to visitor experience could be moderate to major, long term, and adverse.

Impacts on facilities, Operations, and Administration

No impacts to public facilities, operations, or administration would occur under this alternative because the entire study area would remain in private ownership. No facilities would be constructed, and visitor access to the site would remain restricted. No staff dedicated to management of the site for park purposes would be hired.

Impacts on Socioeconomic Conditions

Impacts on socioeconomic conditions are largely speculative at this point and hence a detailed assessment cannot be given. However, it can be anticipated that increased development would result in increased property values and a corresponding increase in the island's property tax base. Whether increased tax revenues would be great enough to offset the need for increased government services is difficult to say. Increased development would also generate opportunities that some tourists (and residents) would find attractive, thereby enhancing a major economic driver for the island. On the other hand, loss of additional open space on the island could render it somewhat less attractive to certain tourists, with potential adverse effects on the island economy. The adverse environmental impacts associated with development (e.g., increased flooding, decreases in quality and quantity of available fresh water, impacts to reefs and fisheries) have economic costs that need to be considered as well. Thus, the no-action alternative could have effects on the socioeconomic environment that were moderate, both beneficial and adverse, and long term.

Cumulative Impacts

This alternative would likely result in additional development to the study area. As a result, this alternative would add to the development-related impacts already occurring elsewhere on the island. The extent of these impacts is impossible to estimate in the absence of concrete development proposals for the study area. However, it can be anticipated that new development would result in additional adverse impacts to soils, water quality, biotic communities, critical habitats, and species of special concern. There would likewise be cumulative losses of cultural resources. Future development could also result in a cumulative diminishment of opportunities for public enjoyment of the natural and cultural environment.

Conclusions

Under Alternative A, the nationally significant cultural resources of the study area would not receive permanent protection from future damage or destruction. The important natural resources of the study area would be similarly vulnerable to loss or degradation. Development of the study area could result in economic benefits to the island, but could generate adverse economic impacts as well.

Impacts of Alternative B

Impacts on Cultural Resources

Alternative B would bring the nationally significant cultural landscape of the study area within the National Park System. NPS administration would provide permanent protection to these resources by ensuring that the study area was never developed for anything other than park purposes. Structures associated with the nine historic estates and the surrounding cultural landscape would be protected and, where appropriate, enhanced in accordance with the Secretary of the Interior's Standards for the Treatment of Historic Properties. Resources at ten or more archeological sites would likewise be monitored and protected from disturbance, except for purposes of research and study. Alternative B would thus provide long term protection to the fields, structures, ruins, and archeological resources that give a glimpse into the cotton era on St. Croix in the eighteenth and nineteenth centuries. Alternative B would also allow the continuation of the cultural practice of breeding Senepol cattle. Under this alternative, the NPS could lease lands to the University of the Virgin Islands for continuation of present breeding operations.

No new construction of trails, parking areas, or structures would go forward under this alternative until the completion of a thorough study on affected areas for previously undiscovered cultural resources.

The protection afforded cultural resources under this alternative is greater than what would occur under the other two alternatives. Overall, impacts to cultural resources would be long term and beneficial. Impacts to cultural resources from park development could be minor, long-term, and potentially adverse.

Section 106 Summary: After applying the Advisory Council on Historic Preservation's criteria of adverse effects (36 CFR Part 800.5, *Assessment of Adverse Effects*), the NPS concludes that implementation of Alternative B would have no adverse effect on historic properties in the study area.

Impacts on Natural Resources

Establishment of the new park unit under Alternative B would permanently protect the study area's abundant natural resources from adverse development activities. Unlike the other alternatives, Alternative B would protect Great Pond, the second largest salt pond in the U.S. Virgin Islands and the most important wetland on the island of St. Croix. Alternative B would also protect the extensive black mangrove stands that rim the pond, as well as the adjacent bay, which provides critical habitat for resident and migratory birds, reef fish and sea turtles. The boundary included in this alternative would encompass and provide protection for over 1,000 acres of Caribbean dry forest, including extensive uplands. It would also protect 4.5 miles of unspoiled shoreline, which is largely made up of coral cobble beaches and small crescent bays with sea grass beds and coral patch reefs.

This alternative would provide more protection than Alternative A and Alternative C for species that are threatened, endangered, or of special concern. These include elkhorn and staghorn coral, three sea turtle species, the bottlenose dolphin, the peregrine falcon, and the roseate tern. It would also provide the most protection to locally protected plants and animals, such as ironwood (*Lignum vitae*) and satinwood (*Zanthoxylum flavum*).

Unlike Alternative C, Alternative B would include an 8,600-acre section of fringing coral reef system within the boundary of a new NPS unit. No federal acquisition is envisioned, and the marine area would remain under the jurisdiction of the Government of the Virgin Islands. However, including it within the boundary of an NPS unit would provide additional protections to this fragile resource by allowing NPS to share expertise and resources with the U.S. Virgin Islands. Working cooperatively, both entities could provide a high level of protection to this resource, as well as opportunities to study the coral reef ecosystem and associated fisheries.

Natural resources would be intensively managed under this alternative to maintain the historic character of the cultural landscape. However, pursuant to NPS policy, efforts would be made to control exotic species if they threaten park resources, visitor safety, adjacent properties, or community values. Impacts would be minor, long-term, and either adverse or beneficial, depending on the particular action being taken. Overall, the impacts of this alternative on natural resources would be long-term and beneficial.

Impacts on Visitor Experience

Alternative B has more acreage than Alternative C and a greater number and diversity of cultural and natural resources. Consequently, it has the most

potential to provide a wide variety of visitor experience opportunities. Many of the same types of educational and recreational opportunities available under the two alternatives would be available. However, with a greater variety of resources to experience, visitor experience would be richer and more informed under Alternative B. Impacts to visitor use and experience under this alternative would be long-term and beneficial.

Impacts on Facilities, Operations, and Administration

Alternative B envisions the protection of Castle Nugent Farms via either a stand-alone NPS unit or a separate subunit of Christiansted National Historic Site. Either way, the area would require additional staff positions and operational funding, with corresponding impacts on budgets. The size of the unit (11,500 acres – 2,900 terrestrial and 8,600 marine) is quite a bit larger than what is proposed under Alternative C (1,750 terrestrial acres only) and thus would require more staffing to manage, with corresponding costs. Annual operating costs are estimated to range from \$850,000 to \$1,150,000 under Alternative B, which is \$100,000 to \$400,000 more per year (depending on Alternative B's staffing arrangement) than Alternative C. Likely initial facilities would include visitor contact, parking, and restroom amenities, as with Alternative C. Impacts to operations and administration would be minor to moderate, long term, and adverse.

