NATIONAL PARK SERVICE • U.S. DEPARTMENT OF THE INTERIOR

Special Resource Study / Boundary Study
Fort San Gerónimo and Other Related Resources
San Juan, Puerto Rico









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Special Resource Study / Boundary Study
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San Juan, Puerto Rico

LEAD AGENCY: NATIONAL PARK SERVICE

The Department of the Interior, National Park Service (NPS), has prepared the *Fort San Gerónimo Special Resource Study / Boundary Study* to evaluate the potential of Fort San Gerónimo and other related sites in the Commonwealth of Puerto Rico to be included within the national park system. As directed by Congress, this document includes a special resource study that evaluates Fort San Gerónimo and 14 other related resources for their inclusion in the national park system as new, independent units under special resource study criteria.

Also included in this document is a boundary study that evaluates the potential of Fort San Gerónimo and 14 other related sites as additions to San Juan National Historic Site, an existing unit of the national park system. The boundary study includes an evaluation of multiple factors to determine the feasibility of adding these areas to San Juan National Historic Site and whether other options for management are adequate.

criteria for significance, and thus were not evaluated further. Therefore, none of the study resources is eligible for inclusion in the national park system as new, stand-alone units. A complete discussion of the finding can be found in "Chapter 3: Special Resource Study—Evaluation of the Study Sites as New, Independent Units of the National Park System."

BOUNDARY STUDY AND SUMMARY OF FINDINGS

Preparation of the special resource study led to a decision to analyze the potential for including Fort San Gerónimo and other related resources within the national park system through an addition to the boundary of an existing national park unit, San Juan National Historic Site (San Juan NHS). Therefore, this document also includes a boundary study. Boundary studies can be initiated without an act of Congress, although park boundaries may be modified only as authorized by law.

National Park Service *Management Policies 2006*, section 3.5, directs that boundary adjustments to existing units of the national park system meet at least one of the following criteria:

- Protect significant resources and values or enhance opportunities for public enjoyment related to unit purposes.
- Address operational and management issues, such as the need for access or the need for boundaries to correspond to logical boundary delineations such as topographic or other natural features or roads.
- Otherwise protect unit resources that are critical to fulfilling the unit's purposes.

Additionally, all recommendations for additions must meet all of the following criteria:

- The added lands will be feasible to administer, considering their size, configuration, and ownership; costs; the views and impacts on local communities and surrounding jurisdictions; and other factors such as the presence of hazardous substances or exotic species.
- Other alternatives for management and resource protection are not adequate.

Fort San Gerónimo and the 14 other related resources were considered as an addition to San Juan National Historic Site based on its potential to enhance opportunities for public enjoyment related to the park purposes of San Juan National Historic Site. The purpose and significance of San Juan National Historic Site is to preserve, protect, and interpret the oldest and largest Spanish fortification system in the United States.

Fort San Gerónimo and most of the other related resources are geographically separated from the Old San Juan area and San Juan National Historic Site resources. Fort San Gerónimo, Isabel II Bastion, Santa Catalina Bastion, La Concepción Bastion, portion of the city wall located behind the José Julián Acosta School, and Polvorín de San Gerónimo are historically significant components of the Spanish fortifications on San Juan; therefore the sites are significant to San Juan National Historic Site's park purpose.

The National Park Service found the proposal to add Fort San Gerónimo and 14 other related resources to San Juan National Historic Site infeasible principally because of the high cost of repairing and restoring the deteriorated historic structure. A complete description of the application of the boundary study criteria is included in "Chapter 4: Boundary Study—Evaluation of Study Sites as an Addition to San Juan National Historic Site."

SUMMARY

INTRODUCTION

The Department of the Interior, National Park Service (NPS), has prepared this special resource study / boundary study to evaluate the potential of Fort San Gerónimo and other related resources to be included within the national park system. As directed by Congress, this document includes a special resource study that evaluates these resources for their inclusion in the national park system as new, independent units. Also, as directed by Congress, this document evaluates Fort San Gerónimo and other related resources as additions to San Juan National Historic Site, an existing unit of the national park system. This evaluation is conducted under boundary adjustment criteria in this document.

LEGISLATIVE HISTORY

In 2009, Congress directed the Secretary of the Interior (Secretary) to evaluate the potential to include Fort San Gerónimo and other related resources as part of the national park system unit San Juan National Historic Site and "the methods and means for the protection and interpretation of Fort San Gerónimo and other related resources by the National Park Service, other Federal, State, or local government entities or private or non-profit organizations." Section 7212 of the Omnibus Public Land Management Act of 2009 (Public Law 111-11, signed March 30, 2009) directs the Secretary to complete a special resource study of the Fort San Gerónimo (also known as "Fortin de San Gerónimo del Boquerón"), which means "the fort and grounds listed on the National Register of Historic Places (NRHP) and located near Old San Juan, Puerto Rico," as well as related resources, which "means other parts of the fortification system of old San Juan that are not included within the boundary of San Juan National Historic Site, such as sections of the City Wall or other fortifications."

The special resource study is to determine "(A) the suitability and feasibility of including Fort San Gerónimo and other related resources in the Commonwealth of Puerto Rico as part of San Juan National Historic Site; and (B) the methods and means for the protection and interpretation of Fort San Gerónimo and other related resources by the National Park Service, other Federal, State, or local government entities or private or non-profit organizations." The legislation specified that this special resource study, containing the study findings and the Secretary of the Interior's recommendations, be submitted to Congress within three years of the study funding.

SPECIAL RESOURCE STUDY AND SUMMARY OF FINDINGS

The special resource study addresses 15 resources, including Fort San Gerónimo. NPS *Management Policies 2006*, section 1.3, directs that proposed additions to the national park system must be suitable for inclusion in the national park system; that is the resource must not already be adequately represented in the system or not comparably represented and protected by a federal agency.

Conclusion

Fort San Gerónimo was individually evaluated and found to meet special resource study criteria for significance and suitability, but not feasibility. Among the numerous aspects of feasibility evaluated, the most prohibitive factor of feasibility is the high cost of historic preservation treatment to repair and restore Fort San Gerónimo, which is severely deteriorated. Such costs would exceed NPS funding resources during this period of fiscal constraint. The 14 other related resources were evaluated both individually and collectively, and none was found to meet special resource study

Conclusion

Fort San Gerónimo and the 14 other related resources do not meet the criteria to be included as an addition to San Juan National Historic Site.

PUBLIC INVOLVEMENT

The National Park Service held two public meetings in San Juan, Puerto Rico, in February 2011. A newsletter describing the purpose, steps of the special resource study, and soliciting public input were distributed in both Spanish and English prior to these meetings. In addition to the two public meetings, the NPS study team held a stakeholder meeting in February 2011 with representatives from the US Army Corps of Engineers, Puerto Rico Historic Preservation Office, Puerto Rico Tourism Co., municipality of San Juan / Old San Juan Urban Center, Congressman Pierluisi's office, Institute of Puerto Rican Culture, and NPS San Juan National Historic Site. Public input received by the National Park Service was predominately supportive of the study. A summary of the public scoping process and the comments received is included in "Chapter 5: Public Involvement, Consultation, and Coordination."

A GUIDE TO THIS DOCUMENT

This special resource study / boundary study is organized into five chapters. Each chapter is briefly described below.

Chapter 1: Purpose and Background provides a brief description of the study area and an overview of the study's purpose, background, and process. This chapter also summarizes the NPS findings on the special resource study and the boundary study.

Chapter 2: Historical Background and Resource Description provides an overview of Fort San Gerónimo and 14 other related resources that are associated with the masonry and brick fortifications built by the Spanish Crown in the San Juan islet from the 16th to 19th centuries. The chapter also describes the sites evaluated in the special resource study.

Chapter 3: Special Resource Study—Evaluation of the Study Sites as New, Independent Units of the National Park System describes the evaluation criteria and findings for the four study sites. This chapter provides the analysis and evaluation required in a special resource study.

Chapter 4: Boundary Study—Evaluation of Study Sites as an Addition to San Juan National Historic Site evaluates the potential of adding Fort San Gerónimo and 14 other related resources to an existing unit of the national park system. This chapter provides the analysis and evaluation required in a boundary study.

Chapter 5: Public Involvement, Consultation, and Coordination describes the history of public and agency coordination during the planning effort. It also lists agencies and organizations that will receive copies of the document and a list of preparers.

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Chapter 1
Purpose and Background



CHAPTER 1: PURPOSE AND BACKGROUND

PURPOSE OF THIS SPECIAL RESOURCE STUDY / BOUNDARY STUDY

New lands are typically added to the national park system by an act of Congress. However, before Congress decides to create a new national park system unit, it needs to know whether the area's resources meet established criteria for designation. The National Park Service (NPS) is often tasked with evaluating potential new areas for compliance with these criteria and documenting its findings in a special resource study.

In 2009, Congress directed the Secretary of the Interior (Secretary) to evaluate the potential to include Fort San Gerónimo and other related resources as part of the national park system unit San Juan National Historic Site and "the methods and means for the protection and interpretation of Fort San Gerónimo and other related resources by the National Park Service, other Federal, State, or local government entities or private or non-profit organizations." Section 7212 of the Omnibus Public Land Management Act of 2009 (Public Law 111-11, signed March 30, 2009) directs the Secretary to complete a special resource study of Fort San Gerónimo (also known as "Fortin de San Gerónimo del Boquerón"), which means "the fort and grounds listed on the National Register of Historic Places and located near Old San Juan, Puerto Rico," as well as related resources, which "means other parts of the fortification system of old San Juan that are not included within the boundary of San Juan National Historic Site, such as sections of the City Wall or other fortifications." The legislation specified that this special resource study, containing the study findings and the Secretary's recommendations, be submitted to Congress within three years of the study funding.

This document contains both a special resource study and a boundary study. The special resource study evaluates Fort San Gerónimo and other related resources as potential new additions to the national park system. The boundary study evaluates Fort San Gerónimo and other related resources as a potential new addition to an existing national park system unit, San Juan National Historic Site.

The purpose of the special resource study is to provide Congress with information about the quality and condition of Fort San Gerónimo and other related resources and their relationship to criteria for national parklands. This study summarizes the NPS findings and, in combination with additional analysis, provides a comprehensive assessment of Fort San Gerónimo and 14 other related properties as potential additions to the national park system.

In contrast to special resource studies, boundary studies may be initiated without an act of Congress, although park boundaries may be modified only as authorized by law. During development of the special resource study, the National Park Service decided to also analyze the potential of including Fort San Gerónimo and other related resources within the national park system through an addition to the boundary of an existing park unit, San Juan National Historic Site. Fort San Gerónimo and other related resources were analyzed in the boundary study in an effort to analyze preservation options for resources at this site and to evaluate the opportunities for public enjoyment related to the purpose and significance of San Juan National Historic Site. The resources at Fort San Gerónimo and other related resources are part of a massive system of fortifications in and surrounding San Juan, Puerto Rico, that can be broadly linked to the purpose and significance of San Juan National Historic Site.

ORGANIZATION OF THE DOCUMENT

This document encompasses both a special resource study and a boundary study. The document presents information on historic context and existing conditions in "Chapter 2: Historical Background and Resource Description." "Chapter 3: Special Resource Study—Evaluation of the Study Sites as New, Independent Units of the National Park System" addresses the evaluation criteria specific to the special resource study, in particular the topic of national significance. "Chapter 4: Boundary Study—Evaluation of Study Sites as an Addition to San Juan National Historic Site" addresses the evaluation criteria specific to a boundary study and the topic of "feasibility," which is common to both types of studies. "Chapter 5: Public Involvement, Consultation, and Coordination" describes public and agency involvement in the study process.

INTRODUCTION TO THE STUDY AREA

More than 3.5 million people live on the island of Puerto Rico, with almost 2.5 million in the greater San Juan metropolitan area alone. It is a vibrant, modern, bilingual, multicultural society—one that has been molded by the Arawak/Taíno indigenous people and, later, Spanish and African people, with influences from the United States. San Juan is the capital and most populous city in Puerto Rico and had a population of 395,000 in 2010.

The Fort San Gerónimo study area is located within San Juan, on the northeastern coast of the island of Puerto Rico. The city lies south of the Atlantic Ocean and occupies an area of 76.93 square miles, of which 29.11 square miles is water. Within the larger municipality of San Juan is the small island of San Juan, which includes the historic neighborhood of Old San Juan. The island of San Juan (also called the San Juan islet) is surrounded by the Atlantic Ocean to the north, San Juan Bay to the west, the San Antonio Channel to the south, and the Condado Lagoon to the east.

The property known as Fort San Gerónimo is the core of the study area. It is a small, two-level, stone masonry fort located on the eastern edge of the island of San Juan. Built on a rocky outcrop in the Condado Lagoon, Fort San Gerónimo is partially submerged by water on all sides and faces the Condado neighborhood across the lagoon. On the island, the fort is adjacent to the grounds of the Caribe Hilton hotel resort complex. Unlike similar forts that comprise the San Juan fortification system, Fort San Gerónimo is not part of the NPS San Juan National Historic Site. Instead, Fort San Gerónimo is owned by the Commonwealth of Puerto Rico and managed by the commonwealth agency, the Institute of Puerto Rican Culture (ICP).

The 14 other study resources are individual sites scattered throughout and adjacent to San Juan Island. They were part of the system of fortifications that once protected the city of San Juan. These resources are owned and managed by various agencies of the Commonwealth of Puerto Rico or the municipality of San Juan, and are not part of the NPS San Juan National Historic Site.

The sites are located within the coastal flood zone with velocity hazard (wave action) of the 100-year flood zone determined by Federal Emergency Management Administration (FEMA) and are directly subject to impacts of sea level rise because their structural foundations are currently within several feet of mean sea level.

STUDY METHODOLOGY / PROCESS

To meet the requirements of the study legislation, both special resource study criteria and boundary adjustment criteria were applied to the study resources.

By law (Public Law 91-383, section 8, as amended by 303 of the National Parks Omnibus Management Act [Public Law 105-391]) and NPS policy, special resource study criteria for potential new units of the national park system must

- Possess nationally significant resources.
- Be a suitable addition to the national park system.
- Be a feasible addition to the national park system.
- Require direct NPS management or administration instead of alternative protection by other agencies or the private sector.

The criteria for boundary studies (NPS *Management Policies 2006*) requires the National Park Service to first demonstrate that the area protects significant resources and values or enhances opportunities for public enjoyment related to park purposes. National Park Service *Management Policies 2006*, section 3.5, directs that boundary adjustments to existing units of the national park system meet at least one of the following criteria:

- Protect significant resources and values or enhance opportunities for public enjoyment related to unit purposes.
- Address operational and management issues, such as the need for access or the need for boundaries to correspond to logical boundary delineations such as topographic or other natural features or roads.
- Otherwise protect unit resources that are critical to fulfilling the unit's purposes.

Fort San Gerónimo and the 14 other related resources were thus evaluated as an addition to San Juan National Historic Site based on their potential to enhance opportunities for public enjoyment related to the park purposes of San Juan National Historic Site according to this criteria.

Additionally, all recommendations for additions must meet all of the following criteria:

- The added lands will be feasible to administer, considering their size, configuration, and ownership; costs; the views and impacts on local communities and surrounding jurisdictions; and other factors such as the presence of hazardous substances or exotic species.
- Other alternatives for management and resource protection are not adequate.

The following methodology was used to determine if Fort San Gerónimo and the 14 other related study areas satisfy the special resource study or boundary study requirements.

1. 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, local neighbors, local and state government agencies, regional residents, and the general public would like to see achieved at Fort San Gerónimo and the other related resources. Information and ideas for the other related sites were also collected during the scoping process. Scoping occurred continuously throughout the planning process. A summary of stakeholder ideas and concerns generated through scoping is presented in chapter 5.

2. Evaluate national significance, suitability, and feasibility of primary site features in the special resource study. To be eligible for designation as a new unit, the resource must be nationally significant, a suitable addition to the national park system, and feasible to manage and operate. For cultural resources, national significance is evaluated by applying the national historic landmarks (NHL) nomination criteria contained in 36 CFR 65. Chapter 3 presents a complete discussion of national significance.

Fort San Gerónimo was found to meet the criteria for national significance and suitability, and, therefore, the site was evaluated for feasibility to determine if it met all three required special resource criteria. The 14 other related resources were not found to possess national significance, and thus do not qualify as new independent units of the national park system; therefore, discussions of suitability and feasibility were not required for the special resource study portion of the document.

3. Evaluate feasibility and suitability of changing the boundary of San Juan National Historic Site to include Fort San Gerónimo in the boundary study. The boundary study discusses the significance of Fort San Gerónimo and the 14 other related resources to determine how they fit into the thematic context of San Juan National Historic Site. The boundary study also evaluates Fort San Gerónimo and the 14 other related resources according to the criteria published in NPS *Management Policies 2006* (section 3.5.1), which state the property must "protect significant resources and values, or enhance opportunities for public enjoyment related to park purposes" to be considered for inclusion within the unit boundary.

A discussion of the feasibility and suitability of Fort San Gerónimo and the 14 other related resources for inclusion in the boundary of San Juan National Historic Site is presented in chapter 4.

4. Evaluate the need for direct National Park Service management under special resource study or boundary study criteria. If the resources meet all of the above criteria for special resource study or boundary study, the study process continues with an analysis to assist in determining the need for direct NPS management instead of alternative protection by another group. To be considered, an area must meet the standard that "[o]ther alternatives for management and resource protection are not adequate." A discussion of the need for direct NPS management is presented in chapter 4.