Impacts on Socioeconomic Conditions

As with Alternative A, the impacts of Alternative B on socioeconomic conditions are largely speculative. However, the establishment of an NPS unit in the study area would mean the loss of property tax revenues currently paid by private landowners. It would also mean that St. Croix would forego the increased tax revenues that could come from any development-related increases in property values. The loss of potential casino and resort facilities could likewise result in lost opportunities for increased tourism, with corresponding adverse impacts to the island economy. On the other hand, protecting the study area as a park would obviate the need for the island to provide government services to new residents and businesses in the area, although some new, smaller level of services would be required to serve the park.

Establishing a new park unit would also forestall the costs associated with adverse development-related environmental impacts (e.g., increased flooding, decreases in quality and quantity of available fresh water, impacts to reefs and fisheries). Moreover, the protection and enhancement of additional open space on the island could render the area more attractive to certain tourists and local residents. Whether tourists and residents, as a whole, would find a park or development more attractive is unknown. It is therefore uncertain whether park

designation or development would, in the long run, produce more tourism interest and revenue. On balance, Alternative B would have impacts on the socioeconomic environment that were moderate, both beneficial and adverse, and long term.

Cumulative Impacts

Cumulative impacts would differ from Alternative A. Rather than adding to the adverse environmental impacts currently being experienced on St. Croix, this alternative would prevent such impacts from spreading to an area of approximately 2,900 terrestrial acres. This alternative would also augment opportunities for public enjoyment of the natural and cultural environment on the island. Cumulative impacts with respect to resource protection and visitor use would thus be beneficial and long term.

Conclusions

Under Alternative B, the full range of nationally significant cultural resources of the study area would be included in an NPS unit and thus receive permanent protection from future damage or destruction. The new unit would likewise offer permanent protection for the most important natural resources of the study area. Establishing a new park unit would mean foregoing some benefits that could ensue from developing the private land within the study area. On the other hand, establishing a new park unit could result in important economic benefits to the island, such as better-protected fisheries and low-impact opportunities for tourism.

Impacts of Alternative C

Impacts on Cultural Resources

Impacts would generally be the same as Alternative B, except that a smaller area would be protected from future development (1,750 acres, as opposed to the 2,900 terrestrial acres in Alternative B). This alternative would protect the core area, but would leave important cultural resources unprotected, particularly the extensive cultural resources associated with Longford, Machenil Bay, and the Hartmann Estate, as well as the entire area around Great Pond. Perhaps as importantly, it would sacrifice the intact cultural landscape of the study area. Overall, impacts to cultural resources would be long term and beneficial, but less so than under Alternative B. Impacts to cultural resources from park development could be minor, long-term, and potentially adverse.

Section 106 Summary: After applying the Advisory Council on Historic Preservation's criteria of adverse effects (36 CFR Part 800.5, *Assessment of*

Adverse Effects), the NPS concludes that implementation of Alternative C would have no adverse effect on historic properties in the study area.

Impacts on Natural Resources

Impacts would generally be similar to those for Alternative B, except that a much smaller area would be protected from development and some very important natural resources would be omitted from the boundary. These include the area around Great Pond, the 8,600-acre marine area (including the offshore barrier reef), and large areas of undeveloped shoreline. The overall impacts of this alternative on natural resources would be long-term and beneficial, but considerably less so than the impacts of Alternative B.

Impacts on Visitor Experience

Alternative C has less acreage than Alternative B and a smaller number and diversity of cultural and natural resources. Opportunities for visitor use and enjoyment are thus correspondingly less under Alternative C than under Alternative B. While the types of educational and recreational opportunities available under the two alternatives would be similar in many ways, the variety and richness of experience that could be offered to visitors would be less under Alternative C. Impacts to visitor use and experience under this alternative would be long-term and beneficial, but less so than under Alternative B.

Impacts on Facilities, Operations, and Administration

Alternative C envisions protecting a portion of the study area as a subunit of Christiansted National Historic Site. Management of the newly protected area would require additional staff positions and operational funding for Christiansted National Historic Site, with corresponding budgeting impacts. However, the smaller size of the protected area as compared to Alternative B (1,750 terrestrial acres vs. 11,500 terrestrial and marine acres) means that Alternative C would require less staff to manage than Alternative B, with correspondingly lower costs. Annual operating costs are estimated to be about \$750,000 - \$850,000 under Alternative C, which is about \$100,000 to \$400,000 per year less than Alternative B (depending on Alternative B's staffing arrangement). Likely initial facilities would include visitor contact, parking, and restroom amenities, the same as with Alternative B. Impacts to operations and administration would be minor to moderate, long term, and adverse.

Impacts on Socioeconomic Conditions

As with Alternative A and Alternative B, the impacts of Alternative C on socioeconomic conditions are largely speculative. However, due to the smaller

size of the unit proposed in Alternative C, St. Croix would lose less property tax revenue than it would under Alternative B. In addition, St. Croix would receive increased tax revenues from any future development of areas excluded from protection under this alternative, as well as increased revenues associated with tourism and visitation to newly developed areas. On the other hand, protecting a smaller area as a park could require the island to provide more government services to any new residents and businesses in the excluded areas. It could also generate new costs associated with adverse development-related environmental impacts (e.g., increased flooding, decreases in quality and quantity of available fresh water, impacts to reefs and fisheries). Finally, protecting a smaller area would leave the wider cultural landscape unprotected, which could in turn diminish the attractiveness of the area to certain tourists and local residents. Whether these adverse impacts would be offset by increased tourism and visitation to newly developed areas is not known. Thus, like Alternative B, Alternative C would have impacts on the socioeconomic environment that were moderate, both beneficial and adverse, and long term.

Cumulative Impacts

Cumulative impacts would be similar to those of Alternative B, but less far reaching and beneficial. Like Alternative B, Alternative C would lessen the spread of adverse development-related impacts, but it would only protect 1,750 acres as opposed to approximately 2,900 terrestrial acres. Similarly, Alternative C would augment opportunities for public enjoyment of the natural and cultural environment on the island, but to a smaller extent than Alternative B. Cumulative impacts with respect to resource protection and visitor use would be beneficial and long term.

Conclusions

Under Alternative C, some of the nationally significant cultural resources of the study area would be omitted from NPS protection. The omitted areas would be vulnerable to future damage or destruction. In addition, the smaller NPS area called for under this alternative would offer less protection for the important natural resources of the study area. Within the unit itself, however, cultural and natural resources would receive permanent protection and offer long term opportunities for visitor use and enjoyment. Like Alternative B, Alternative C could result in a mix of beneficial and adverse impacts on the local economy.

Selected References

Boyer, William W.

- 1983 *America's Virgin Islands: A History of Human Rights and Wrongs*. Carolina Academic Press, Durham, NC.

Brubaker, C. L., E. M. Bourland, and J. E. Wendel

- 1999 The Origin and Domestication of Cotton. In *Cotton: History, Technology, and Production*, edited by C. Wayne Smith and J. Tom Cothren, pp. 3-31. John Wiley and Sons, New York.

Chapman, William

- n.d. *Estate Castle Nugent National Register of Historic Places Nomination*. Prepared for the State Historic Preservation Office, Department of Planning and Natural Resources, Government of the Virgin Islands.

Curet, Luis Antonio

- 1996 Ideology, Chiefly Power, and Material Culture: An Example from the Greater Antilles. *Latin American Antiquity* 7(2): 114-131.

Gill, Ivan P., Dennis K. Hubbard, Peter McLaughlin, and Clyde H. Moore.

- 1989 Sedimentological and Tectonic Evolution of Tertiary St. Croix. *Terrestrial and Marine Geology of St. Croix, U.S. Virgin Islands*, edited by Dennis K. Hubbard, pp. 49-71. Special Publication Number 8. West Indies Laboratory, St. Croix, U.S. Virgin Islands.

Haagensen, Reimert

- 1994[1758] Description of the Island of St. Croix. *The Kamina Folk. Slavery and Slave Life in the Danish West Indies*, edited by George F. Tyson and Arnold R. Highfield, pp. 29-46. Virgin Islands Humanities Council, U.S. Virgin Islands.

Hall, Neville. A. T.

- 1994 *Slave Society in the Danish West Indies. St. Thomas, St. John, and St. Croix*, edited by B. W. Higman. The Johns Hopkins University Press, Baltimore.

Hardy, Meredith D.

- 2008 *Saladoid Economy and Complexity on the Arawakan Frontier*. Unpublished Ph.D. dissertation, Department of Anthropology, Florida State University, Tallahassee.

Hovey, Sylvester

- 1994[1838] Letters from the West Indies: relating especially to the Danish Island of St. Croix and to the British Islands of Antigua, Barbadoes and Jamaica. In *The Kamina Folk: Slavery and Slave Life in the Danish West Indies*, edited by George F. Tyson and Arnold R. Highfield, pp. 185-191. The Virgin Islands Humanity Council, St. Thomas.

Hupp, H. D.

- 1981 *History and Development of Senepol Cattle*. Report 11, Agricultural Extension Service, University of the Virgin Islands, St. Croix.

Nagle, Frederick, and Dennis Hubbard

- 1989 St. Croix Geology since Whetten: An Introduction. *Terrestrial and Marine Geology of St. Croix, U.S. Virgin Islands*, edited by Dennis K. Hubbard, pp. 1-7. Special Publication Number 8. West Indies Laboratory, St. Croix.

Rouse, Irving

- 1992 *The Taino: Rise and Decline of the People Who Greeted Columbus*. Yale University Press, New Haven.

Tyson, George F.

- 1996 On the Periphery of Peripheries: the Cotton Plantations of St. Croix, Danish West Indies, 1735-1815. In *Bondmen and Freedmen in the Danish West Indies. Scholarly Perspectives*, edited by George F. Tyson, pp. 83-107. Virgin Islands Humanities Council, St. Thomas.

U.S. Department of Agriculture

- 1998 *Soil Survey of the United States Virgin Islands*. Natural Resources Conservation Service, U.S.D.A. Washington, D.C.

V.I. Department of Planning and Natural Resources

- 1993 *St. Croix Coral Reef System Area of Particular Concern (APC) and Area of Preservation and Restoration (APR)*, VI DPNR, U.S. Virgin Islands, 1993.

Whetten, J.T.

- 1966 *Geology of St. Croix, U.S. Virgin Islands*. Geological Society of America, Memoir 98:177-239.

Web Sites

BirdLife International (2009) Important Bird Area factsheet: Great Pond, Virgin Islands (to USA). Downloaded from the Data Zone at <http://www.birdlife.org>

Castle Nugent Farms, <http://www.cnsenepol.com/>

Senepol Cattle Breeders Association, <http://www.senepolcattle.com/>

St. Croix East End Marine Park, <http://www.stxeastendmarinepark.org/>

St. Croix Environmental Association, <http://www.stxenvironmental.org/>

**St. Croix Environmental Information Repository,
<http://www.usvircd.org/STXEIR/index.html>**

Appendix A – Authorizing Legislation

One Hundred Ninth Congress of the United States of America

AT THE SECOND SESSION

*Begun and held at the City of Washington on Tuesday,
the third day of January, two thousand and six*

An Act

To authorize the Secretary of the Interior to study the suitability and feasibility of designating Castle Nugent Farms located on St. Croix, Virgin Islands, as a unit of the National Park System, and for other purposes.

*Be it enacted by the Senate and House of Representatives of
the United States of America in Congress assembled,*

SECTION 1. NATIONAL PARK SERVICE STUDY REGARDING CASTLE NUGENT FARMS.

(a) FINDINGS.—Congress finds the following:

(1) Castle Nugent Farms, located on the southeastern shore of St. Croix, U.S. Virgin Islands, is the largest parcel of privately-held land in the Virgin Islands and has been an operating cattle ranch for 50 years.

(2) This land has the largest and healthiest fringing coral reef anywhere in the Virgin Islands.

(3) It consists of Caribbean dry forest and pasturelands with considerable cultural resources including both pre-Columbian and post-European settlement.

(4) Castle Nugent Farms contains a large historic 17th century Danish estate house that sits on over 4 miles of pristine Caribbean oceanfront property.

(5) In addition to being an area for turtle nesting and night heron nesting, it is the home for the Senepol cattle breed, a unique breed of cattle that was developed on St. Croix in the early 1900's to adapt to the island's climate.

(b) STUDY.—The Secretary of the Interior shall carry out a study regarding the suitability and feasibility of designating Castle Nugent Farms as a unit of the National Park System.

H. R. 318—2

(c) **STUDY PROCESS AND COMPLETION.**—Section 8(c) of Public Law 91–383 (16 U.S.C. 1a–5(c)) shall apply to the conduct and completion of the study required by this section.

Speaker of the House of Representatives.

*Vice President of the United States and
President of the Senate.*

Appendix B – National Significance Determination



United States Department of the Interior
 NATIONAL PARK SERVICE
 1849 C Street, N.W.
 Washington, D.C. 20240

H32(2280) OCT - 9 2008

MEMORANDUM

To: Chief, Planning and Compliance, NPS, Southeast Regional Office

From: Chief, National Register of Historic Places and National Historic Landmarks, National Park Service, WASO *[Signature]* 10/7/08

Re: Special Resources Study (SRS) for Castle Nugent Estates area, St. Croix, Virgin Islands

Thank you for the opportunity to review and comment upon the Special Resources Study (SRS) for the Castle Nugent Estates area, St. Croix, Virgin Islands. It is our opinion that the SRS demonstrates significance at the national level as a cultural landscape. The study area provides a glimpse into the historic development of the island in the late 18th and 19th centuries. The lack of 20th century development in the Castle Nugent Estates area promises a relatively undisturbed laboratory for further archeological study. Information gleaned from historic archeological evaluation of the estates can bolster the area's national significance.