5. Transmit Study to Congress. The study and summary findings will be transmitted by the National Park Service to the Department of the Interior. The Department of the Interior will transmit the results of the study to Congress together with any recommendations of the Secretary of the Interior.

STUDY LIMITATIONS

Special resource studies and boundary studies serve as reference sources for members of Congress, the National Park Service, 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 study do not guarantee future funding, support, or any subsequent action by Congress, the Department of the Interior, or the National Park Service.

Fortín de San Jerónimo, Estudio de Recursos Especiales (Fort San Gerónimo, Special Resource Study-SRS)
Puerto Rico

National Park Service
U.S. Department of the Interior

Mapa Regional del Caribe
(Regional Map of the Caribbean)



Océano Atlántico
(Atlantic Ocean)

Golfo de México
(Gulf of Mexico)
Gulf of Mexico

Florida Straits
Yucatan Channel
Gulf of Honduras
Gulf of Darien
Caribbean
Mar Caribe
(Caribbean Sea)

Jacksonville
Orlando
Tampa
Florida
Miami
Nassau
BAHAMAS
Havana
CUBA
Merida
Cancun
Santiago de Cuba
George Town
Santiago
DOMINICAN REPUBLIC
Port-au-Prince
HAITI
Santo Domingo
JAMAICA
Kingston
Puerto Rico
San Juan
PUERTO RICO
U.S. VIRGIN ISLANDS
Basseterre
St. John's
GUADELOUPE
Roseau
Fort-de-France
Castries
Kingstown
BARBADOS
Bridgetown
St. George's
Oranjestad
Willemstad
Belmopan
GUATEMALA
Guatemala
HONDURAS
Tegucigalpa
San Salvador
EL SALVADOR
NICARAGUA
Managua
COSTA RICA
San Jose
Panama City
Barranquilla
Cartagena
Maracaibo
Barquisimeto
Valencia
Maracay
Caracas
Barcelona
Maturin
Port of Spain
TRINIDAD AND TOBAGO

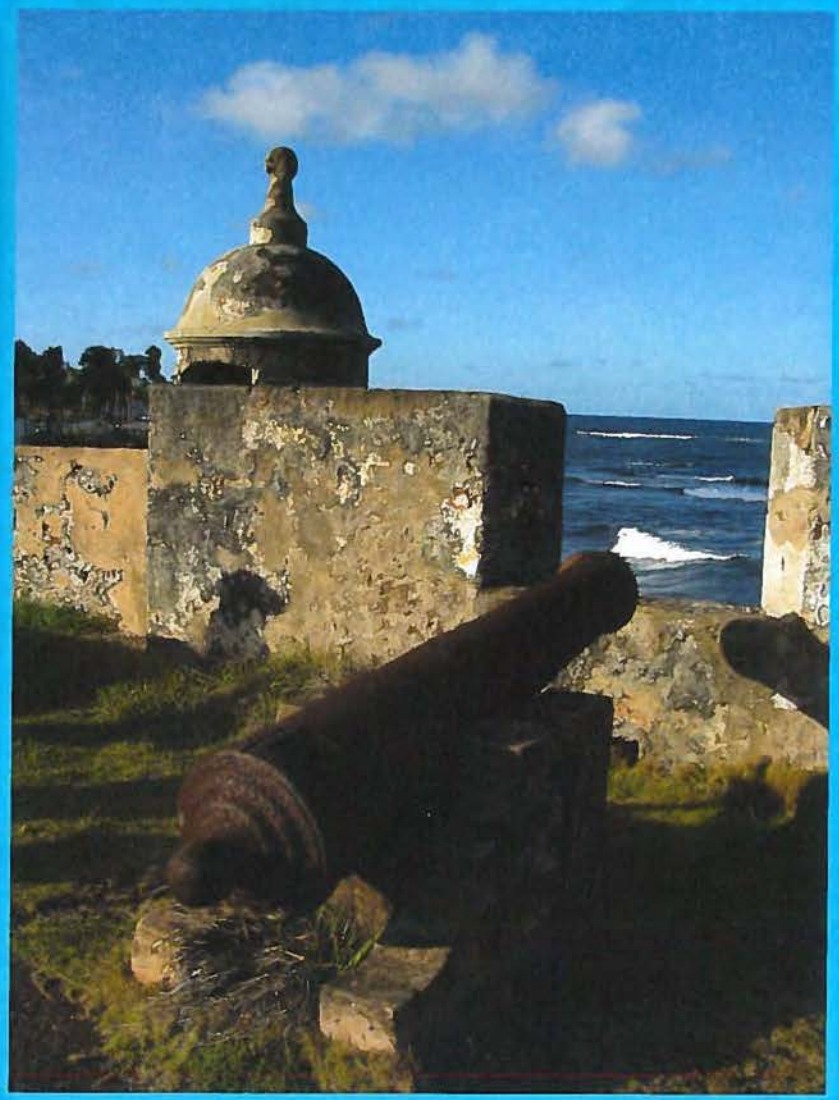
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Chapter 2

Historical Background and Resource Description



CHAPTER 2: HISTORICAL BACKGROUND AND RESOURCE DESCRIPTION

INTRODUCTION

This chapter is divided into two parts: "Historical Overview" and "Description of the Study Sites." Both sections contain information that is relevant to the evaluation of candidate sites contained in chapters 3 and 4 of this study.

Congress directed the National Park Service to investigate Fort San Gerónimo and related resources. Therefore, the "Historical Overview" includes a summary of the history of the massive fortification system of San Juan, Puerto Rico, of which Fort San Gerónimo and the related resources identified through public scoping are a part.

The second section of this chapter, "Description of the Study Sites," describes Fort San Gerónimo and the 14 other study sites that were identified through scoping. For each resource, there is a brief physical description, a summary of the resource's current condition, a brief site history, a summary of the historical documentation (official recordation) completed to date, a summary of previous determinations of significance that have been established for each resource at the time of this study, and a brief analysis of the resource's integrity.

HISTORICAL OVERVIEW

The following historical narrative was prepared using historical information from *The Forts of Old San Juan* (NPS 1996) and was supplemented using other secondary sources.

Since the 16th century, Puerto Rico's strategic location has attracted the attention of world powers vying for control of the Caribbean. Puerto Rico holds a key position in the geographic center of the Caribbean subgroup of islands called the Greater Antilles, which includes Cuba, Jamaica, and Hispaniola (now Haiti and the Dominican Republic). In the 1500s, Spain established outposts on these islands, from which they could resupply and launch expeditions to Mexico, Central America, and South America for exploring, settling, or exploiting resources for the benefit of Spain. By 1535, the Spanish navy had successfully conquered Mexico and Peru and was sending home ships carrying gold, silver, and jewels in "treasure fleets" crossing the Atlantic Ocean. To protect the cargo from pirates and from Spain's enemies of England, France, or Holland, Spain began using a convoy system of armed boats to escort ships carrying the valuable bounty from Central and South America. At the same time, Spain fortified its Spanish Colonial forts in the Greater Antilles to safeguard these ships when they stopped to resupply in the Spanish-controlled ports. San Juan, Puerto Rico, was to become a key port among these.

Spain had first learned of Puerto Rico in 1493 after Christopher Columbus's second voyage to the New World. Columbus found the Caribbean island populated by several thousand Arawak/Taíno people. The Taíno Indians called the island Boriquen, meaning Land of the Brave Lord. Columbus named the island "San Juan Bautista" for Saint John the Baptist, and later Spanish explorer Juan Ponce de León named the island Puerto Rico (NPS 1996).

In 1508, Ponce de León and his men settled on Puerto Rico about two miles inland from the port of San Juan to fulfill orders from the Crown to explore and colonize Puerto Rico. Ponce de León's tenure of ruling over the neighboring island of Hispaniola for 15 years won him praise from the Spanish Royal Governor in the Caribbean, and as a result, Spain chose Ponce de León to similarly establish a Spanish colony in Puerto Rico. Ponce de León named his Puerto Rican

settlement Caparra, and it became a center for colonial Spanish military and government in Puerto Rico for the next 10 years (NPS 1996).

Although the Taíno Indians first met Ponce de León and his men with openness, their goodwill evaporated when the Spanish settlers became oppressive to the natives. The Spanish engaged in land seizures and enslavement of the Taíno Indians, forcing them to work in the fields and mine for the gold that the Spanish believed to be on the island. In 1511, the Taíno Indians rebelled against their invaders, but their attempts were futile against the Spanish firearms. In retreat, many of the natives left Puerto Rico for the Lesser Antilles Caribbean islands to the south and southeast. Unified by a common enemy in the Spanish, the Taíno Indians joined forces with the Island-Caribs, a tribe of South American Indians, and began a campaign of harassment against the Puerto Rico's Spanish Colonial settlements (NPS 1996).

By 1519, Ponce de León's settlement of Caparra proved hard to defend, and the site's swamp conditions became unhealthy. Ponce de León, then governor of Puerto Rico, refused to relocate the base of the colonial government, but the Spanish crown overruled his decision and forced him to move the seat of the Spanish government to the coastal inlet site that was then called Puerto Rico, Spanish for "rich port" or "good port," and later renamed San Juan. San Juan was established at the western end of a narrow island measuring three and a half miles long from east to west and one mile wide from north to south. Compared with Caparra, San Juan's position at the mouth of the San Juan Bay was considered a vastly superior site for its defense and cleaner air quality. The king of Spain felt reassured by the relocation to San Juan and referred to the new city as the "key to the Indies." In 1521, Ponce de León left Puerto Rico to colonize Florida and never returned (NPS 1996).

After Spain established its San Juan outpost, France endeavored to plunder Spain's newfound riches in the Americas and attack Spanish bases where the settlers had little military protection. In 1528, French corsairs raided a Spanish settlement on Puerto Rico called San Germain, located on the island's western coast. The French assumed control of the port, along with at least five other sites across the Caribbean islands. Spain reacted to the French takeovers by deploying naval convoys along its shipping route and fortifying its Caribbean bases to help protect shipping and depots. These plans included the authorization to construct a permanent military fort in San Juan (NPS 1996).

Spain's directive to build defensive fortifications in San Juan was timely. In May 1529, Puerto Rico had no structures from which to defend itself. Although Ponce de León's Casa Blanca in San Juan was a substantial building constructed of rammed earth and stone, it was not a defensive structure. The earliest Spanish fortifications in San Juan were constructed between 1532 and 1540 to guard the entrance to San Juan Bay. In 1537, Spain built the fortress of La Fortaleza high on the rocky southwestern corner of San Juan, just the inside the harbor. Similar to medieval and early Renaissance European fortifications, La Fortaleza consisted of a square courtyard plan with thick, crenellated stone and tabby walls and two circular turrets facing the bay. However, because the port was located inside the harbor and lacked a garrison or cannons, La Fortaleza could not adequately defend the city from this position. A need for supplemental fortifications led to the construction of a masonry tower and battery armed with four cannons north of the fort closer to the harbor opening (NPS 1996).

In 1582, Captain General Diego Menéndez de Valdés arrived in Puerto Rico to govern the colony on behalf of King Felipe II of Spain (also known as King Philip). Governor Menéndez de Valdés had experience fighting in Caribbean military campaigns and was sent to convert the town of San Juan into a

walled presidio. Menéndez de Valdés drew a proposal for the construction of forts at the entrance of San Juan's key harbors and for the establishment of a strong coast guard, and King Felipe II's War Council responded with authorization to build earthen fortifications. Menéndez de Valdés first built a four-gun battery, called Santa Elena, along the shoreline between La Fortaleza and the northwestern site of the islet that would become El Morro. Progress was slow, however, and, although San Juan had gained Menéndez's leadership and a garrison of soldiers, the city and the rest of Puerto Rico remained weak with poverty and continued to be powerless against corsairs and other enemy ships that freely used the rest of the Puerto Rico's ports without opposition (NPS 1996).

King Felipe's Council of the Indies approved funding for three more defensive projects in 1588. These three sites became Castillo San Felipe Del Morro (named for King Felipe, and also called El Morro today), the tall defensive wall between La Fortaleza and El Morro, which continued to expand, and the sunken blockade at the Boquerón Inlet at the eastern side of the San Juan islet in an attempt to prevent a land invasion from the east. In fact, two hundred years before Fort San Gerónimo was built, a fortification structure at El Boquerón Point is mentioned for the first time by Governor Diego Menéndez de Valdés (1582–1593) in his report to the Junta de Puerto Rico in 1587 (Blanco 1947, *cited in* Puerto Rico State Historic Preservation Office [PR SHPO] 2011). According to his report, Menéndez fortified El Boquerón Point with a platform and a trench big enough to emplace six artillery pieces (Brau 1914, *cited in* PR SHPO 2011).

These early fortifications were built by a gang of skilled laborers from the Spanish military that included stonecutters, masons, smiths, a cooper, a metal founder, and an overseer. El Morro, first called the Castillo San Felipe Del Morro, was built to shelter 3,000 people. Set high on San Juan's northwest corner, El Morro provided views over the mouth of San Juan Bay and the harbor and, to the north, outward to the Atlantic Ocean. The construction of El Morro brought San Juan batteries, magazines, and "hornwork," which were two half-bastions connected by a wall (NPS 1996).

In 1591, a new plan for fortifications designed by the military engineer Juan Bautista Antonelli led to Captain Pedro de Salazar's deconstruction of all works, redoubts, and trenches built by Governor Menéndez de Valdés on the eastern part of the islet of San Juan (PR SHPO 2011). As proved later by attacks in 1595 and 1598 by English Admiral Sir Frances Drake and Lord Cumberland, respectively, Salazar's actions were a military blunder because the key to the defense of San Juan rested in the impregnability of the land by approaches from the east (PR SHPO 2011). Between 1591 and 1595, many temporary positions were constructed at the eastern part of the San Juan Island, including El Boquerón inlet at the east side of San Juan in the area today called the Condado Lagoon (Hoyt 1943, *cited in* PR SHPO 2011).

1595 Attack by Sir Francis Drake

By 1595, San Juan's new defensive system was in place when English Admiral Sir Frances Drake sought to plunder Spain's New World riches that were temporarily stored in La Fortaleza while the Spanish ship used to carry them was repaired in the San Juan Bay. When Spanish Admiral Pedro Tello de Guzmán



Citation: Colección San Juan Español.

heard of the Englishman's plan, he quickly sailed to San Juan to prepare the fort for Drake's arrival. Drake first approached San Juan by anchoring his fleet of ships within shooting range of the Boquerón Battery at the eastern shore of Old San Juan, which would later become the location of Fort San Gerónimo. Puerto Rico Governor Pedro Suárez Coronel had ordered the construction of a dirt platform to hold two cannons positioned to support the Boquerón's four cannons. The platform was just south of the Boquerón Battery, near a bridge that crossed over the Condado Lagoon. While 100 men awaited attack at Old San Juan, 150 men defended the islet's eastern site at the Boquerón Battery (NPS 1996).

The Spanish fired 28 shots, one of which hit Drake's cabin and mortally wounded three English officers. The following day, Drake repositioned his ships to the mouth of the San Juan Bay and anchored at Cabras Island and El Cañuelo Island, across the bay from El Morro. Drake swarmed the Spanish frigates waiting in the harbor by sending a series of small, shallow-draft armed boats to attack. The Spanish defended La Fortaleza with musketeers at El Morro and cannon fire from the Santa Elena Battery and drove the English ships back to their fleet after a bloody battle for both sides (NPS 1996).

Second British Attack by Lord Clifford, Third Earl of Cumberland, in 1598

Three years later, in 1598, the English made another attempt to seize San Juan. Although Spain's defense against Sir Francis Drake had been successful, the attack reduced Spain's troops from 1,500 to 200 men and left San Juan vulnerable to future attacks. Moreover, the people living in San Juan were plagued with famine and outbreaks of disease such as dysentery. Weakened and hungry, when word arrived of a second English attack few rallied to build emergency defenses. The El Morro garrison was reduced to 134 infantrymen and 14 artillerymen. The Crown supplemented this with 200 new soldiers, but they proved difficult to manage (NPS 1996).

Under the leadership of Lord George Clifford, Third Earl of Cumberland, the British arrived in the West Indies with a fleet of 21 ships. Lord Cumberland's orders were to fulfill Queen Elizabeth's desire to acquire Puerto Rico as a strategic military base from which to attack Spanish galleons carrying riches from Central and South America. Careful not to repeat Drake's mistake in attacking the well-defended entrance to the San Juan harbor, Cumberland and his 1,700 men sailed into Puerto Rico through a small bay at Cangrejos, east of what is today the Condado peninsula.

After a full day's march the British troops reached the eastern end of the San Juan islet at the San Antonio Bridge and the Boquerón Bay. Anticipating a landside invasion, Admiral Guzman's troops demolished the center of the bridge, which was closed off by a strong wood door at the western end, to prevent entry to the island. The Boquerón Point defended the eastern entrance to the island, along with the Escambrón at the islet's northeastern point (NPS 1996).

There were two fortified points at the eastern end of San Juan, a small fort at El Boquerón and a fort built on the San Antonio Bridge, which crossed the Condado Lagoon and connected to what is called the Condado peninsula today. The fort, or bastion, is referred to by Layfield as "Fuerte Rojo" (Red Fort) and "Mata Diablo" (Devil Killer). "Fuerte Rojo" suggests a structure built of red brick (Hoyt 1943) or a wooden one painted red (de Hostos 1948). The name "Mata Diablo" may have been given the fort because the Spaniards thought Sir John Hawkins had been killed by the fire of its guns at the time of Drake's attack (Hoyt 1943, *cited in* PR SHPO 2011).