The Castle Nugent estates area represents the early settlement of the Virgin Islands and reflects colonial attempts to exploit the resources of the Caribbean. The plantations that make up the study area produced cotton as their primary crop and did not make the transition to sugar cane as most other Virgin Islands estates did. Therefore, their landscape remains essentially intact from the earliest days of colonial exploitation.

National Park Service cultural resources specialists often use National Historic Landmark (NHL) themes when preparing documentation. Castle Nugent Estates area relates to NHL themes of (I) Peopling Places and (V) Developing the American Economy. For further help documenting the estates area please contact the park service's National Register liaison Alexis Abernathy, 202-354-2236, alexis_abernathy@contractor.nps.gov; the National Register reviewer for the Virgin Islands, Jim Gabbert, 202-354-2254, james_gabbert@nps.gov; or National Historic Landmarks Historian Patty Henry, 202-354-2216, patty_henry@nps.gov.

Appendix C – Public Comment Summary

In June 2009, the NPS presented a range of preliminary management alternatives to the public. The NPS conducted public meetings and provided an open comment period to solicit feedback and opinions on the alternatives and the progress and direction of the study. The NPS presented the following alternatives:

- Alternative A: No Action
- Alternative B: Castle Nugent National Historical Park, run administratively by Christiansted NHS, consisting of 11,500 acres (2,900 terrestrial and 8,600 submerged acres)
- Alternative C: Castle Nugent National Historical Park, a stand-alone NPS Unit, consisting of 11,500 acres (2,900 terrestrial and 8,600 submerged acres)
- Alternative D: Castle Nugent National Historic Site, run administratively by Christiansted NHS, consisting of 1,750 terrestrial acres

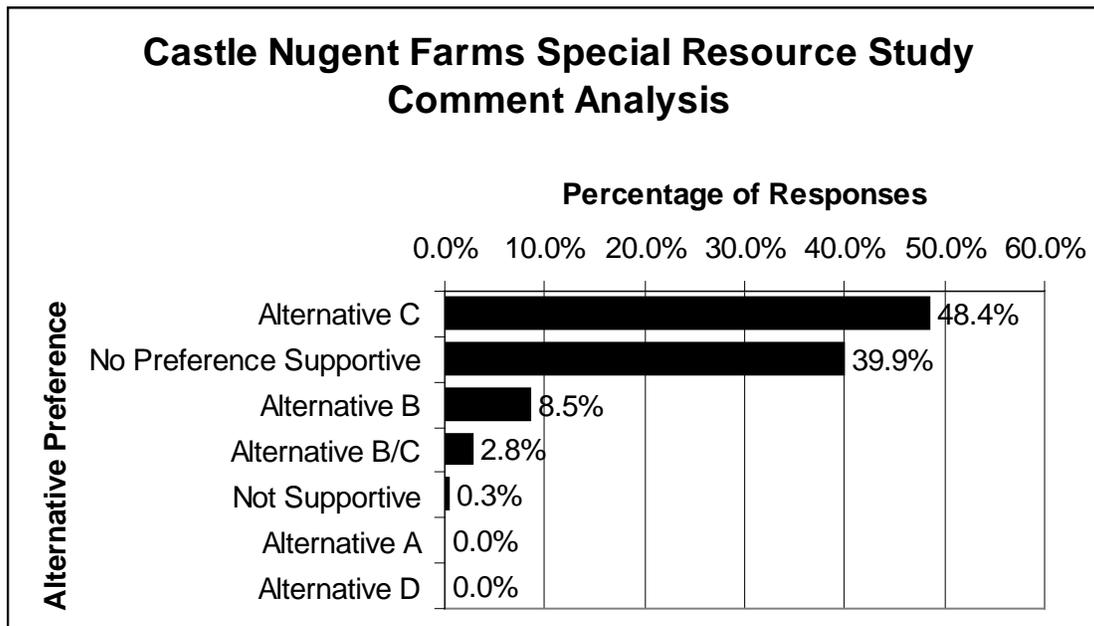
Following the public comment period, the NPS consolidated Alternatives B and C into a single management alternative (Alternative B as described in the Management Alternatives section) since the only difference between the alternatives was the operational approach of a stand-alone unit versus one that would primarily share resources with existing NPS operations on St. Croix.

Public response to the Castle Nugent Farms Special Resource Study alternatives development process totaled 316 comments. Of those, 315 comments were in support of the establishment of a national park on the southern shoreline of St. Croix at Castle Nugent Farms. The majority of respondents were in support of the maximum acreage in alternatives B and C of 2,900 acres. Only one comment opposed the establishment of a national park unit. Comments were in majority support for alternative C with 153 comments. The second largest grouping of comments at 126 supported the creation of a national park unit, but did not list a preferred alternative. Alternative B was selected as the third most popular response with 27 comments. Eight respondents could not decide between Alternative B and Alternative C and selected both.

Summary of Comments and Supportive Preferences for Castle Nugent Farms Special Resource Study:

Alternative Preference	Number of Comments
Alternative C	153
Supportive But No Preference	126
Alternative B	27
Alternative B/C	9
Not Supportive	1
Alternative A	0
Alternative D	0
	Total Comments 316

Percentage of Responses for Each Alternative:



The most popular reason respondents selected Alternative C was that the greatest acreage of the three alternatives would be protected and on-site staff would oversee the park. Some respondents were concerned that including Castle Nugent as part of Christiansted National Historic Site, as in alternative B, would not afford enough protection and management to the site. In addition, respondents advocating alternative C wanted park staff on site for interpretation of park lands and consistent management. Alternative C was also preferred due to its broader range of potential activities.

Alternative B was supported mainly from a cost perspective. Secondary reasons for preferring Alternative B included an interest toward minimal park

development and the perceived advantages of joint operations with Christiansted National Historic Site. Several comments regarded the connection with Christiansted National Historic Site as a management asset that would lead visitors from Christiansted to Castle Nugent Farms. Respondents were supportive of including the 2,900 acres, but were concerned that Alternative C would be cost prohibitive if all 2,900 acres were included. A few respondents wanted a less developed park at Castle Nugent Farms. They wanted the acreage protected, but were concerned about heavy visitation, roads, concessionaire facilities, and impact on resources.

Overall, comments were overwhelmingly in support of creating a national park unit at Castle Nugent Farms due to the high threat of future residential and commercial development in the study area. Many supporters of a future park unit live or vacation on St. Croix for long periods of time and were very familiar with the geography of the island and the rapid development replacing rural landscapes. Although many responses were broad statements stating a preference for the creation of a national park unit, repeatedly people stated concern that if a park is not established at Castle Nugent Farms, then resort or residential development would be imminent. Many comments stated that the establishment of a national park unit was an opportunity to preserve a piece of St. Croix that reflects more of the island's historic agrarian past. Respondents referred repeatedly to the views from hills to sea without modern development as rare on St. Croix. Additionally, preservation of the historic south shore viewshed was listed as a significant reason to create a national park unit at Castle Nugent Farms.