Although vastly outnumbered by Clifford's troops, Spanish gunmen defended their position for almost two hours. Cumberland fell into the water wearing his armor and had

to be saved by his soldiers from drowning. When the tide rose, artillery near the bridge gate and the Boquerón Battery, as well as musket fire, forced the end of the battle. Both sides lost 50 men (NPS 1996).

The English returned for a second attack, this time using one of their ships to fire cannons on the Boquerón Battery at close range. The attack finally forced the Boquerón Battery to succumb. The Spanish defended the Escambrón beachhead with 50 musketeers and 200 pikemen, but, outnumbered by the English, Cumberland's soldiers marched into the city of San Juan unopposed. The Spanish and their 400-man garrison surrendered on July 1.

Cumberland's victorious capture of El Morro was short lived. As soon as the British troops occupied San Juan, they were overwhelmed by a deadly disease epidemic that took 400 English lives. Lord Cumberland and his troops abandoned the fortress only several weeks after their arrival (NPS 1996).

Lessons learned from Cumberland's attack and Spain's failed attempt to protect San Juan from the eastern end of the islet led to Spain's engagement in a rebuilding campaign to better fortify the city. Under the governorship of Don Gabriel de Rojas Párano (1608–1614), a new fort at El Boquerón was either built or reconstructed from the one that had been partially destroyed during the 1598 attack (NRHP 1997). The bridge and battery at El Boquerón Point were both rebuilt in stone between 1614 and 1620. Artillery was added to El Morro (NPS 1996).

Dutch Attack of 1625

The third attack on San Juan came in 1625 when the Dutch became interested in overtaking Spanish possessions in the Caribbean and the New World. The Dutch West Indies Company financed an expedition led by Boudewijn Hendrickszoon that aimed to reinforce the Dutch garrison of Bahia, Brazil. When Hendrickszoon's fleet arrived at Bahia, however, the garrison had been overtaken by Spanish and Portuguese forces, and Hendrickszoon set his sights on Puerto Rico and sent part of his fleet to take the capital of San Juan. Hendrickszoon and a fleet of 17 Dutch ships arrived at San Juan on September 25, 1625 (NPS 1996).

Having learned from the previous two English attacks that attempted to invade the islet from the east, Spanish governor Juan de Haro y Sanvítores positioned two cannons from El Morro to the Boquerón Battery (referred to as the "post" of El Boquerón on a Dutch map), dug trenches at the Escambrón area, and sent a large number of soldiers to guard the eastern side of the island. However, in a bold move, Hendrickszoon surprised the Spanish by instead entering from the west by sailing right into San Juan Bay, closely hugging the shoreline below the high cliffs of El Morro and its gunnery (Boletín Histórico de Puerto Rico, op. cit; IV, 230, *cited in* PR SHPO 2011). The Dutch ships close position required that El Morro's cannons and guns fire at an impossibly sharp downward angle, and as a result, the Dutch sailed closely but out of firing range and successfully entered San Juan Bay. The Spanish instead tried to defend the southern peninsula of the islet, but they were too late. The Dutch ships attacked the Spanish infantry with their cannons and forced the Spanish troops to flee the city for the walled safety of El Morro. Eight hundred Dutch soldiers then seized upon the abandoned city of San Juan (NPS 1996).

A Dutch engraving showing a general view of San Juan from the bay clearly depicts La Fortaleza as it appeared in 1625 during the Dutch siege on San Juan (NPS 1996). A barrier wall constructed from the angle formed by the south turret and the western curtain wall of the structure followed the natural topography of the cliff down to the shoreline of the bay. The city walls had been built at the time of this engraving.

The next day, Hendrickszoon's fleet began a 28-day attack on San Felipe Del Morro. Dutch ships blocked entry into San Juan harbor and seized El Cañuelo Island and its wood-framed fort at the west side of the bay's entrance across from El Morro. The Dutch also controlled the east side of the San Juan islet, including the San Antonio Bridge and channel, where Commander Hendrickszoon kept two ships on patrol and added additional defensive trenches near the bridge (NPS 1996).

A counteroffensive formed by the Puerto Rican militia and Spanish troops broke down the Dutch garrison and eventually drove out Hendrickszoon and his men, but not before they set the city of San Juan on fire on October 22, 1625. The Dutch fleet debarked from San Juan on November 2 (NPS 1996).

Building San Cristóbal and Other New Fortifications

The aftermath of the Dutch attack highlighted a need to better fortify San Juan from future attacks, which appeared imminent from Spain's enemies (the French, Dutch, Danish, and English) that were establishing new settlements on nearby islands in the Caribbean.

Spanish military engineers began construction on the Castillo de San Cristóbal (San Cristóbal), which would become the largest of the forts of San Juan. Puerto Rico was still considered to be the crossroads of the Spanish Americas, and the reinforcement of the San Juan forts continued to be key in launching operations to the Americas where Spain's New World holdings lay. The fort was built on a rocky site 150 feet above the



sea at the northeastern corner of the old city at that time, about a half mile east of El Morro. Construction of the fort continued for 50 years until its completion in 1783. By that time, San Cristóbal had developed into a complex fortification encompassing 27 acres of coastal defenses and outworks facing the Atlantic Ocean and other points to the east (NPS 1996).

The architectural design for San Cristóbal employed new technologies for making thick walls filled with rubble that could absorb the impact of cannonballs. The fort included sentry boxes, guardhouses called *garitas* in Spanish, strategically placed at salient points with unobstructed views within and outside of the fort (NPS 1996).

The Spanish military also made many large-scale improvements to El Morro at this time by making the complex more unified and with thicker walls capable of absorbing cannon fire, while also fortifying the Santa Barbara Battery.

The Spanish governors granted permission to build a bastion wall to enclose the city at the south and east. The wall continued the application of new technologies in fortification design in that it was constructed of stone masonry with stone rubble infill. At this time, the city wall only enclosed the southwest and southern parts of the city facing the San Juan Bay, and the city was open to the Atlantic to the north. A new northern wall was constructed for the first time in the 1630s, effectively enclosing the city of San Juan. Between 1634 and 1656, construction also continued on the Santa Catalina Bastion, La Concepción Bastion, and San Justo Bastion defensive walls. This first phase fortified La Fortaleza from the bay as part of the primitive city enclosure. Maps drawn in 1750 and 1783 demonstrate the expansion of tall, battered city walls around La Fortaleza and along the shoreline facing the bay to the north toward El Morro (PR SHPO 2011). Materials used to build the walls involved cut limestone block set in white mortar, which was covered with white plaster in some places.

In 1635, the Spanish also rebuilt the fort at the Boquerón site at the eastern end of the islet, where Fort San Gerónimo now stands, forming the first line of defense at the east. There is little information about the eastern El Boquerón site after the 1625 attack until a 1731 report issued by the Spanish military engineers of San Juan used the name of San Gerónimo Fort for the first time in relation to a structure built at El Boquerón Point. The report only states that the roof of the living quarters at San Gerónimo needed repairs (PR SHPO 2011).

About 30 years later, in the 1660s, Governor Juan Pérez de Guzmán y Chagoyen ordered the construction of a stone masonry battery on the island of El Cañuelo, at the west side of the San Juan Bay entrance across from El Morro (NPS 1996). The fort San Juan de la Cruz (also called El Cañuelo) is now part of the NPS San Juan National Historic Site. The city's fortifications continued to be modified and strengthened by the Spanish Corps of Engineers between 1766 and 1830, when by this time, the military fortifications covered more than 250 acres on the island of San Juan.

Construction of San Juan's Lines of Defense

Spain's presence in the Caribbean changed in the late 18th century during the Bourbon Dynasty's ruling in Spain. By this time, the English navy had asserted itself as a superior military force among its European world powers. The British navy overtook the city of Havana, Cuba, in 1762, during the Seven Years' War (also known as the French and Indian War in North America), and thereafter, the English controlled the seas and kept large fleets of ships permanently based in the Caribbean. Faced with this threat, Spain set out to further fortify its Caribbean forts (NPS 1996).

Tensions between Spain, Britain, and France heightened as the American Revolution began in 1776, with France supporting the American rebellion and, by extension, Spain as France's

ally. During the unrest, Spain successfully seized the opportunity to retake Florida from England. Not long after, France became embroiled in its own revolutionary war. Spain allied itself at first with Revolutionary France's foes but, following the French Revolution, again became aligned with France and Holland against Britain, vying for colonial control of the Caribbean islands in a quest to control the seas and assert dominance among the world powers. In Puerto Rico, Spain continued to maintain the fortified city of San Juan to guard against attack.

In 1765, Spanish Field Marshal Alejandro O'Reilly arrived in Puerto Rico to investigate the island's defensive ability. Based on his observations, O'Reilly issued a report, called the General Fortification Plan, which described the need for new construction to better withstand enemy attack and for the reorganization of the local militia units. The Spanish Crown approved O'Reilly's plan for San Juan and authorized funding through an annual grant of 100,000 pesos from the Viceroyalty of New Spain, Mexico (NPS 1996).

Spanish military engineers, including Chief Military Engineers Thomas O'Daly, Juan Francisco Mestre, and Ignacio Mascaró y Homar, established a strategy to fortify the entire San Juan Island. Their plan was to enhance the existing forts, principally El Morro and San Cristóbal, by bolstering these large citadels with three defensive lines in the central and eastern parts of the islet of San Juan (NPS 1996). Each of the defensive lines was interdependent of one another and incorporated the prevailing tactical strategy of the time. The design allowed for deep defensive sight lines and distribution of defensive firepower along the line (Hoyt 1943).

The first line of defense (also called the advanced line of defense) was to be located along the eastern shoreline of the island to stop attacks by land from the east at the Boquerón Bay (today, the Condado Lagoon). This first line of defense extended from Escambrón Point at the northeast extent of the islet, across El Boquerón Point, where a small fort of San Gerónimo stood. Fort San Gerónimo was considered to be a small fort for defending small boats that could pass through the shallow waters of the Boquerón Bay, which connects the Atlantic Ocean to the San Antonio Channel along the south side of San Juan Island. The line continued south to the nearby mangroves of the San Antonio Channel in the southeast corner of the island. At this latter point, the San Antonio Bridge provided access to the mainland of Puerto Rico and, thus, was a strong point for defense (Alonso and Flores 1997, 169).The military engineers designed a second line of defense in a north-south line at the halfway point between the first and third lines. The third line was to be built further west through the



Military Architecture Archive, San Juan National Historic Site.

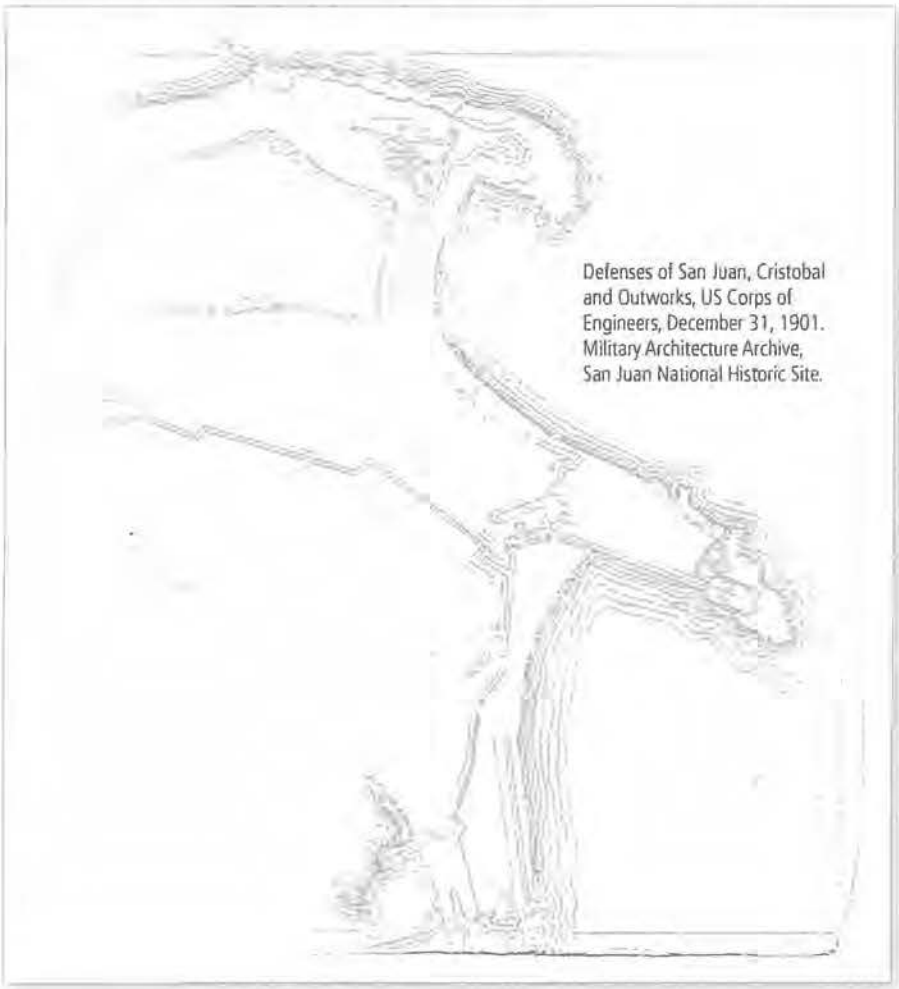
midpoint of San Juan Island. It is possible that a deep trench, or *zanjón*, built by the Spanish to the east of San Cristóbal functionally served as a third line of defense and as the last barrier to an enemy advancing from the east before confronting the outworks of San Cristóbal and the city walls of San Juan. This barrier could be viewed, however, as an extension of San Cristóbal's outworks. This zanjón was later filled in the 20th century (Marull 2011). The city wall and the exterior defenses of Castillo San Cristóbal guarded the enclosed city of San Juan (NPS 1996).

As part of the construction of the first defensive line, sometime between 1771 and 1801, the Escambrón Battery was built high on a rocky promontory on the northeast tip of the San Juan Island on the site of an earlier fortification next to the site known today as Escambrón Beach. The Escambrón Battery's position allowed it to reinforce the first line of defense by complementing the San Antonio and San Gerónimo Forts to the south in the protection of the eastern water approaches to the city of San Juan. Escambrón's position at the northeast top of the island also prevented access into the Condado Lagoon by hostile ships.

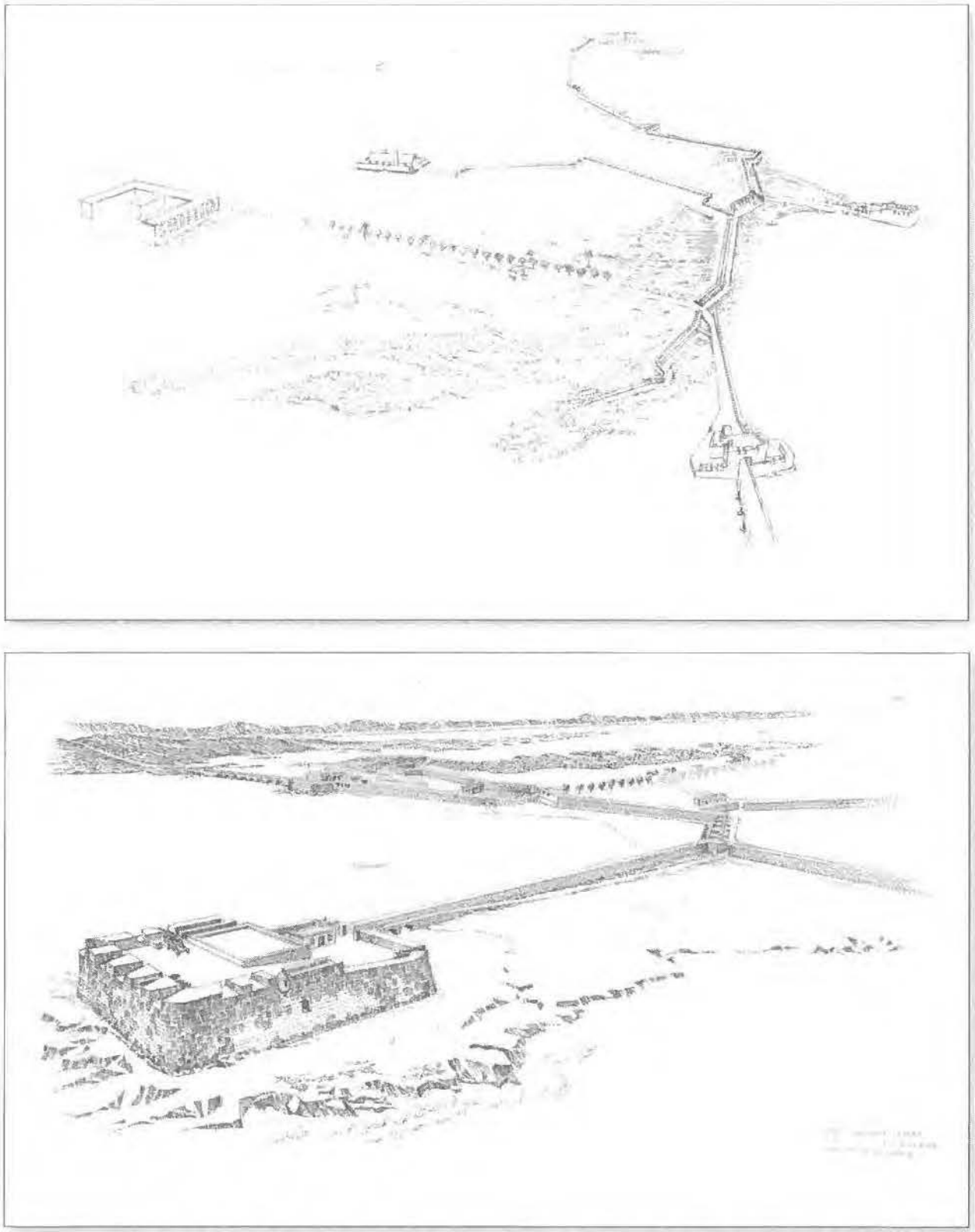
Between 1769 and 1772, the Polvorín de San Gerónimo, the powderhouse accompaniment of Fort San Gerónimo, was built about a half mile east of the fort at the eastern extent of the island. The large structure stored gunpowder, ammunition, pyrotechnic materials, weapons, and other equipment. In the event of an invasion by land, these materials were moved to the walled city to the west.