Other reasons for expressing support for a national park unit included protection of wildlife, public access to the historic rangelands, continuation of heritage agriculture with the historic Senepol cattle, and maintaining the undeveloped state of the south shore beaches. Specifically, many comments were in favor of national park status due to the variety of bird and other animal life around the Great Salt Pond area as well as along the undeveloped beach and reef. Several comments advocated the creation of a park unit to avoid another underused or empty resort facility. Respondents stated that St. Croix should not be developed like St. Thomas. Comments also focused on Castle Nugent Farms as a historic site and its use as an interpretive and educational facility for St. Croix. Respondents were concerned that leaving Castle Nugent Farms to development pressure would disconnect future St. Croix residents and visitors with the history of the island.

Respondents actively utilized social networking to communicate updates and solicit comments from friends. Comments came from all over the United States, St. Croix, and several other European Countries. Forty-seven comments listed an organization, but many of the organizations were private businesses or organizations without a connection to St. Croix or the establishment of a national

park. About half of respondents commented independently and did not leave a name.

Appendix D – University of the Virgin Islands Statement on Cattle Breeding Program



University of the Virgin Islands
Historically American. Uniquely Caribbean. Globally Interactive.

Office of the Vice Provost for Research and Public Service

Castle Nugent Farms Special Resource Study

Conducted by National Park Service

June 23, 2009

Good evening. My name is Dr. Lawrence W. Lewis. I am the Special Assistant to the Vice Provost for Research and Public Service (Dr. Henry Smith) of the University of the Virgin Islands (UVI).

I am joined this evening by Dr. Robert Godfrey, Professor of Animal Science at the UVI Agricultural Experiment Station (AES) and will later be joined by Dr. James Rakocy, the AES Director.

Park Service Superintendent Joel Tutein, we are here to support the argument that the Senepol cattle is a special resource that should be afforded a special place in any discussions relative to the preservation of Castle Nugent Farms.

In January 1, 2006, UVI made the decision to assume ownership of the largest herd of purebred Senepol cattle in St. Croix. The Gasperi family members wanted to retain the breed on the Castle Nugent Farm where it was developed,

Castle Nugent Farms Special Resource Study
Conducted by NPS
June 23, 2009

#2 John Brewer's Bay • St. Thomas • U.S. Virgin Islands 00802 - 9990 • Tel: (340) 693-1062 • Fax: (340) 693-1065
Email hsmith@uvi.edu



Oscar Henry's Farm are the other two sources of purebred Senepol on St. Croix – but the herds are smaller). We think that, should the National Park Service or anyone else assume ownership of the property, land room should be provided to continue the history and culture of the Senepol at Castle Nugent.

Later this week, UVI and Annaly Farms are hosting the Senepol Cattle Breeders Association at the Carambola Beach Resort (June 24-27, 2009). Over 100 attendees from mainland USA, as well as Paraguay, Venezuela, Panama, Costa Rica, Brazil, Puerto Rico and South Africa will discuss the international impact of Senepol cattle production and buy breeding stock from Virgin Islands producers for their countries.

There have been suggestions that UVI's partner, the VI Department of Agriculture, could assume responsibility for the breed. The dedication of the University to scholarly research makes UVI better suited for the task. However, neither the VI Government's Department of Agriculture nor UVI own the significant acres of land necessary to maintain the Senepol research currently ongoing at Castle Nugent. It, therefore, seems necessary to emphasize that, without access to the lands used by UVI at Castle Nugent, the cattle research projects and herd management would be severely hampered and diminished, if

University Virgin Islands
of the

not terminated. For this reason, we urge the National Park Service to retain a special space for this activity in its negotiations of ownership of Castle Nugent properties.

Glossary

algal ridge: Elevated margin of a windward coral reef built by actively growing calcareous algae.

alluvial fan: A fan-shaped deposit formed where a fast flowing stream flattens, slows, and spreads typically at the exit of a canyon onto a flatter plain; in St. Croix the mouth of a gut can contain an alluvial fan.

alluvium: Loose, unconsolidated soil or sediments, eroded, deposited, and reshaped by water in some form in a non-marine setting; alluvium is typically made up of a variety of materials, including fine particles of silt and clay and larger particles of sand and gravel

anthropogenic: Effects, processes or materials are those that are derived from human activities, as opposed to those occurring in biophysical environments without human influence.

Arawakan-speaking societies: Language family and people from northern tropical South America; Arawakan-speaking societies moved into the Caribbean likely beginning ca. 400-500 B.C. and populated many of the Caribbean islands along with their later competitors the Caribs, who also spoke an Arawakan-based language; Island Arawak is another term for the Taino language

archeological resource: Any material remains or physical evidence of past human life or activities which are of archeological interest, including the record of the effects of human activities on the environment. They are capable of revealing scientific or humanistic information through archeological research.

bagasse shed: Structure used to dry crushed cane stalks before use as a fuel in the boiling process of the cane juice.

bake oven: An oven heated by wood, coal, or other solid fuel; oven shape is denoted by an upper opening for placing items to be baked and separate ground opening for building fire; often made of stone, brick, or clay.

baymouth bar: A narrow ridge of sand that stretches completely across the mouth of a bay.

black mangrove: (*Avicennia germinans*) A communal species that plays a key role in the mangrove ecosystem. It contributes to the ecological community by trapping in the root system debris and detritus brought in by tides; the community is valued for its protection and stabilization of low-lying coastal lands and its importance in estuarine and coastal fishery food chains.

buttonwood mangroves: (*Conocarpus erectus*) A small mangrove tree that seldom reaches heights of 40' usually small and shrub-like; grows in the silty, muddy shorelines of tidal bays and lagoons,; also found on the edges of hammocks, salt flats, marshes, and sandy rocklands; native to tropical and

subtropical climates in North America, Central America, South America, West Africa, and island areas in between.

Caribbean Barrier Resource System: As set forth in the Federal Coastal Barrier Improvement Act of 1990; includes all of Great Pond and extends south into the ocean past the barrier reef of Great Pond Bay on St. Croix

ceramic typology: A set of shared traits used by analysts; permits the archaeologist to date an archaeological site without reliable chronometric data via comparison to known dated ceramic assemblages; this system also provides a basis of identifying locally produced and imported ceramics and their approximate source area.

Christiansted: Former capital of the Danish West Indies and town with a population of approximately 3,000 on the north coast of St. Croix; home of Christiansted National Historic Site and 18th century Danish style buildings.

cobble beaches: Beach composed of large and small rocks; a step pattern can exist where steps are marked by tide levels along the rocks; cobble beaches by nature can be steep compared to fine grained flat sand beaches.

conserve: To protect from loss or harm; preserve. Historically, the terms conserve, protect, and preserve have come collectively to embody the fundamental purpose of the NPS—preserving, protecting and conserving the National Park System.

coral reefs: Complex, species-rich marine ecosystems; Reefs are formed by corals, which are animals that secrete a calcium carbonate skeleton. Coral reefs provide essential fish habitat, support threatened and endangered species, and protect marine mammals and turtles. In addition, coral reefs reduce wave action and protect the coastline from erosion and flooding.

cotton house: A cotton storage building and a gin house.

creolized traditions: The development of new traditions, aesthetics, and group identities out of combinations of formerly separate peoples and cultures—usually where at least one has been deterritorialized by emigration, enslavement, or exile.

crescent bays: Shoreline marked by a semicircular or crescent shape forming a bay between two ends of the crescent shape.

Crucian plantation system: Plantation economy utilizing slave labor and plantation divisions in the Danish West Indies; in St. Croix cotton was grown under a plantation system in addition to sugar cane for rum and molasses until 1848.

cultural landscape: A geographic area, including both cultural and natural resources and the wildlife or domestic animals therein, associated with a historic event, activity, or person or exhibiting other cultural or aesthetic values. There are four general kinds of cultural landscape, not mutually exclusive: historic site,

historic designed landscape, historic vernacular landscape, ethnographic landscape.

cultural significance: Aesthetic, historic, scientific or social value for past, present or future generations.

cultural resource: An aspect of a cultural system that is valued by or significantly representative of a culture or that contains significant information about a culture. A cultural resource may be a tangible entity or a cultural practice. Tangible cultural resources are categorized as districts, sites, buildings, structures, and objects for the National Register of Historic Places and as archeological resources, cultural landscapes, structures, museum objects, and ethnographic resources for NPS management purposes.

Danish West India and Guinea Company: Danish chartered company that exploited colonies in the Danish West Indies; was founded as the Danish Africa Company in 1659 in Glückstadt by two Dutchmen Isaac Coymans and Nicolaes Pancras; included were the Caribbean islands of St. Thomas, St. John, and St. Croix and the Danish Gold Coast in present-day Ghana; In the 17th and 18th centuries, the company flourished from the North Atlantic triangular trade routes; slaves from the Gold Coast of Africa were traded for molasses and rum in the West Indies; the company administered the colonies until 1754, when the Danish government's "Chamber of Revenues" took control; the financially troubled company was liquidated on November 22, 1776.

dry forest: Subtropical forest receiving less than 10cm of precipitation per year; trees generally less than 15 feet tall are a mix of evergreen and deciduous which lose their leaves in the dry season roughly December to July.

ecosystem: A system formed by the interaction of a community of organisms with their physical and biological environment, considered as a unit.

Estate Granard: Estate that began to breed N'Dama cattle in the 1860s and began the transition to the Senepol cattle breed.

Halfpenny Bay: Bay and beach on the south side of St. Croix; off South Shore Road, south of Longford Estate.

Federal Coastal Barrier Improvement Act of 1990: Amended version of Coastal Barrier Resources Act (CBRA, Public Law 97-348) of 1982; the Act was amended in 1990 by the Coastal Barrier Improvement Act (CBIA, Public Law 101-591) to include the designation of otherwise protected areas (OPAs), which applies to the national, state and local areas that include coastal barriers held for conservation or recreation; examples of OPAs include National Wildlife Refuges, national parks and seashores, state parks, and lands owned by private organizations for conservation purposes; Coastal Barrier Resources Act (CBRA, Public Law 97-348) of the United States was enacted October 18, 1982; United States Congress passed this Act in order to address the many problems associated with coastal barrier development; CBRA designated various undeveloped coastal

barriers, which were illustrated by a set of maps adopted by law, to be included in the John H. Chafee Coastal Barrier Resources System (CBRS); designated areas were made ineligible for both direct and indirect Federal expenditures and financial assistance, which are believed to encourage development of fragile, high-risk, and ecologically sensitive coastal barriers.

French West India Company: Chartered company established in 1664; charter gave them the property and seignory of Canada, Acadia, the Antilles, Cayenne, and the terra firma of South America, from the Amazon to the Orinoco; had an exclusive privilege for the commerce of those places, and also of Senegal and the coasts of Guinea, for forty years, only paying half the duties; stock of the company was so considerable, that in less than 6 months, 45 vessels were equipped; with which they took possession of all the places in their grant, and settled a commerce; the company only subsisted nine years; in 1674, the grant was revoked.

general management plan: A plan which clearly defines direction for resource preservation and visitor use in a national park unit, and serves as the basic foundation for decision making. Such plans are developed with broad public involvement.

genips: Genips often refer to the fruit of the genip tree; genip trees (*Melicoccus bijugatus*) are native or naturalized over a large part of the Caribbean, Mexico and parts of Central and South America; they can be found on many road sides and in forested areas throughout the U.S. Virgin Islands; genip trees can grow up to 85 feet tall; the fruit grow in bunches and typically ripen during the late summer months; genips are small fruit with a thin but rigid green skin; inside the skin is usually one large seed; the seed is covered with a juicy, fibrous, peach colored flesh; when ripe the flesh is sweet with a slight tart taste; when not yet ripe the tartness is more apparent.

great house: Large house located on a plantation and utilized by the plantation or estate owner and his/her family; generally from the English Georgian (1714-1830) or Victorian (1837-1901)eras; the art, music, and architectural styles developed in England during these periods greatly influenced the styles across Europe, the Caribbean, and North America, so houses may be said to be in a one of these styles even though they are from the Danish West Indies.

Great Pond: A fringe, saltwater, reef-protected lagoon on the south shore of St. Croix that contains extensive mangrove stands and serves as a haven for several species of birds, including federally listed threatened and endangered species; the second largest salt pond in the U.S. Virgin Islands and the most important wetland on the island of St. Croix.

Greater Antillean Ridge: An ocean floor topographic swell bordered on the north by the Puerto Rican Trench and separating the Caribbean Sea from the Atlantic Ocean.

Green Cay National Wildlife Refuge: A 14-acre refuge was established in 1977 to protect the natural population of the endangered St. Croix ground lizard and preserve bird nesting habitat; this small island off the north coast of St. Croix consists of dry, forested areas with cactus scrub and small rocky beaches; conch shell middens indicate a human presence as early as 1020 A.D.; management involves habitat improvement protection and study of the St. Croix ground lizard.

groundstone celt: Similar to axes, but lack a groove; made by grinding one stone against another.

guts: Gullies that drain precipitation to the ocean from the higher inland points.

horse mill: Horse powered machine generally used for grinding grain or pumping water; horse is attached to a pole and walks in a circle moving the machinery and milling as it walks.