The construction of the first generation of Fort San Gerónimo was completed in 1788 under the direction of military engineer Don Ignacio Mascaró y Homar. The fort's design was distinctive from the other fortifications in that it was built on a rocky outcrop jutting into the Condado Lagoon from the eastern point of the San Juan Island. The fort was rectangular in construction with rounded corners, merloned walls, a house for the commander, and a high battery facing eastward to defend entry from the lagoon.

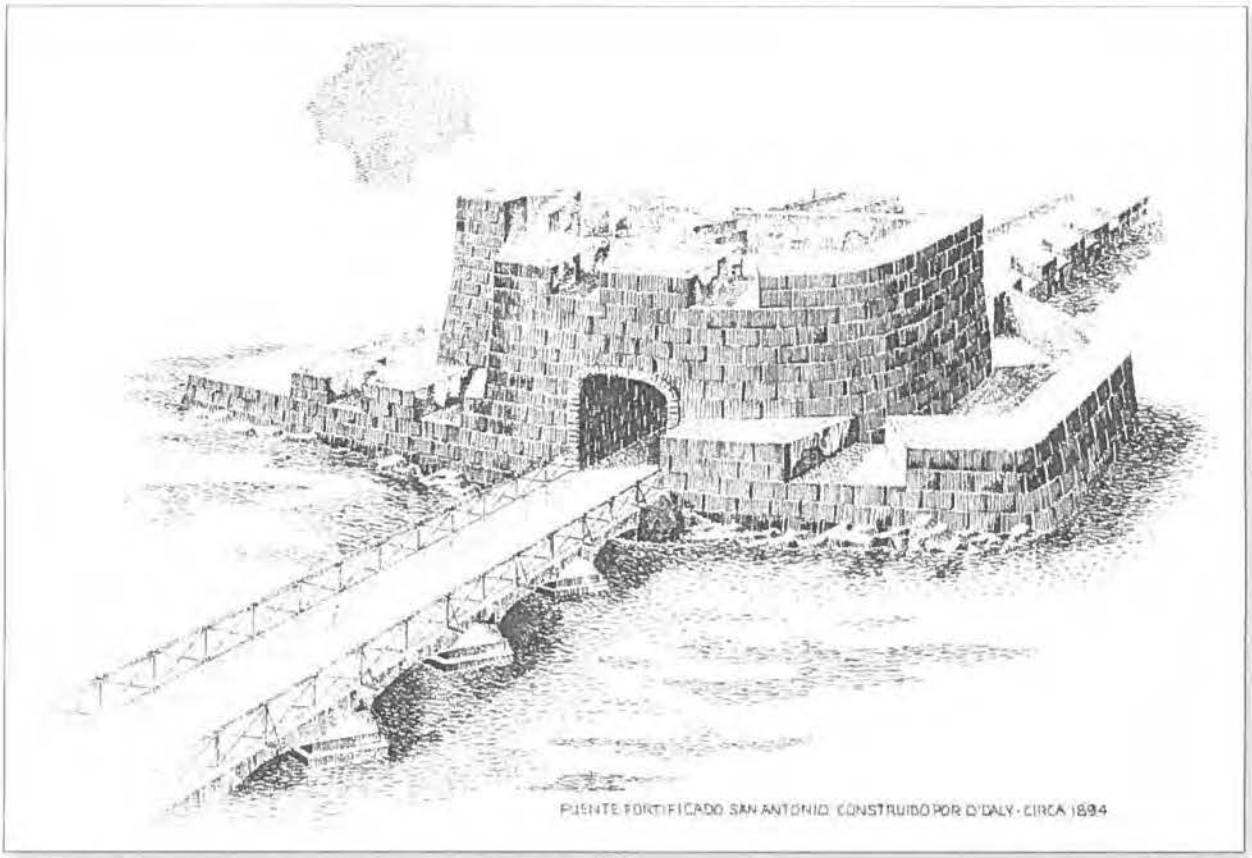
In 1776, a powder magazine to support the first defensive line of San Juan was built on the Miraflores Island adjacent to the San Juan Island. Today called the Polvorín de Miraflores, the magazine stored gunpowder,

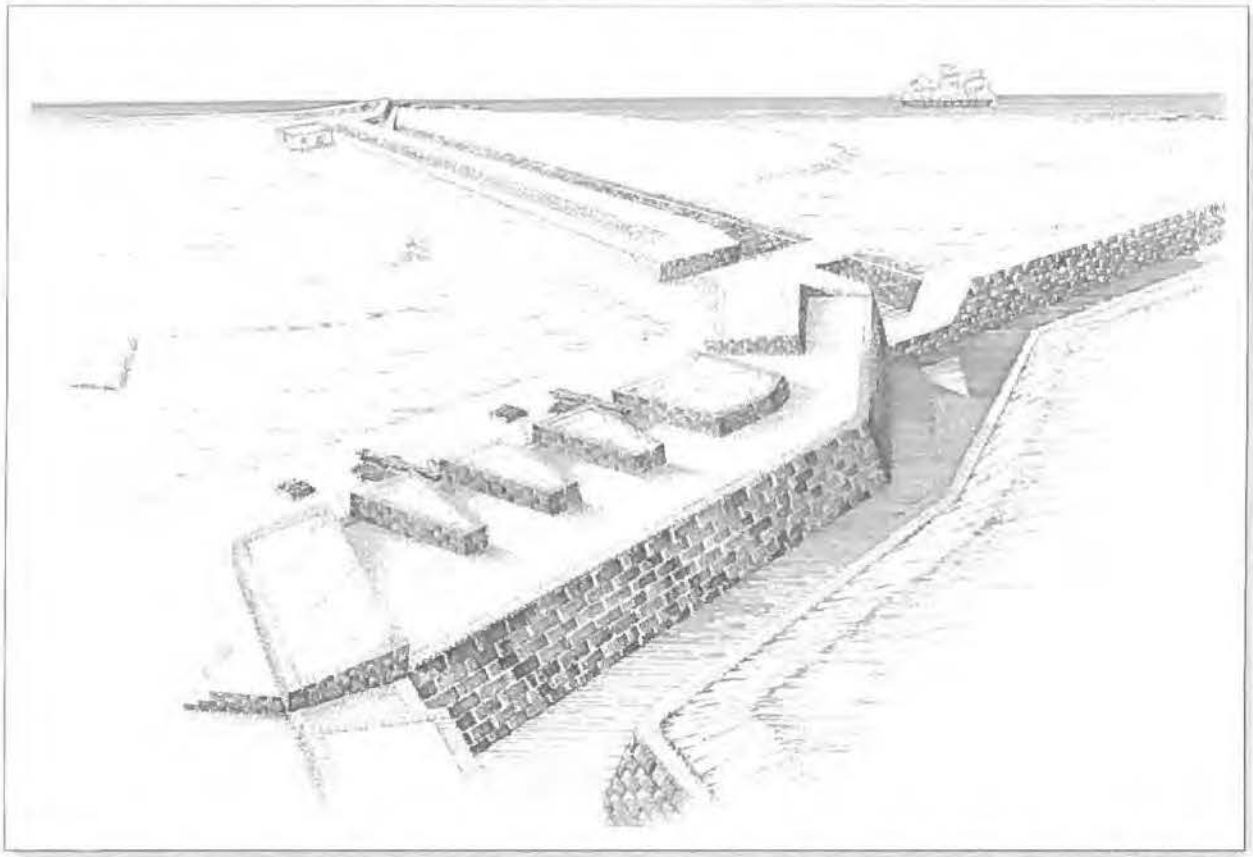


Defenses of San Juan, Cristobal and Outworks, US Corps of Engineers, December 31, 1901. Military Architecture Archive, San Juan National Historic Site.



Citation: Created by artist Eric Perez, "San Juan in Black and White Graphic Recreations," for the Puerto Rico State Historic Preservation Office, 2010.





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weapons, and supplies for the militia troops based in Río Piedras–Santurce areas for the defense of the San Antonio Bridgehead (also called Fort San Antonio), which was due south of Fort San Gerónimo.

The second line of defense was built just east of the midpoint of the island of San Juan. The line consisted of compact earthen parapets and trenches that crossed the islet from north to south, with embrasures (openings to allow for gun or cannon fire) and a moated battery at the south end of the line. This southern battery is also referred to as the Isabel II Battery (named for a statue of Isabel La Católica that was placed at the site in 1967) or San Agustin Fort. The structure is a triangular-shaped, two-embrasure battery and faced the old Spanish Royal Road (today south Ponce de León Avenue). The battery was protected by a dry moat facing east and was connected to the rest of the second defensive line by masonry parapets for infantry and embrasures for cannons (PR SHPO 2011). The battery provided a good defensive position for any enemy attack advancing from the eastern shore of the islet. Construction of the second defensive line finished in 1794.

From 1795 to 1800, Spain's second phase of construction took place on the first line of defense at the far eastern end of the islet at the site of the Boquerón entrance and the San Antonio Channel. The structures consisted mainly of a 4,220-foot-long stone parapet wall connecting the Escambrón Battery at the north end, Fort San Gerónimo at the midpoint, and Fort San Antonio at the south end. The majority of the wall was 18 feet thick, with v-shaped embrasures strategically located along the wall.

In the early 1790s, parts of the stone masonry city wall were raised and expanded with additional fortifications. The wall near La Fortaleza was raised to be taller, to extend about 35 feet in some places, and to incorporate additional cannon vaults. Improvements to the walls continued into the early 1800s.

All of these investments to improve and strengthen San Juan's fortification system reveal Spain's perceived value in Puerto Rico and the importance of defending its strategic position in the Caribbean.

Continued European Interests in the Caribbean

Although Spain had long been considered the uncontested and dominant power in the Caribbean, by the 1700s, its Caribbean holdings were reduced to Trinidad, Cuba, Puerto Rico, and part of Hispaniola, including Santa Domingo. The climate was ripe for other European powers to seize control of certain islands and key trade routes to and from South America that served as lifelines for Spain. Puerto Rico also offered more than its shipping interests; some in England saw Puerto Rico as a relatively large, fertile, and undeveloped island with potential for a lucrative sugar industry (Alonso and Flores 1997). An in-depth explanation of Great Britain's interest in the Caribbean in the 18th century can be found in *The Eighteenth Century Caribbean and the British Attack on Puerto Rico in 1797* (Alonso and Flores 1997).

Throughout the 1700s, Great Britain considered Spanish-controlled Puerto Rico to be an impedance to its Caribbean trade network, and its acquisition would be valuable for British trade networks to Jamaica (Alonso and Flores 1997). The superpower had its own colonies in the Caribbean islands. Britain's interest in gaining control of Puerto Rico was well known among its allies and foes, but its ability to act was delayed by the American Revolution, which began in 1775.

Allied with France, Spain was reluctantly pulled into the revolutionary conflict in opposition to Britain. Spain supported General Washington's Continental Army with troops in battles against the British in Pensacola, Florida, and Yorktown, Virginia. The treaty that ended the American Revolutionary War in 1783 resulted in an independent America, and Spain regained control of Florida. Underscoring Puerto

Rico's significance for both Spain and Great Britain in 1783 was Spain's refusal to exchange Puerto Rico for Gibraltar, a possible offer that was posed during the negotiations that ended the American Revolutionary War (Morris 1965, 398).

Less than six years later, Spain's alliance with the French monarchy pulled it into another revolution, this time fighting against revolutionary France. The victory of the French people cost Spain its Caribbean colony Santo Domingo, which fell to France. In this aftermath, Spain continued an even tighter alliance with France and Holland in opposition to Great Britain. From 1793 to 1815, Britain continued to vie with France for colonial power abroad in the high-stakes struggle to control commercial trade routes and military power throughout the world. Thus, Spain's 1796 alliance with France and Holland posed a military threat to Britain's interests, particularly to British colonies and its trade routes that were a vital part of the British economy. In 1797–98, the British acted on their interests and won naval battles against the French in the battle of the Nile near Egypt, against Spain near Cape St. Vincent, Spain, and against Holland near Camperdown, Holland. In its quest to retain and solidify its control of the seas and establish new colonies, Britain included the Caribbean colonies held by France and Spain in its focus. Britain had already successfully secured the ports of St. Lucia, Maria-Galante, and Port-au-Prince. Next, it moved to overtake Barbados. In the early part of 1797, a British fleet led by Admiral Sir Henry Harvey sailed to Trinidad, Barbabos, and easily seized control of a Spanish-controlled fort on the island. Commander Sir Ralph Abercromby joined Harvey's forces, bringing with him an army to assist Harvey in overtaking the Spanish garrison. Abercromby was a seasoned 62-year-old Scottish commander and a veteran of the French and Indian War (Seven Years' War) in North America between 1754 and 1763. With Sir Ralph Abercromby assuming command of the British armada, the fleet next turned their attention to overtaking San Juan as the primary Spanish holding in the Caribbean.

British Siege of 1797



Don Ramón de Castro, Governor of Puerto Rico by José Campeche, 1800

In San Juan, Puerto Rico, the Spanish military had been anticipating an invasion by the British navy for many months in advance of the spring of 1797. To prepare, the governor of Puerto Rico, Don Ramón de Castro y Gutiérrez, gathered an army to defend San Juan. Don Ramón himself was considered to be a highly capable commander and soldier and was credited with the victory at Pensacola from British control during the American Revolution in 1781. He had been the governor, intendant, and captain general of San Juan and Puerto Rico for just over two years, and he instilled a sense of confidence in his soldiers' abilities to defend the vital port of San Juan.

To prepare for the arrival of what amounted to the most skilled and outfitted naval power in the world at that time, Castro y Gutiérrez harnessed the growing patriotism among Puerto Ricans from all over the island and was able to use this sentiment in building a large military defense. Castro y Gutiérrez was able to build an army from militia, local recruits, armed peasants, paroled prisoners, and French privateers. In total, his army nearly matched the British fleet that sailed toward Puerto Rico. After a decade of strengthening the fortification structures and building San Juan's lines of defense, Castro y Gutiérrez armed the fortification structures with 376 cannons. San Juan was well prepared for the British arrival that came in April.

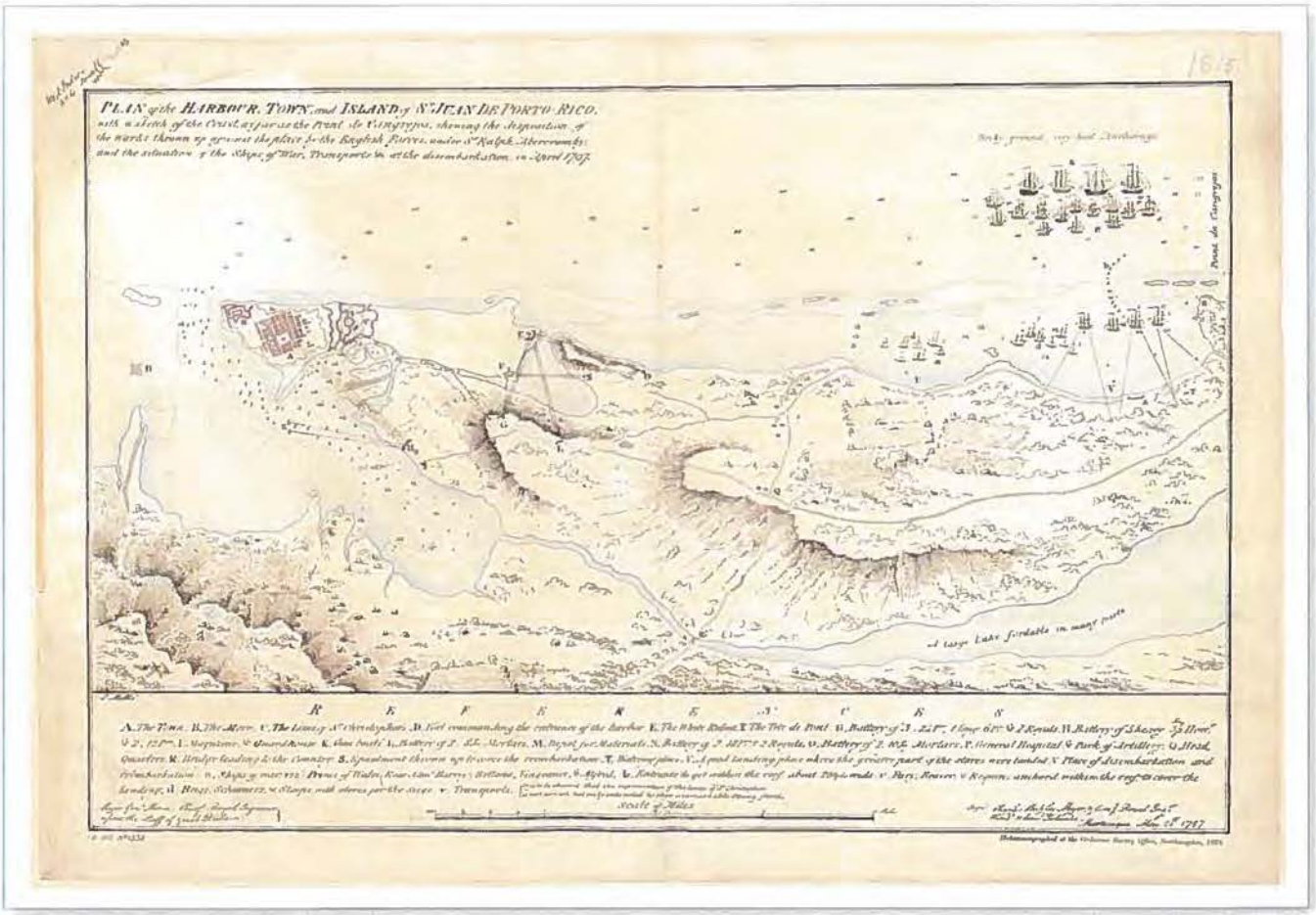
On April 17, 1797, Commander Abercromby and Admiral Harvey jointly led a fleet of 68 ships carrying 7,000 British men and about 600 guns toward San Juan. Taking the same approach as Lord Clifford, Earl of Cumberland, 200 years earlier, Abercromby directed the majority of the ships to anchor east of San Juan along the Atlantic shoreline near Cangrejos Point. While Abercromby's men held their eastern position, Harvey led two frigates to the waters west of San Juan to establish a blockade at the entrance to the San Juan harbor (NPS 1996).

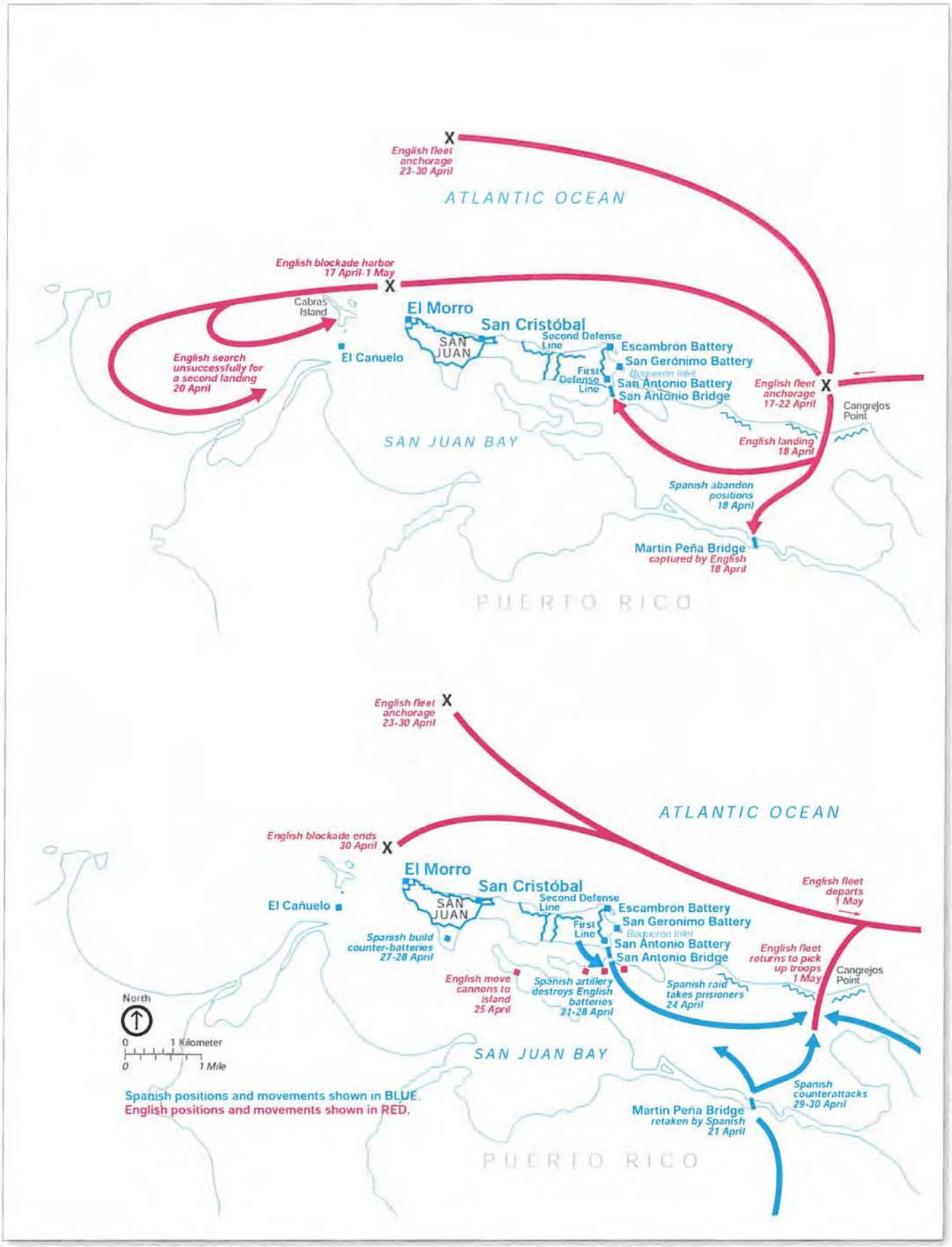


Sir Ralph Abercromby, National Portrait Gallery, London, England

On April 18, 3,000 men of Abercromby's army landed on a beach in the area of Cangrejos and effectively blocked San Juan's ability to communicate with or receive supplies from the interior of the island. Castro y Gutiérrez refused Abercromby's written invitation to surrender and spare the lives of his men, vowing to defend the city "until I lose the last drop of my blood" (NPS 1996, 69).

Meanwhile, Admiral Harvey commanded ships at the coastline west of San Juan seeking a second landing point. With the British closing in on San Juan from both the east and west, Castro y Gutiérrez moved his men from Cangrejos to reinforce the Escambrón Battery, engaging fully for the first time San Juan's first line of defense at El Boquerón Bay. Without its supply route, the city of San Juan relied on canoes to bring supplies from the Cataño shore and Bayamon River to the fortified city (NPS 1996).




English fleet anchorage 23-30 April
ATLANTIC OCEAN
English blockade harbor 17 April-1 May
Cabras Island
El Morro
San Cristóbal
SAN JUAN
Second Defense Line
Escambron Battery
San Gerónimo Battery
Bayaman Inlet
First Defense Line
San Antonio Battery
San Antonio Bridge
English search unsuccessfully for a second landing 20 April
El Cañuelo
English fleet anchorage 17-22 April
Cangrejos Point
English landing 18 April
SAN JUAN BAY
Spanish abandon positions 18 April
Martin Peña Bridge captured by English 18 April
PUERTO RICO
English fleet anchorage 23-30 April
ATLANTIC OCEAN
English blockade ends 30 April
El Morro
San Cristóbal
SAN JUAN
Second Defense Line
Escambron Battery
San Geronimo Battery
Bayaman Inlet
First Line
San Antonio Battery
San Antonio Bridge
El Cañuelo
English fleet departs 1 May
Spanish build counter-batteries 27-28 April
English fleet returns to pick up troops 1 May
Cangrejos Point
English move cannons to island 25 April
Spanish artillery destroys English batteries 21-28 April
Spanish raid takes prisioners 24 April
North
0 1 Kilometer
0 1 Mile
SAN JUAN BAY
Spanish positions and movements shown in BLUE.
English positions and movements shown in RED.
Spanish counterattacks 29-30 April
Martin Peña Bridge retaken by Spanish 21 April
PUERTO RICO

On April 21, 1797, Abercromby began an assault that became a seven-day artillery duel on San Juan's first line of defense by firing on the Spanish garrisons of Fort San Gerónimo and Fort San Antonio. Castro y Gutiérrez's army relentlessly defended the island from the two forts and, with help from San Cristóbal, from its central position on the island. The battle rallied many more Puerto Rican locals by the thousands to take up arms to protect San Juan and close in on Abercromby's eastern position. Castro y Gutiérrez's troops managed to retake the Martin Peña Bridge to regain the critical supply lines to the interior of the island southeast of San Juan, and captured a number of British soldiers in the process (NPS 1996).

On April 24, Castro y Gutiérrez's military Sergeant Francisco Díaz seized a number of British soldiers from behind enemy lines and kept them as prisoners. Meanwhile, the British had established rifle and artillery positions on the Miraflores Island, which separates San Juan Island from the mainland, capturing the Miraflores powder magazine (Polvorín de Miraflores) on April 25, but not before Spain stopped Abercromby's men from moving cannons onto Miraflores (PR SHPO 2011).

On April 29 and 30, 1797, a counterattack from Spain at El Boquerón forced the British to pull back. On May 1, as Castro y Gutiérrez began preparing his troops for another attack, he learned that Abercromby and Harvey and their men had retreated from Puerto Rico in haste, leaving behind a number of arms and ammunition.

When the battle ended, both Spain and Britain had suffered many casualties and a loss of materiel. The forts of San Gerónimo and San Antonio were severely damaged, but both withstood the invasion. For Spain, the forts had battle-tested the application of the first line of defense on the eastern approaches of the city of San Juan (NRHP 1997). Abercromby would later write of the strength of this military defensive line and the effectiveness of forts of San Gerónimo and San Antonio in preventing a breach of the line. Abercromby wrote of his misjudgment of the fortitude of San Juan's powerful artillery and his underestimation of the magnitude of Spain's rallied manpower that ultimately blocked the British navy from penetrating the island of San Juan at its outer line of defense. Abercromby wrote that, of the enemy "we found him well prepared, with a garrison stronger than our force and with powerful artillery. The troops certainly were of an inferior sort, but behind walls, they could do no less than fulfill their duty with success." Abercromby also remarked that Fort San Gerónimo and Fort San Antonio were "both by Nature and Art, very strong" and that the forts could have withstood ten times more firepower than he had available (NPS 1996, 71). The British siege on San Juan in April 1797 proved to be the last major attack on Spain's San Juan outpost by any European power in the more than 200 years since.

Shortly after the British attack of 1797, Spain, fearing another invasion on a bigger scale, sought to further strengthen all of the fortifications of San Juan. Spanish military engineers began construction of permanent brick and masonry parapets and batteries in the first line of defense. Work to repair and restore Fort San Gerónimo was completed in 1799. By 1801, there was a clear development of a permanent trench system and the development of artillery positions of the first and second defensive lines were well underway. The second line of defense was also strengthened from an earthwork to that of a masonry line. Other improvements included the construction of barracks and updated armament. These defensive systems were completed within the first half of the 19th century (PR SHPO 2011, NPS 1996).

In the early 1800s, revolutionary movements in Europe continued to impact the military interests of all of the superpowers that once pursued holdings in the Caribbean and the Americas, Spain included. One by one, European colonies in the Americas broke away from their respective Western European rulers. France kept only a few small possessions in the Caribbean, while

Great Britain, the Netherlands, and Denmark continued to maintain Caribbean colonies. With the collapse of the Spanish-American empire, by 1830 only Puerto Rico and Cuba remained loyal subjects of the Spanish crown. However, San Juan, Puerto Rico, was no longer necessary as a gateway base of operations for Spain. The mother country began to invest fewer resources in building the fortifications beyond purposes for local defense. After 1810, central funding from Spain to maintain and improve Puerto Rico fortifications stopped because the funding source had come from Mexican subsidies, which had ended with the Mexican revolution for independence at that time. After 1810 Puerto Rico paid for the costs to maintain its infrastructure (NPS 1996).

Mid-Nineteenth-Century Growth and Expansion

Puerto Rico's population increased under relatively peaceful circumstances during the 19th century. The population of the city of San Juan increased to 24,000 people within the borders of its city walls. The forts continued to be well maintained, but the city's 62 enclosed acres became severely. Declining living conditions moved the residents to appeal to the governor to allow for expansion beyond the city walls to relieve the overcrowding. The people were met with resistance, as growth beyond the defensive city walls was prohibited to ensure that the island's land outside of the wall, primarily to the east of the city, would remain clear of development for the purpose of military defense. In 1867, the lands between the first and second defensive line at the eastern extent of San Juan Island were transferred to the Spanish Treasury (NPS 1996).

A growing nationalist movement in Puerto Rico began to challenge Spanish authority in the late 19th century. The Puerto Ricans gained a few concessions for autonomy, while Spanish governors fought to retain authority and control. In 1897, the governor of Puerto Rico finally relented to local petitions seeking expansion beyond the San Juan city wall and started with the demolition of the Santiago Gate at the east side of the city wall, allowing the city to expand into the open military lands to middle and eastern parts of the island. The eastern and southeastern sections of the tall masonry city wall, including Santiago Ravelin and Santiago Bastion, were demolished to make space for the construction of new buildings and infrastructure (NPS1996). Prior to the demolition, the Spanish Crown divided the open lands between the municipality of San Juan and the Spanish military. Expansion of the city southeastward meant that the undeveloped areas between the first and second defensive lines effectively became the primary defensive perimeter for the city of San Juan after 1897, taking on the role of the demolished portions of the city wall (PR SHPO 2011).

Near the turn of the 20th century, while San Juan was busy accommodating the growing urban population, word of conflict from neighboring Cuba prompted the governor of Puerto Rico to fortify the extant 18th-century fortifications still surrounding the northern, western, and southeastern parts of the city. Although the military recognized that the old forts would not be sufficiently fortified to defend against new technologies in military artillery, many batteries were modernized with modern guns and stronger parapets to help withstand the powerful gunfire of the day. At La Concepción Bastion, a 17th-century sentry box, or garita, was filled in to install a mounted battery for a machine gun (PR SHPO 2011). The Escambrón Battery was also fitted with three 24-cm howitzers capable of launching firepower at longer distances than gunfire. These upgrades would be tested near the close of the 19th century.

Spanish-American War

In 1898, when the United States declared war on Spain, in support of Cuba's fight for independence, Puerto Rico became involved in the US blockade of Cuba. Still under the rule of the Spanish Crown, San Juan rallied

8,000 troops and 6,000 volunteers to prepare for a possible invasion of the city. On May 12, 1898, a US fleet of nine warships and two smaller craft commanded by Admiral William T. Sampson sailed to the northern shores of San Juan and fired upon El Morro and San Cristóbal. Sampson's intent was to locate the Spanish naval squadron commanded by Admiral Pascual Cervera y Topete that the Americans believed to be in the area of the port of San Juan. The US bombardment lasted three hours, with Spain's artillerymen returning fire. The United States destroyed large parts of El Morro's walls and inflicted lesser damage on San Cristóbal and other buildings caught in the line of fire. The attack resulted in 36 Spanish dead and 20 wounded before Sampson stopped the shelling. Without making landfall, the US Navy returned to Cuba, where Sampson found and attacked his target, Cervera's navy (NPS 1996). The US Navy returned to Puerto Rico two months later on July 25, landing not in San Juan, but on the southern coast of the island of Puerto Rico, in the town of Guanica.

In August 1898, the United States and Spain agreed to a ceasefire, ending the Spanish-American War. As part of the terms, Cuba became an independent nation and Puerto Rico, Guam, and the Philippines were ceded to the United States, thereby dismantling the last outposts of the former Spanish empire. For the first time in its 400-year history, El Morro's Spanish coat of arms was removed, replaced with the US flag (NPS 1996).