Hovensa: One of the world's largest petroleum refineries, located on the south shore of St. Croix.

hypersalinity: Higher than normal salt content; salts can be sodium chloride or other mineral salts in connection to a body of water.

leachate: Liquid that drains or 'leaches' from a landfill; it varies widely in composition regarding the age of the landfill and the type of waste that it contains; can usually contain both dissolved and suspended material.

manchineel: A species of flowering plant in the spurge family (*Euphorbiaceae*), native to Florida in the United States, the Bahamas, the Caribbean, Central America, and northern South America; reaching up to 30 feet high with a grayish bark, shiny green leaves and spikes of small greenish flowers. Its fruits, which are similar in appearance to an apple, are green or greenish-yellow when ripe; the tree and its parts contain strong toxins including the secretion of a toxic white milky substance during rainfall; standing beneath the tree during rain may cause blistering of the skin from mere contact with this liquid.

migratory birds: Bird species that move from one area to another according to season.

no-take area: A zone of sea that has been temporarily or permanently closed to fishing and other extractive activities to protect fish stocks and natural habitats.

National Environmental Policy Act (NEPA): a United States environmental law that established a U.S. national policy promoting the enhancement of the environment and also established the President's Council on Environmental Quality (CEQ); NEPA's most significant effect was to set up procedural requirements for all federal government agencies to prepare Environmental Assessments (EAs) and Environmental Impact Statements (EISs); EAs and EISs contain statements of the environmental effects of proposed federal agency actions.

National Park System: The sum total of the land and water now or hereafter administered by the Secretary of the Interior through the NPS for park, monument, historic, parkway, recreational or other purposes.

nationally significant: having features that possess exceptional value or quality in illustrating or interpreting the intellectual and cultural heritage and the built environment of the United States, and that possess a high degree of integrity.

N'Dama cattle: N'Dama breed is the most representative "Bos taurus" breed in West Africa. The origin of this breed is located in the Fouta-Djallon highlands of Guinea (Conakry); from there the N'Dama spread in the Sudanian and Guinean regions; being trypanotolerant and heat tolerant it has been used for large scale dissemination for grazing savannah in Congo, Central Africa, Gabon, Nigeria and Zaire, especially in the regions infested by the tse-tse fly.

Orinoco River Valley: Extensive river drainage emptying into the Gulf of Paria in Venezuela; the Orinoco extends into Columbia with its source on the Venezuelan-Brazilian border; Taino people trace their ancestry to the Orinoco River Valley.

oxpound: An enclosure used to contain oxen; in the Virgin Islands this type of corral was made of stone walls.

public involvement (also called public participation): The active involvement of the public in NPS planning and decision-making processes. Public involvement occurs on a continuum that ranges from providing information and building awareness, to partnering in decision making.

Puerto Rican-Virgin Islands shelf: Underwater landmass supporting Puerto Rico and the Virgin Islands.

salt pond: A shallow marine embayment that receives freshwater inflow from groundwater entering the head of the pond, and saltwater inflow through an inlet from the sea; the inlet is periodically opened and closed by the shifting of barrier sands; conditions will vary greatly with the opening and closing of the inlet, and some organisms will not survive the sudden changes in salinity.

Salt River: Intracoastal waterway and connected bay that form Salt River Bay National Historic Site and Ecological Preserve; site of Christopher Columbus' 1493 contact with native islanders and subsequent conflict; a substantial mangrove forest and coral reefs are under NPS protection and management.

seagrapes: (*Coccoloba uvifera*) Small shrub to medium sized tree up to 30 feet high; native to seashores throughout tropical America. Forms long clusters of grape-like fruit with an acidic flavor. The sea grape is often used as a landscape tree near beaches and waterways as it adapts well to sandy soil.

seagrass beds: Highly diverse and productive ecosystems that can harbor hundreds of associated species from all phyla; for example juvenile and adult fish, epiphytic and free-living macroalgae and microalgae, mollusks, bristle worms,

and nematodes; flowering plants from one of four plant families (*Posidoniaceae*, *Zosteraceae*, *Hydrocharitaceae*, or *Cymodoceaceae*), which grow in marine, fully-saline environments.

Senepol cattle: also known as Nelthropp Cattle, Cruzan Breed and St. Croix Cattle; The Senepol breed is a direct descendant of *Bos taurus*, with characteristics that have been cross-bred from both longhorn (N'Dama) and shorthorn (Red Poll) humpless cattle. Senepol are a medium-sized beef breed, and were developed to specifically handle the tropical Caribbean climate; The crossing of N'Dama cattle, with their tolerance of heat and resistance to insects, and the gentleness, quality meat, and high milk production of the Red Poll led to a highly successful breed that has been exported throughout the Caribbean, Brazil, Panama, and elsewhere in South America, the “sun belt states” (from Florida to Texas), Australia, and Zimbabwe. Both cattle and embryos continue to be sold and shipped around the world.

shell middens: An archaeological feature comprised of layers of mollusk shells laid down by human activity; a midden refers to a dump for human domestic waste.

shrublands: Plant community characterized by vegetation dominated by shrubs, often also including grasses, herbs, and geophytes.

stakeholder: A person, group, organization, or system who affects or can be affected by an organization's actions.

St. Croix East End Marine Park: In 2003, the Twenty-Fourth Legislature of the Virgin Islands of the United States amended Title 12, Chapter 1, Sections 97 and 98 of the Virgin Islands Code to establish the St. Croix East End Marine Park and authorize the establishment of other marine parks; the St. Croix East End Marine Park was established to protect significant marine resources, promote sustainability of marine ecosystems, including coral reefs, sea grass beds, wildlife habitats and other resources and to conserve and preserve significant natural areas for the use and benefit of future generations; four different kinds of managed areas within its boundaries; areas are intended to ensure ecosystem-wide management of the park and to accommodate many different types of users; the park is comprised of Recreation Management Areas, Turtle Wildlife Preserve Area, No-Take Areas and Open Areas.

St. Croix Landmarks Society: St. Croix preservation organization established in 1948 to formulate plans and processes to maintain and restore the heritage of St. Croix.

St. Eustatius: A Caribbean Sea island two miles wide by five miles long in the Leeward Islands and part of the Netherland Antilles; also known as Sint Eustatius and part of the Kingdom of the Netherlands.

steam mill: Milling operation utilizing steam power to operate the moving parts; steam power allowed milling to take place away from water power sources.

steam tower: Hollow tower used to funnel heat and steam up and out during a manufacturing process or other heat related process utilizing water vapor.

submerged lands: Land below navigable water.

subtropical climate: Refers to zones in a range of latitudes between 30/40° and 45°; hot season duration is longer and the cold season is milder and rainy.

Taino chiefdoms: Territorial holdings of the Taino people, whose ancestors began to migrate to the islands ca. 400-500 B.C.; the Taino developed over time in the Dominican Republic, Puerto Rico, western Cuba, the Virgin Islands, and a few other places.

tamarinds: (*Tamarindus indica*) Long-lived, medium-growth bushy tree which attains a maximum crown height of 40 to 60 feet; crown has irregular vase-shaped outline of dense foliage; leaves are evergreen, bright green in color, elliptical ovular, arrangement is alternate, of the pinnately compound type, with pinnate venation and less two inches in length; branches droop from a single, central trunk as the tree matures and is often pruned in human agriculture to optimize tree density and ease of fruit harvest; fruit is an elongated-rod, three to six inches in length, and covered in a hard, brown exterior; fleshy, juicy, acidulous pulp of the fruit is mature when colored brown or reddish-brown; fruit is considered ripe when the pods are easily pried open with fingers.

Tortola: A mountainous island 13.5 miles long by 3 miles wide in the Caribbean Sea part of the British Virgin Islands; the principle town of Road Town is the capital of the British Virgin Islands, a British dependent territory.

turtle grass meadows: (*Halassia testudinum*) Extensive meadows of turtlegrass are found throughout the Caribbean; these productive habitats support many fish and invertebrates associated with nearby coral reefs and mangroves; turtle grass meadows are considered to be the mature or "climax" species, existing in an area indefinitely unless environmental conditions change; the plant itself has a deep root and rhizome system and its broad flat leaves can be up to a foot in length; turtle grass plants are not tolerant of freshwater or being exposed at low tide for long periods.

United States Territorial Sea: As defined by the 1982 United Nations Convention on the Law of the Sea, is a belt of coastal waters extending at most twelve nautical miles from the baseline (usually the mean low-water mark) of a coastal state; the territorial sea is regarded as the sovereign territory of the state, although foreign ships (both military and civilian) are allowed innocent passage through it; this sovereignty also extends to the airspace over and seabed below.

United States Virgin Islands: Insular archipelago of islands in the Caribbean Sea of which three principle islands are St. Thomas, St. John, and St. Croix. The three major islands and many minor islands are part of the Leeward Islands of the Lesser Antilles.

Virgin Gorda: an island 8.5 miles long in the Caribbean Sea and part of the British Virgin Islands a British dependent territory

Virgin Islands State Historic Preservation Office: Major functions include administration of the National Register of Historic Places; surveying and inventorying of historic places and sites (on land and in coastal waters); reviewing and ensuring of compliance with federal and territorial preservation laws; historic preservation planning; securing of technical assistance, implementing of public education and identifying of cultural resources; office of the Virgin Islands State Historic Preservation Officer.

visitor: Anyone who physically visits a park for recreational, educational or scientific purposes, or who otherwise uses a park's interpretive and educational services, regardless of where such use occurs (e.g., via Internet access, library, etc.).

visitor experience: The perceptions, feelings, and reactions a person has while visiting a park.

white mangrove: (*Laguncularia racemosa*) A small low sprawling shrub or tree that reaches 40' to 60' in height; characterized by its narrow rounded crown; leaves are rounded at the base and the tip and are smooth underneath. Each leaf has two glands, called nectarines, at its base that excrete sugar; many insects feed on the excreted sugar; one of four major species in a tropical mangrove community other mangroves include black mangrove, buttonwood, and red mangrove.

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Notes

¹ Gill, Ivan P., Dennis K. Hubbard, Peter McLaughlin, and Clyde H. Moore. "Sedimentological and Tectonic Evolution of Tertiary St. Croix". *Terrestrial and Marine Geology of St. Croix, U.S. Virgin Islands*, (1989):49.

² U.S. Department of Agriculture 1998:18.

³ Nagle, Frederick, and Dennis Hubbard, "St. Croix Geology since Whetten: An Introduction", *Terrestrial and Marine Geology of St. Croix, U.S. Virgin Islands*, (1989).

⁴ Ibid.

⁵ Boyer, William W., *America's Virgin Islands: A History of Human Rights and Wrongs*, (Durham: Carolina Academic Press, 1983):11

⁶ Hovey, Sylvester, "Letters from the West Indies: relating especially to the Danish Island of St. Croix and to the British Islands of Antigua, Barbadoes and Jamaica", *The Kamina Folk: Slavery and Slave Life in the Danish West Indies*, (1994): 185-191.

⁷ Hall, Neville. A. T., *Slave Society in the Danish West Indies. St. Thomas, St. John, and St. Croix*, (Baltimore: The Johns Hopkins University Press, 1994):13.

⁸ Tyson, George F., "On the Periphery of Peripheries: the Cotton Plantations of St. Croix, Danish West Indies, 1735-1815", *Bondmen and Freedmen in the Danish West Indies*. (1996):83.

⁹ Brubaker, C. L., E. M. Bourland, and J. E. Wendel, *The Origin and Domestication of Cotton. In Cotton: History, Technology, and Production*, (New York: John Wiley and Sons, 1999).

¹⁰ Ibid.

¹¹ Tyson, "On the Periphery of Peripheries: the Cotton Plantations of St. Croix, Danish West Indies, 1735-1815", 84.

¹² Ibid, 85.

¹³ Ibid, 83.

¹⁴ Ibid, 90.

¹⁵ Ibid, 92.

¹⁶ Hupp, H. D., "History and Development of Senepol Cattle", *Report 11, Agricultural Extension Service*.

¹⁷ V.I. Department of Planning and Natural Resources 1993:17.

¹⁸ Ibid.

¹⁹ Federal Register, Vol. 71, No. 89; 50 CFR Part 223.

²⁰ Assessment based on findings of NPS Acropora Biological Review Team (2005).

²¹ Ibid.

²² National Historic Landmarks nomination criteria contained in 36 CFR Part 65: The quality of national significance is ascribed to districts, sites, buildings, structures and objects that possess exceptional value or quality in illustrating or interpreting the heritage of the United States in history, architecture, archeology, engineering, and culture and that possess a high degree of integrity of location, design, setting, materials, workmanship, feeling, and association, and [meet one or more of the six following criteria]:

Criterion 1 – that are associated with events that have made a significant contribution to, and are identified with, or that outstandingly represent, the broad patterns of United States history and from which an understanding and appreciation of those patterns may be gained; or

Criterion 2 – that are associated importantly with the lives of persons nationally significant in the history of the United States; or

Criterion 3 – that represent some great idea or ideal of the American people; or

Criterion 4 – that embody the distinguishing characteristics or an architectural type specimen exceptionally valuable for the study of a period, style, or method of construction, or that represent a significant, distinctive, and exceptional entity whose components may lack individual distinction; or

Criterion 5 – that are composed of integral parts of the environment not sufficiently significant by reason of historical association or artistic merit to warrant individual recognition but collectively compose an entity or exceptional historical or artistic significance, or outstandingly commemorate or illustrate a way of life or culture; or

Criterion 6 – that have yielded or may be likely to yield information of major scientific importance by revealing new cultures, or by shedding light upon periods of occupation of large areas of the United States. Such sites are those which have yielded, or which may reasonably be expected to yield, data affecting theories, concepts, and ideas to a major degree.

²³ Hardy, Meredith D., “Saladoid Economy and Complexity on the Arawakan Frontier”, (doctoral dissertation, Florida State University, 2008)