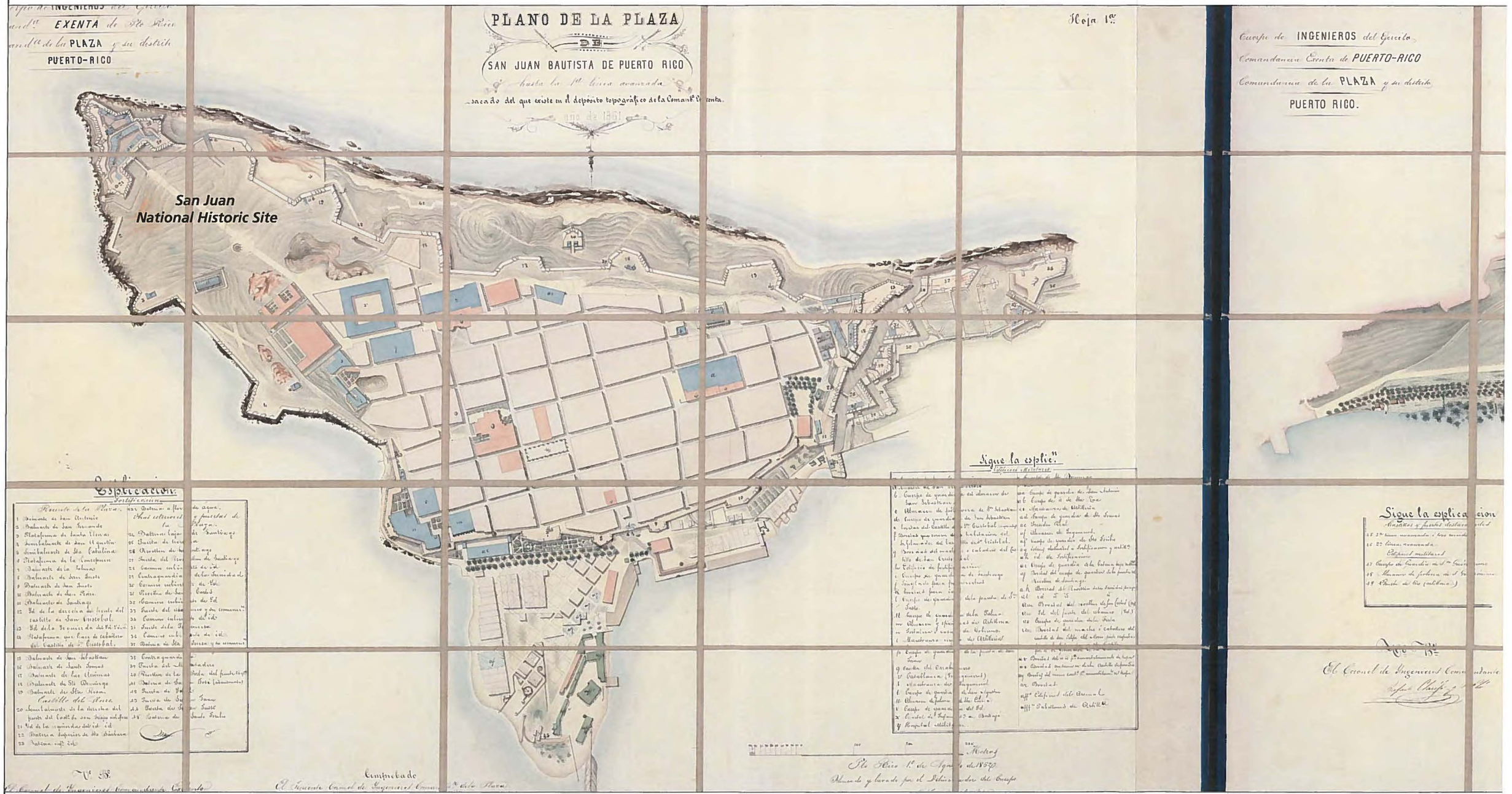
US Military Outpost in the Caribbean

As the city of San Juan continued to expand after 1898 and into the early 20th century, many of the city walls in the southern and eastern portions, surrounding what is today Old San Juan, were demolished to accommodate growth to the south and east of the island. Much of the first and second lines of defense at the eastern part of San Juan Island were also demolished when the US military developed these previously undeveloped areas for military and naval installations. Other lands not used by the military were leased to the Government of Puerto Rico. The trenches that comprised what some historians refer to as a third line of defense were filled in during the early 20th century.

During World War I, Puerto Rico assumed a new role as a strategic military outpost for the United States in protecting its interest in the Panama Canal and elsewhere in the Caribbean. The US military modified many of the 17th-century fortifications for 20th-century warfare. El Morro became part of a large expansion that was named the San Juan Military Reservation from 1903 to 1943. During the interwar years, on July 15, 1921, the US Congress granted retired Lieutenant Commander Virgil Baker of the US Navy, along with his family, a lease to live at Fort San Gerónimo. This action resulted in a series of legal actions, whereby the United States took full possession of the fort in 1949 (PR SHPO 2011). In 1925, the United States and Puerto Rico entered into an agreement allowing for the established of the US Camp Buchanan in exchange for Puerto Rico's use of the Escambrón and machine gun range, which the commonwealth developed into Luis Muñoz Rivera Park for public enjoyment in 1932. During World War II, the United States built command and communication centers and observation points for coastal defense at San Cristóbal and El Morro that remain visible today as 20th-century additions to the 17th-century forts. As part of this defense system, the US War Department renamed Fort San Gerónimo to Fort Brooke in 1943 (NPS 1996).

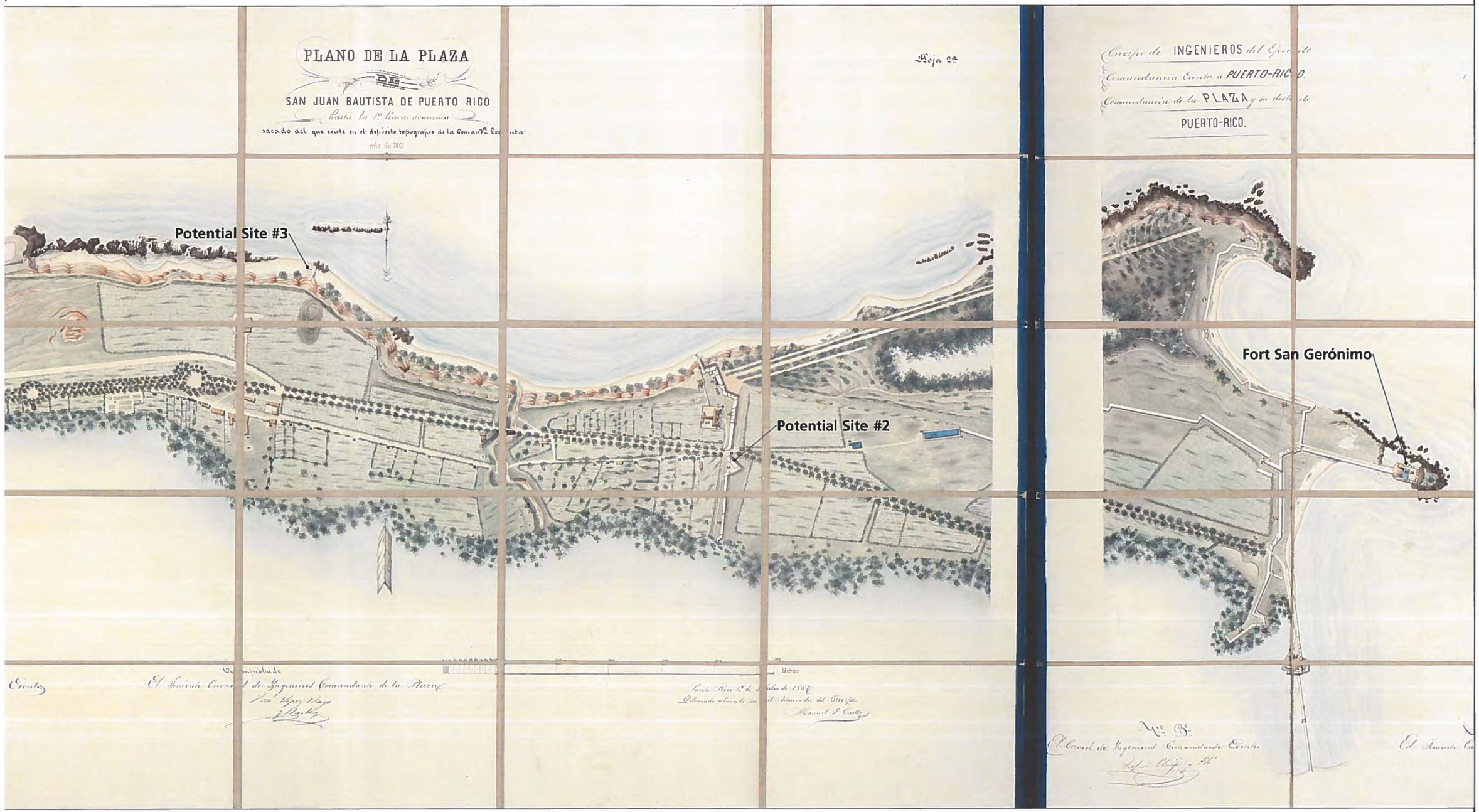
After World War II, the city of San Juan looked to develop parts of the remaining open land on San Juan Island to accommodate the postwar population boom. In 1949, the municipality of San Juan embarked on development of a hotel complex on the east side of the island adjacent to Fort San Gerónimo. The complex would become the hotel Caribe Hilton. Development of the hotel resulted in demolition of most of Fort San Gerónimo's entrenchments, covered ways, field-gun batteries, and infantry defense

Plano de la Plaza - 1861



Turn Over

Plano de la Plaza - 1861



Continued from previous page

positions that had been built by the Spanish Corps of Military Engineers in the early 1800s as part of the first line of defense. The hotel's construction also resulted in the total demolition of late 19th-century Battery San Ramón west of Fort San Gerónimo. Only a sentry box and a small portion of Battery San Ramón's masonry fence remained from these fortifications, and its ruins are extant in the hotel's front lawn (NRHP 1997).

After World War II, the US government and the Commonwealth of Puerto Rico formally divided possession of San Juan's massive fortification system. In 1949, the US Secretary of the Interior established the San Juan National Historic Site as a unit of the National Park Service for the purpose of making San Juan's fortifications available for public visitation, enjoyment, and education. The new park unit designated the largest forts that remained at that time, which were El Morro, San Cristóbal, parts of the city wall adjacent to these primary forts, and the fort of El Cañuelo at the west side of the mouth of San Juan Bay. The municipality and Commonwealth of San Juan took over the ownership and management of the remaining fortifications scattered throughout the island of San Juan, including Fort San Gerónimo, El Escambrón, parts of the city wall adjacent to La Fortaleza, and, to the south, Polvorín de Miraflores on the island of Miraflores.

In 1953, the United States documented several structures under the Historic American Buildings Survey program, which documents historic structures using architectural drawings and a brief historical narrative and description of the structure. Structures documented included Fort San Gerónimo (also called Redoubt San Gerónimo; PR-50), the Ravelin of the Second Line of Defense, referred to as Isabel II Bastion (San Agustin Fort) in this report, Battery Escambrón (PR-50), and San Gerónimo Powderhouse (PR-46).

Conclusion

For 500 years, San Juan, Puerto Rico, played a key role in the European powers' command of the Caribbean as a strategic access point to the Americas. Controlled by Spain for 400 of the past 500 years, San Juan and its massive fortification system helped the Spanish Crown establish a formidable foothold in the New Word. The fortifications that were built to defend this key position are a testament to the island's importance, shown through its long history of conquest and defense. Over time, San Juan's fortifications became stronger, larger, and increasingly more sophisticated under the design of Spanish military engineers. At the same time, the fortifications became symbolic of the national and cultural identity for Puerto Ricans, who recognize the significance of their Spanish Colonial past and the role it has played among world superpowers vying for trade and military position in the Caribbean.

DESCRIPTION OF THE STUDY SITES

The study area encompasses Fort San Gerónimo and 14 other related resources that were identified by the public during the study's scoping phase. All 15 resources are associated with the massive fortification system built by Spanish military engineers between the 16th and 19th centuries to defend the city of San Juan from foreign invasion. Fourteen of these resources are located on San Juan Island, and one site, the Polvorín de Miraflores, is located on the adjacent island of Miraflores. The 15 resources evaluated are:

1. Fort San Gerónimo
2. Isabel II Bastion (San Agustin Fort)
3. Taxamar (or Bajamar)
4. Santa Catalina Bastion
5. La Concepción Bastion
6. San Justo Bastion
7. Parque de Artillería Wall
8. Santiago Bastion (the wall behind the José Julián Acosta School)
9. San Francisco de Paula Battery Remnant
10. Second Line of Defense Wall Remnants
11. Escambrón Battery
12. San Ramón Battery
13. Fort San Antonio Embrasures
14. Polvorín de San Gerónimo
15. Polvorín de Miraflores

The description of each study site, below, includes a summary of the site's physical description, current condition, site history, historical documentation (official recordation) to date, and previous determinations of significance to date and a brief analysis of the resource's integrity. According to the National Register of Historic Places, the term "integrity" is defined as "the authenticity of a property's historic identity, evidenced by the survival of physical characteristics that existed during the property's prehistoric or historic period." Integrity is further defined as the composite of seven qualities: location, design, setting, materials, workmanship, feeling, and association. Although in-depth documentation and an official determination of integrity of each resource is beyond the scope of this study, the information gleaned from historical research, reconnaissance surveys, and a condition assessment of each study site allowed the study team to make preliminary determinations of integrity for each resource to support an evaluation of special resource study and boundary adjustment criteria presented in chapters 3 and 4.

Fort San Gerónimo

Description. Fort San Gerónimo (also known as Fortín de San Gerónimo de Boquerón) is a small rectangular fort at the easternmost point of the islet of San Juan. The structure extends about 250 feet into the marine inlet called El Boquerón, which connects the Atlantic Ocean and San Juan Bay through San Antonio Channel. The fort rests on a flattened coastal reef and rises nine meters above the waterline, forming a small island. The fort is partially submerged by water at all sides.

The fort has a rectangular footprint with rounded corners and is approximately 17,000 square feet in area, 100 feet wide by 170 feet long oriented on an east-west axis. The structure has two levels: an upper gun deck and a lower-level battery. The open upper gun deck overlooks the Atlantic Ocean to the north, the Boquerón Canal and Condado peninsula to the east, and the Boquerón Bay to the south. It is connected to the lower forecourt by two stone ramps at the north and south sides of the structure. The north side of the ramp includes a sentry box with a bell-shaped domed roof featuring a decorative cornice and base. The lower-level battery is organized around a central forecourt or parade. A guardhouse is positioned where the main fort structure meets the bridge that leads to San Juan Island to the west. The lower level has seven interior rooms, two cisterns, and a three-arch arcaded hall or loggia (also referred to as a portico) that opens to the forecourt. The rectangular guardhouse, which was constructed in the early 20th century, is positioned where the main fort structure meets the bridge that leads to San Juan Island to the west. From land, the fort is accessed by this approximately 100-foot-long masonry bridge.

The lower and outer walls of the structure are built mostly of sandstone ashlar block, measuring approximately 16 inches by 18 inches by 32 inches, laid in courses. The heavier walls and shell walls have a rubble core. Rubble masonry with lime mortar form the interior walls and breast walls. Brick was used throughout for lining, coping vaults and arches, and on some interior walls, which were originally covered in lime stucco, much of which is missing, cracked, or spalled. The ceilings and roofs covering the interior rooms and the guardhouse in the forecourt, as well as the latrine, are brick set on asubo beams. The structure's barrel vaults are covered with lime concrete. The pavements and walking surfaces are covered in a hard lime mortar with burnt clay and brick fragment aggregate. At the exterior waterline, a concrete apron has been built on the fort, with a stone revetment against the apron—both constructed by the US Army Corps of Engineers in 2013 to mitigate damage to the foundation. The bridge that connects the fort to the San Juan Island to the west is stone masonry supported by two flattened arched spans.

With the exception of the freestanding guardhouse in the forecourt, most of the accretions that were added to the structure

in the early 1900s have been removed, and the fort is restored to its 1790–1800 appearance, the structure's primary period of construction.

Condition. *Note: The condition described below is excerpted from a comprehensive condition assessment conducted in 2012 and updated in January 2016. The full condition assessment summary report is provided in appendix C.*

In January 2016, Fort San Gerónimo was assessed to be in very poor condition. Although the fort is intact as a whole, it is severely deteriorated due to age, weathering, wave action at the foundation, lack of repair and maintenance, and inappropriate repairs. Most notable are the failures of the walls at the foundation on the east wall and southeast and southwest corners. At all three locations, the walls are severely eroded and loose material moves in and around the voids that have been created by continued wave action. Extensive cracking in the east exterior wall and in Room 1 implies that the southeast corner of the fort is settling apart from the rest of the structure.

All of the exterior plaster-covered brick and sandstone walls are eroded. The wood window frames and doors are in varying states of deterioration. Other deficiencies include missing bricks from multiple doorways, arches, and wall surfaces. The mortar for the bricks is fully deteriorated in various locations. The pillars supporting the portico roof are missing mortar up to a depth of four inches. Other exterior walls have void spaces at least six inches deep. All of the embrasures have deteriorated to exposed substrate and the metal railing is badly deteriorated.

The sentry box on the north side of the gun deck has significant cracking and spalling throughout. The sentry box in the forecourt at the gate is also in very poor condition, with missing bricks and mortar and black mold on the cement walls. These areas and the gun decking show significant vegetative growth across the entire surface of the fort. Inappropriate repairs are evident throughout as the fort's exterior pavements are deteriorated. There is also significant deterioration on the east and south edges of the roof where electrical devices had been installed.

The bridge to the fort is in severely deteriorated condition. The bridge contains a 13-foot by 9-foot-wide void that is open to the deck surface, caused by erosion in the past two years. Similar voids are likely present in the other bridge sections because their sidewalls are being similarly eroded by wave action. The 2016 assessment revealed that cracks in the arches of the bridge have worsened since the 2012 assessment, including a major crack across the top of an arch and other significant cracks evident in the bridge components.

In the fort's interior rooms, the weathering of bricks worsened to severe condition during the period between the 2012 and 2016 condition assessments. There is active deterioration of the roof beams due to rainwater infiltration and sustained severe water damage and fungal growth. Additionally, the roof bricks over the portico are rapidly decomposing, shedding brick dust onto the floor. The west corner of the roof has a large hole through the brick ceiling (Applied Management Engineering, Inc. 2012; Hoeksema 2016). Please refer to appendix C for additional detail from the fort's 2012 and 2016 condition assessments.

History. As part of the design and construction of the three lines of defense on the eastern half of the island of San Juan, Fort San Gerónimo was to become a centerpiece of the first, advanced line of defense at the far eastern end of the island. Construction of the first masonry Fort San Gerónimo was completed in 1788 under the direction of Spanish military engineer Don Ignacio Mascaró y Homar. The fort was linked to the Escambrón Battery to the north and to the San Antonio Bridgehead to the south by defensive parapet walls and collectively formed the first line of defense. The line was supported by the

San Gerónimo powder magazine a half mile to the west. Fort San Gerónimo stood apart from its adjacent batteries because it was built on the rocky island in the Condado Lagoon to prevent ships from sailing past in the shallow waters of the lagoon.

The most extensive rebuilding of Fort San Gerónimo began in 1791 in preparation of a British attack that Spain believed to be forthcoming. That attack finally came in April 1797 with the 13-day siege of San Juan by a squadron of British ships led by Sir Ralph Abercromby. (Please refer to the historical narrative for more detail about this attack.) Under the command of Colonel Don Teodomiro del Toro, Fort San Gerónimo and the San Antonio Bridgehead bore the brunt of the attack as Abercromby's fleet concentrated their fire on this part of San Juan in its quest to penetrate San Juan's defenses and enter the city of San Juan to the west. Although badly damaged in the battle, Fort San Gerónimo stood up against the firepower and successfully thwarted the British, who finally retreated in defeat.

The battle was to be the last attack on Puerto Rico by a major European power. Sir Ralph Abercromby later wrote that Fort San Gerónimo and Fort San Antonio were "both by Nature and Art, very strong" and that the forts could have withstood ten times more firepower than he had available (NPS 1996, 71). To restore Fort San Gerónimo to its original defensive purpose, the damaged fort was rebuilt, largely in its original design, in 1799.

Fort San Gerónimo continued to be used as a Spanish military post in the 19th century. In the mid-19th century, a two-story wood-frame house was built on top of the garrison of Fort San Gerónimo to serve as a residence, housing the fort's commanding officer. This wood structure was destroyed by the San Ciriaco hurricane of 1899. After the Spanish American War of 1898 shifted Puerto Rico's seat of power from Spain to the United States, the US Navy used Fort San Gerónimo as a military post until 1921. During this time, the US military rebuilt the wood-frame two-story house atop the stone masonry fort.

On July 15, 1921, Retired Lieutenant Commander Virgil Baker of the US Navy, his heirs and assigns, was granted a 999-year lease, under special authority of Congress, of a tract of land known as San Gerónimo Fort. This action led to a series of lawsuits culminating in the insular government of Puerto Rico taking possession of the fort in 1949 for a payment of $35,000 to the US government.

Seven years earlier, in 1942, the government of Puerto Rico acquired the lands adjacent to the west of Fort San Gerónimo on San Juan Island to enable the construction of the Caribe Hilton hotel complex that overlooks Fort San Gerónimo today. After the legal transfer of Fort San Gerónimo to Puerto Rico in 1949, the San Juan Municipality administered the site until 1956, when it was transferred to the Institute of Puerto Rican Culture (ICP), a department of the Commonwealth of Puerto Rico.

Between 1955 and 1959, the Caribe Hilton hotel built buildings close to the entrance to Fort San Gerónimo's bridge, facing the Condado Lagoon. The new structures effectively blocked public access to the fort and made fort access exclusive to the Caribe Hilton (Estrella 2011). Also during this time, in 1957, the ICP conducted a renovation of the fort and used the site for a small military museum until 1978, when the museum closed due to advancing deterioration of the fort (NRHP 1983a).

In 1982, the ICP restored the fort by removing six trees that had been planted in the 1950s and subsequently rooted into the fort masonry, replastering walls, and fixing cracks and other water damage. The cannons that lay on the deck were restored and placed in their battle positions. At that time, an iron security gate was installed at the east end of the bridge, and the small circa 1940s

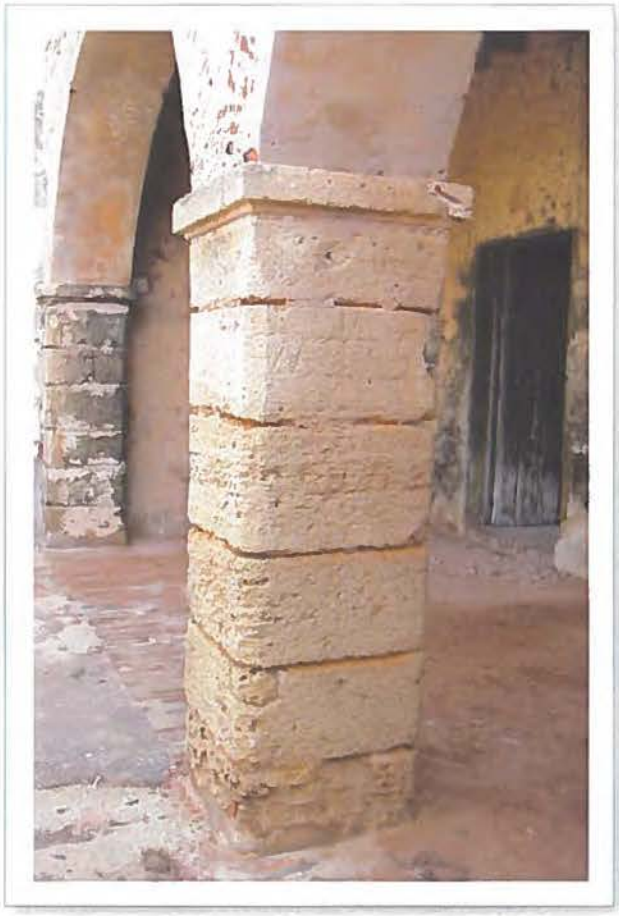




















concrete pier at the south of the structure was demolished to restore the fort's 1791 appearance (NRHP 1983a).

From 1982 through the 2000s, Fort San Gerónimo was closed to the general public, but it was used on occasion for special events. Although the fort is owned by the Commonwealth of Puerto Rico, there is no legal easement providing public access to the fort today (Estrella 2011).

In 2010, the ICP initiated planning to correct the fort's substantial structural problems and deteriorating condition. The first phase of the plan involved upgrades to the fort's infrastructure and utilities, which were completed in July 2012.

Also in 2010, the US Army Corps of Engineers (USACE) became involved in stabilizing the fort's foundation walls at and below the structure's waterline. It completed this project in January 2013. Of note is the USACE's contract with the ICP, which stipulates that the ICP retain operations and maintenance of Fort San Gerónimo for the 50-year life of the USACE's stabilization project. This means that the ICP must retain ownership and that other organizations, such as the National Park Service, could assist the ICP with maintenance and repairs if an appropriate agreement were made to do so. Regardless of who conducts preservation work on the fort, the ICP would ultimately be responsible for the condition of the site (Cynthia Perez, pers. commun., November 2, 2010).

The Commonwealth's preservation work on Fort San Gerónimo stopped around 2013, well short of its phased plans to stabilize and rehabilitate the structure. As of the spring of 2016, phase two work on the interior and bridge components had not begun.

In 2010, the ICP acquired a National Park Service grant from the historic preservation fund of the Save America's Treasures program. This grant appropriated $300,000 in matching funds to the commonwealth for the purpose of rehabilitating Fort San Gerónimo. However, for reasons that are not known, the commonwealth and the ICP did not use these funds during the grant period, and on September 30, 2015, the Save America's Treasures grant appropriation expired and the funds automatically reverted back to the US Treasury without being used.

Documentation. Fort San Gerónimo was recorded in the Historic American Buildings Survey in 1954 (NPS 1954a), including photographic documentation and measured architecture drawings. (See appendix D for a copy of the Historic American Building Survey documentation.) Fort San Gerónimo was listed individually in the National Register of Historic Places in 1983 (Fortin San Gerónimo del Boquerón). In 1997, the fort was listed as a contributing resource of the "Advanced Defense Line" National Register of Historic Places historic district that includes Escambrón Battery, Polvorin de San Gerónimo, and remnants of Fort San Antonio.

Previous Evaluation of Significance. The 1983 National Register of Historic Places nomination states that Fort San Gerónimo is significant in the areas of military history and architecture and engineering, and, "as a small fort, San Gerónimo gives of itself a full and rapid documentation of Spanish military architecture." The nomination also states, "as part of the San Juan defense system, it forms part of one of the greatest monumental military compounds in America" (NRHP 1983a). The 1997 National Register of Historic Places nomination for *Linea Avanzada* (Advanced Defensive Line) includes Fort San Gerónimo as a key part of the nationally significant noncontiguous district of the four remaining structures of the first line of defense at the Condado Lagoon at the eastern side of San Juan Island (NRHP 1997).

Fort San Gerónimo is nationally significant because of its key strategic role in the British blockade (Battle of San Juan) when, under the command of Spanish Colonel Don Teodomiro del Toro, the fort sustained a 13-day attack by Sir Ralph Abercromby's

British forces from April 17 to May 1, 1797. The attack concentrated primarily on this defensive line in an effort to penetrate the eastern line as the first of three defensive lines designed to stop the enemy invasion at the east end of the island of San Juan and protect control of the city of San Juan at the west end of the island. The attack was concentrated at the areas to the south end of the line at Fort San Gerónimo and Fort San Antonio, and, although heavily damaged, the two forts successfully prevented penetration of the line. The British siege of 1797 was the last major assault on San Juan or Puerto Rico by a major European power. The two National Register of Historic Places nominations for Fort San Gerónimo list significant dates as 1791 and 1795, in association with the fort's original construction, and April 17 to May 1, 1797, for the fort's role during the Battle of San Juan as the key part of the first line of defense of San Juan.

Integrity. Although Fort San Gerónimo's materials have substantially deteriorated due to aging, weathering, and in some places inappropriate repairs made over the years, the fort retains a high degree of location, feeling, association, materials, design, and workmanship. Overall, the design of the structure's two-level masonry form is highly intact, and, although eroded, the original materials and workmanship are in place such that the structure easily conveys its original purpose as a defensive structure and a work of sophisticated military engineering. The fort's integrity of setting has been lost due to the 20th-century development on lands surrounding the fort, including multilevel buildings that comprise an urban landscape today. This adjacent development, however, does not preclude the feeling and association of the fort's place in history because the fort retains a high degree of integrity of location by continuing to stand perched on the rocky outcropping in the Condado Lagoon. The fort's strategic position between the bay to the south and the Atlantic Ocean to the north and its position at the extreme eastern edge of the islet of San Juan remains evident.

Isabel II Bastion (San Agustin Fort)

Description. The site referred to as the Isabel II Bastion or the San Agustin Fort was originally connected to the continuous parapet walls that crossed the island of San Juan from the north and south to form a second line of defense. This line of defense was designed to stop enemy attack from the east should the invader get past the first line of defense that was anchored by Fort San Gerónimo, Escambrón Battery, and Fort San Antonio. Today, the fort is the only surviving remnant of that second defensive line.

Located due west of Luis Muñoz Rivera Park, the structure is a 78 foot by 89 foot triangular-shaped battery with two east-facing embrasures that provided defensive positions. The walls are constructed of masonry shells with a rubble core. They are either battered (tapered) or stepped toward the top with the faces inclined. Transverse walls at the embrasures provide support to the masonry shell walls. All of the masonry is field stone and local sandstone, and brick was used for cornering and steps. The 1953 HABS documentation for the structure reveals that the battery was originally protected by a dry moat along its outer east side, but this moat is now filled with earth and no longer evident.

Condition. The condition of the fort structure is poor. All of the masonry finishes have severely deteriorated, the walls are eroded, and the center cores of the walls have settled. There is no evidence of the original pavement within the battery. The firing steps on the southern interior are completely gone. The walls are covered in vegetation, especially on the southern exterior. Significant deterioration of the wall foundation is noticeable on the south walls in several areas where the vegetation has not completely overtaken the wall. Floodlights were mounted on the top of the north wall sometime in the recent past (AME 2012).

History. The fort is a remnant of the second defensive line of San Juan. After the 1797 British campaign, the Spanish engineers

began construction of permanent brick and masonry parapets and batteries in the same area. The fortification is typical of the compact earthen parapets and trenches built by Spanish engineers in the 18th century. The second line of defense consisted of a parapet wall with embrasures that crossed the islet from north to south. By 1801 development of a permanent trench system and the artillery positions of the first and second defensive line, of which the fort was a part, was well underway on the eastern coast of the islet of San Juan. The defensive lines were completed within the first half of the 19th century (PR SHPO 2011).

In 1867, the lands between the first and second defensive line at the eastern end of the island of San Juan were transferred to the Spanish Treasury. In 1897, prior to demolition of the southern and eastern segments of the city wall, the Spanish Crown returned the lands, except those sold to the municipality of San Juan, to the Spanish military. The area between the first and second defensive lines became the new defensive perimeter for the city of San Juan (PR SHPO 2011).

After the change in sovereignty to the United States, all of the parapets and artillery positions of the second defensive line were demolished to make way for the wireless naval station and Luis Muñoz Rivera Avenue, with the exception of the fort and a nearby sea battery. The fort and its dry moat were converted for use as a park by the municipality of San Juan, and this use continues today.

In 1953, the Isabel II Bastion was documented in the Historic American BuildingsSurvey (HABS) with photography and architectural plans (NPS 1954b). At that time, the structure's dry moat remained intact and a fence was built above the retaining wall. After 1953, the moat was filled and a sidewalk built around the battery. In 1967, the municipality of San Juan placed a sculpture of Isabel La Católica (Elizabeth the Catholic), created by the Spanish artist Pablo Serrano, in the open interior area of the battery. A newspaper article (El Mundo, 14 de octubre de 1967, page 12, *cited in* PRSHPO 2011) identified this battery as San Agustin Fort in Puerta de Tierra.

Documentation. In 1953, the fort was documented in the Historic American Buildings Survey with photography and measured architectural drawings (NPS 1954c). The site has not been documented for listing on the National Register of Historic Places.

Significance. The Isabel II Bastion site has not been previously determined to be significant through National Register of Historic Places documentation or similar documentation or evaluation.

Integrity. The fort does not retain a high degree of integrity due to its severely deteriorated condition and loss of materials and, because it stands as a small remnant of a much larger structure, the second line of defense. It does not retain a sufficient degree of materials, design, and workmanship and, to a degree, feeling and association.





Taxamar (or Bajamar)



Description. The small structure called Taxamar is a masonry wall structure that extends into the Atlantic Ocean and is shaped similar to a backward P. The walls are constructed of sandstone, fieldstone, and brick with rubble as the core. The walls taper from the bottom to the top, but not as significantly as many of the other structures throughout San Juan. Remnants of the staircase on the west side suggest that this structure could have originally been two levels (AME 2012).

Condition. Only ruins exist at the Taxamar site. The northeast section of the fort has split and fallen onto its outer exterior. The northwest rounded corner of the fort remains intact. The interior construction of the fort has been completely eroded by the ocean. Structural remnants surviving include a staircase and support columns. Excavation of the sand on the interior of the fort could yield more insight into the construction of this structure (AME 2012).

History. Little is known about the Taxamar structure that was built by the Spanish Corps of Engineers. In 1953, the Historic American Buildings Survey and the Historic American Engineering Record documented the property as part of "Fortifications of San Juan, Outer Defenses, Puerta de Tierra, San Juan County, PR" (NPS 1954c). The report concluded that this structure was a pier of the third defensive line of San Juan; however, the Puerto Rico State Historic Preservation Office did not find additional evidence of a third defensive line in their analysis. Some historians identify the structures of the San Cristóbal outworks as the third defensive line. However, to the east of this construction, the Spanish maintained a deep trench, or *zanjón*. This zanjón, which was later filled up in the 20th century, served as the last barrier to an enemy advancing from the east before facing the outworks of San Cristóbal and the city walls of San Juan. For this reason, it is believed that this structure is an extension of the San Cristóbal's outworks. It is believed that it probably served as protection against enemy debarkation in the area and as an observation post. From this structure, there is a clear line of sight to the Escambrón Battery, San Cristóbal, and San Felipe del Morro (PR SHPO 2011).

Documentation. The Taxamar site has not been formally documented, and it is not listed in the National Register of Historic Places.

Previous Evaluation of Significance. The significance of the Taxamar structure cannot be determined at this time because there is not enough information known or available to assess the function and history of this feature.

Integrity. The Taxamar site does not retain a high degree of integrity due to its ruinous state. The erosion of the structure's design, workmanship, and materials do not allow for a determination of this site's original function as part of the fortification system of San Juan. .



Santa Catalina Bastion



Description. The Santa Catalina Bastion consists of five sections of the Old San Juan city wall. It is adjacent to and facing the Paseo de la Princesa, due south, in the Compañia de Turismo (Tourism Company) complex of San Juan. The wall is constructed of sandstone brick with rubble filling the core. The wall extends approximately for 768 feet in length and is, on average, 75 feet high. The walls are battered, tapering from the base to the top. The thickness of the wall is uncertain because the interior, city-side of the walls have been paved in either concrete or asphalt for sidewalks and the adjoining streets. Even though the bastion is adjacent to a very high profile street, it is within the compound of the Compañia de Turismo and cannot be viewed by the public from the lower approach. The wall includes a cylindrical sentry box with a bell-shaped roof.

Condition. The condition of the Santa Catalina Bastion is fair compared to other similar resources. The sentry box has some exposed brick substrate along its roof edge. The sentry post is located in a small city park, and, although its entrance was boarded up at the time of assessment, there is evidence of vandalism and vagrancy. Significant signs of deterioration and inappropriate repairs are evident in the brick steps surrounding the sentry post. There is significant cracking, scaling, spalling, and deteriorating foundations throughout these sections of wall. There are also signs of previous repairs with inappropriate materials, such as concrete, throughout these walls. Vegetation and biological growth are present throughout (AME 2012).

History. The 2003 report, "Historic Fortification Wall of Old San Juan," for the Santa Catalina Bastion, Concepción Bastion, San Justo Wall, and San Justo Bastion states that the Santa Catalina Bastion presents one of the most complex histories of construction phases and subsequent transformations. The Santa Catalina Bastion, along with Concepción Bastion and San Justo Bastion (together with the San Justo Wall), form the part of the oldest defensive wall built between 1634 and 1656 around the city of San Juan. These fortifications were modified by the Spanish Corps of Engineers between 1766 and 1830, strengthening the city of San Juan's defenses.

Field observations and historical period plans suggest that, prior to the formation of the existing Santa Catalina Bastion, a series of wall segments led from the San Juan curtain to the north side of the north turret of La Fortaleza and continued southward from the southern turret toward the La Concepción Bastion. The 26 foot by 26 foot, lower east section of the Santa Catalina north flank corresponds to an original section of the primitive wall. An existing garden wall, which contains the height difference between the bastion's terreplein and the sunken gardens of the Governor's Palace, appears to coincide with the original trajectory of the city wall and aligns with a surviving remnant of the original wall, adjacent to the north tower. According to this theoretical reconstruction, the two circular towers of La Fortaleza served as early bastions in and of themselves, from which stemmed continuations of the city walls. The small primitive version of the Santa Catalina Bastion was probably constructed during this first phase of the city walls, or between 1640 and 1678. It first appears in Venegas Osorio's 1678 plan of the city. The old barrier wall shown in the 1625 engraving was apparently reused as the north flank of the small bastion

which protected the castle's south tower. This primitive version of the Santa Catalina Bastion possessed an obtuse salient angle and two approximately 90 degree shoulder angles. The south flank of the primitive bastion connected at an obtuse angle with the Old Santa Catalina Curtain, which is currently buried behind the existing curtain wall.



Alejandro O'Reilly's 1765 map of San Felipe del Morro and the southwest section of the city walls, and other maps prepared between 1750 and 1783 demonstrate that, at the time, the Santa Catalina Bastion had already been expanded northward, as to protect the entire bayfront of La Fortaleza. This second generation bastion incorporated the primitive bastion as part of a new south and a new salient angle, located on the site of the existing salient angle. The new north face of the bastion extended a short distance beyond the north tower of La Fortaleza, where it met with the north shoulder angle and north flank of the bastion. The short north flank of the bastion connected with the old curtain wall, which led toward the old section of the existing north flank, adjacent to the Ochoa fountain.

As a result of O'Reilly's recommendations and Field Marshal Juan Francisco Mestre's construction plans, the bastion was significantly renovated in 1792 to a physiognomy similar to that which survives today. At this time, the short section of the wall that projected westward from the San Juan curtain was raised in height approximately 13 feet (including the parapet) and extended westward 34 feet, incorporating a canon-vault over the old Ochoa Fountain. This section of the wall became the north flank of the new Santa Catalina Bastion. The north face of the bastion was built out along its current lines. The south face was renovated up to its junction with the old barrier wall or north flank of the first-generation Santa Catalina Bastion. The south face of the bastion was subsequently raised and renovated, probably by Ignacio Mascaró y Homar circa 1808–1811, upon which the south face of the bastion received its curved south shoulder angle. As a result of this last major improvement, the old Santa Catalina Bastion was almost entirely buried, leaving only the old south shoulder angle, isolated between the new curved angle and the Santa Catalina Curtain (PR SHPO 2011).

Documentation. The Santa Catalina Bastion is listed as a contributing resource of the "San Juan Historic Zone" National Register of Historic Places historic district (NRHP 1972) and of the Old San Juan Historic District National Historic Landmark (NRHP 2012).

Previous Evaluation of Significance. The Santa Catalina Bastion, along with Concepción Bastion and San Justo Bastion (together with the San Justo Wall), is nationally significant as part of the oldest defensive wall built around the city of San Juan. Thus, the bastion is not individually significant but rather is significant as part of the fortification system as a whole. This component was repeatedly modified and strengthened by the Spanish Corps of Engineers between 1766 and 1830.

Integrity. Although the Santa Catalina Bastion is in fair condition, overall, the structure has a high degree of integrity due to its integrity of design, materials, workmanship, location, feeling, and association.

La Concepción Bastion



Description. Description. La Concepción Bastion consists of three sections of the Old San Juan city wall. It is adjacent to Paseo de la Princesa at the Convento y Casa de Salud de las Siervas de María complex. The total length of this section of the wall is about 269 feet and it rises 55 feet on average. The wall is constructed of sandstone brick with rubble filling the core. Like the rest of the city wall, the bastion walls are battered in design, tapering from the bottom to the top. The thickness of the wall is uncertain because much of the tops of the wall have been paved in concrete or asphalt for sidewalks and driveway areas (AME 2012).

Condition. The physical condition overall of La Concepción Bastion is fair compared to other sections of the city wall. The bastion is adjacent to a very busy, high-profile street in San Juan, and it has been adequately maintained. There is some exposed brick substrate along the wall corners and some significant cracking along the eastern section of the wall about a third of the way up. There is significant cracking, scaling, spalling, and deteriorating foundations throughout these sections of wall. There are also signs of previous repairs with inappropriate materials and significant vegetative and biological growth throughout this bastion (AME 2012).

History. La Concepción Bastion has architectural features and materials that reflect the three principal periods of construction and modifications on San Juan's fortifications. The bastion was built along the current alignment during the original phase of construction, between 1634 and 1637. The similarity is only in plan because all the walls have undergone significant changes since then (PR SHPO 2011).

Similar to other contemporaneous sections of the city walls, the first walls at La Concepción were laid atop the hillside and constructed out of almost square white limestone blocks bound together by a bright white setting mortar and faced with a similar finish stucco. These walls conformed to the existing topography, therefore rising upward at the west face and east flank, in order to accommodate the significant change in levels. Evidence of the existence of a higher parapet exists on west end of the San José curtain, where it meets with the east flank of La Concepción. A large, cylindrical sentry box, built upon a stone corbel and crowned by a domed roof, sat over the salient angle of the bastion (PR SHPO 2011).

The first main alteration entailed cutting-back of the natural hillsides below the 17th-century walls and facing them with a red-orange rough mortar and cream-colored finish stucco. Historic plans of the city and its fortifications suggest that the slope below the west face was cut back and rendered at some point between 1640 and 1766. The slopes below the south face and east flank were apparently cut back at some point between 1792 and 1835. The slopes were no longer present on the plan of the La Puntilla peninsula, prepared by Ignacio Mascaró y Homar, in which the new La Princesa Jailhouse first appears upon lands previously used by an artillery school (PR SHPO 2011).

Other major modifications took place on the walls and within the bastion over the 150-year period from the original construction to the late 18th century. The ground level at the bastion lies below ground level in the vicinity of the Fortaleza and the Concepción hospital and chapel. In the original bastion, the slope was resolved by virtue of a retaining wall, built within the bastion along an east-west axis, more or less on axis with the adjacent San José Curtain. An artillery ramp toward the east end of the bastion provided access to it through a gate which perforated the retaining wall. The terrace that was created above the bastion as result of the retaining wall became the site of the new Concepción Chapel, ascribed to the Sister of Charity nuns. The simple masonry, wood, and tile-roof structure grew over time and eventually occupied the entire terrace. The south terreplein of the bastion was eventually occupied by a new building for theInmaculada Concepción Hospital, which was administered by the church. This building consisted of a gabled wood and tile roof, built over most of the south terreplein of the bastion, using the parapet and the retaining walls as support for the roof structure. The bastion itself was thus limited to the terreplein above the western flank. This hospital appears on the bastion as late as 1792. The hospital still occupies part of the bastion, within a new building, reconstructed during the 1930s (PR SHPO 2011).

Preparation for the Spanish-American War also affected the La Concepción Bastion. In 1897, the Spanish Army removed the old 17th-century sentry box and filled in the existing embrasures adjacent to it in order to install a mounted battery for the Ordoñez Cannon. The new battery incorporated concrete stuccoes and brick soldier course aristae. Apart from subsequent repair patches throughout most of the bastion's wall surfaces, the bastion has conserved its late 19th-century appearance up to today (PR SHPO 2011).

Documentation. La Concepción Bastion is listed as a contributing resource of the "San Juan Historic Zone" National Register of Historic Places historic district (NRHP 1972) and of the Old San Juan Historic District National Historic Landmark (NRHP 2012).

Previous Evaluation of Significance. La Concepción Bastion, along with the Santa Catalina Bastion and San Justo Bastion, is nationally significant as part of the oldest defensive wall built around the city of San Juan. Thus, the bastion is not individually significant but rather is significant as part of the fortification system as a whole. These, and adjacent, fortifications were repeatedly modified and strengthened by the Spanish Corps of Engineers between 1766 and 1830.

Integrity. Although La Concepción Bastion is in fair condition, overall, the structure has a high degree of integrity due to its integrity of design, materials, workmanship, location, feeling, and association.



San Justo Bastion



Description. San Justo Bastion is a six-section part of the Old San Juan city wall adjacent to Paseo de la Princesa to the south. The wall is 384 feet long and rises 21 feet on average. It is constructed of sandstone brick with rubble filling the core, and, similar to other sections of the city wall, the walls taper from the bottom to the top. The thickness of the wall is uncertain because the interior, city-side of the walls have been paved in either concrete or asphalt for sidewalks and the adjoining streets.

Condition. The condition of San Justo Bastion is good compared to other sites. The bastion is adjacent to a busy, very-high profile street in Old San Juan, and it has been adequately maintained. The sentry post has some notable significant cracking along its face. Although this sentry post does a have a gate to prevent public access, the interior has an accumulation of trash and debris from pedestrian traffic. The gate itself shows noticeable rusting and deterioration. Throughout the San Justo Bastion, there are signs of previous repairs with inappropriate materials on the walls. For example, the westernmost section of the bastion has been covered in concrete. There is substantial plant growth on the walls, and the appearance of moisture and fungal growth (black spots) indicate that there is deterioration behind the newer concrete façade at the western area of the bastion (AME 2012).

History. The San Justo Bastion was constructed in its entirety during the 17th-century fortification campaign of almost square limestone blocks set in a white mortar and surfaced with a white plaster. As did other parts of the 17th-century walls, it possessed parapets and merlons with a curved profile. During the 18th-century renovations campaign, the parapets and merlons were replaced with higher, angular parapets and merlons, similar to those installed at the San José Bastion and other areas of the walls. The 17th-century sentry box was also selectively repaired with new stuccoes. The scarp walls of the bastion were completely surfaced with red-orange rough scratch, followed by a hard, gray, smooth and sheen stucco, up to just below the parapets, where a small segment of the original 17th-century white stucco is still visible at the west flank. No further significant alterations occurred at the San Justo Bastion until the 1920s, when a concrete sidewalk and rail were installed atop of it. For many years, dense foliage was allowed to proliferate on the bastion, until it was finally removed in preparation for the 1992 celebrations. A large Ficus tree had become embedded into the bastion's walls and sentry box, threatening the sheer existence of the architectural feature.



The removal of the tree and concrete railing and the consolidation of the cracks and voids were highly successful. The intervention included the surfacing of the flat tops, with rough-textured materials visible today, and the installation of metal railing (PR SHPO 2011).

Documentation. The San Justo Bastion is listed as a contributing resource of the "San Juan Historic Zone" National Register of Historic Places historic district (NRHP 1972) and of the Old San Juan Historic District National Historic Landmark (NRHP 2012).

Previous Evaluation of Significance. The San Justo Bastion and the San Justo Wall, along with La Concepción Bastion and the Santa Catalina Bastion, are nationally significant as part of the oldest defensive wall built around the city of San Juan. Thus, the bastion is not individually significant but rather is significant as part of the fortification system as a whole. These and adjacent fortifications were repeatedly modified and strengthened by the Spanish Corps of Engineers between 1766 and 1830.

Integrity. The San Justo Bastion is in good condition and has a high degree of integrity due to its integrity of design, materials, workmanship, location, feeling, and association.

Parque de Artillería Wall

Description. The public scoping meetings resulted in identification of an associated resource known as the Parque de Artillería wall, which is believed to be a fragmented remnant of the historic city wall that enclosed Old San Juan. The fragment is believed to be at the north end of Old San Juan along or near the Calle Norzagaray that runs between Castillo San Felipe del Morro and Castillo de San Cristóbal. A wall that appears to be a 20th-century cast-in-place concrete wall has been identified along the calle, but no other discernible earlier stone wall associated with the historical fortifications of San Juan or Fort San Gerónimo has been located in this area.

History. This area was probably the site of the Hermitage of Santa Barbara construction begun in 1529. This hermitage was closed between 1757 and 1775 because it was in a position vulnerable to enemy fire. The hermitage was also used during the 18th century as a gunpowder warehouse. In 1846, the structure in this area—identified as Ammunition Warehouse (*Almacen de Pertrechos*)—was converted for lodging of the Spanish Artillery Corps. This wall was built in 1856 to keep apart the former Cuartel de Santa Barbara, or barracks, and the pavement built to provide access to the Market Place Building. By 1863, the barracks building was used provisionally by the Spanish Artillery Corps for their Maestranza de Artillery, or workshops where the cannon and their implements were repaired. This wall was joined in the 20th century to a concrete wall (PR SHPO 2011).

Condition. Because the resource could not be identified, a survey of its condition was not possible.

Documentation. The Parque de Artillería wall has not been fully identified or formally documented.

Previous Evaluation of Significance. Due to the lack of information about this resource, it cannot be fully assessed for significance.

Integrity. Due to the lack of information about this resource, it cannot be fully assessed for integrity.



Santiago Bastion (the Wall behind the José Julián Acosta School)



Description. This 534-foot-long wall is part of the Old San Juan city wall and the part of the former Santiago Bastion. The section of the city wall identified as this study site is behind José Julián Acosta School above Paseo Carvadonga to the south. The wall is constructed of sandstone brick with rubble filling the core. The walls taper from the bottom to the top. The thickness of the wall is undetermined because the tops of the walls have been paved with concrete or asphalt for parking. This section of the city wall primarily comprises two sections, east and west. It appears that the east section has been covered in concrete at different times because multiple lines of different aged sections are visible. The west section of the wall shows the original outline of the sandstone blocks. The top of this western section is bordered with a concrete railing that is not part of the wall's original construction.



History. This section of the city wall is likely a portion of the wall associated with the Santiago Bastion that was built in the 16th century. The southern and eastern parts of the bastion were demolished in 1897, leaving this remnant and another section to the west (where the locally known Doña Fela parking area is today). The José Julián Acosta School was built in 1907 above this remaining section of the wall. This section of the city wall is believed to be the only surviving resource associated with the original defensive wall in the southeast part of Old San Juan.

Condition. The condition of this section of the city wall is poor. The eastern part has been covered in concrete at different times, and multiple lines of different aged sections are visible. These accretions probably resulted from the failure of previous applications of cement and concrete. There is considerable vegetation and even trees growing out of the base of this section of wall. The concrete railing affixed at the top of the wall is significantly deteriorated and could present a fall hazard to anyone walking on the sidewalk below. The west section of the wall shows the original outline of the sandstone blocks. This section has also been covered at different times with inappropriate repairs. The concrete railing at the top of the west section of the wall is deteriorated. A large tree with a substantial root system is growing out of the west section about halfway down the wall toward the base (AME 2012).

Documentation. The Santiago Bastion is a contributing resource in the Old San Juan Historic District National Historic Landmark (NRHP 2012).

Previous Evaluation of Significance. The Santiago Bastion is significant as part of the oldest defensive wall built around the city of San Juan. Thus, the bastion is not individually significant but rather is significant as part of the fortification system as a whole. These fortifications were repeatedly modified and strengthened by the Spanish Corps of Engineers between 1766 and 1830.

Integrity. The integrity of the Santiago Bastion has been compromised by its poor condition and the addition of modern elements, namely a low concrete wall that has been built on the top of the wall. As a result, the structure does not have a high level of integrity required of national historic landmark criteria.

San Francisco de Paula Battery Remnant



Description. This resource is believed to be a masonry fragment of the former San Francisco de Paula Battery and is in the vicinity of Calle Nilita Vientós Gastón and Calle Comercio in the urban setting of southeastern Old San Juan. This remnant is a relatively small linear section of stone wall that is mostly submerged in the ground and protrudes from the ground approximately 6 inches. This section of the wall is next to a privately owned building that has been built around it and has an extended cantilevered roof, effectively covering the site above the ground level. The wall section is straight, curving slightly at one end. The wall materials appear to be a combination of stone rubble and brick, with a section that is partially covered by concrete.

Condition. This wall fragment is in poor condition, as it is in a state of ruin. The resource is protected by the building roof that covers the site and by a low concrete wall with a metal balustrade along the adjacent sidewalk, shielding it from the wind and rain that cause erosion. The submerged section of the wall is stabilized by the earth that encloses it.

History. This floating battery, known as the lower battery of Santiago, was constructed in 1783. It defended against invading forces entering the San Juan Bay by way of the San Antonio Channel. In 1795, the permanent battery was started with the construction of a dike built into the bay. When the battery was completed two years later, the dike collapsed and the battery was surrounded on the southern, eastern, and western sides by water. The cannon from this structure could support Spanish troops retreating from Puerta de Tierra and controlled the passage toward the marina and Puntilla area. The battery had six embrasures, a guardhouse, and a covered way. At the beginning of the 19th century, the battery lost its defensive importance and by 1834 was closed.



In 1895, two new buildings were constructed on this battery, one to serve as an officers' pavilion and another as the military ovens. An officers' pavilion was built on the battery's embrasures, and the ovens were constructed on the western end (where the guardhouse had been located). In the latter part of the 19th century, the battery ended up inland as a result of the dredging and filling work conducted on the San Juan Bay and the southern coast of the San Juan Islet (PR SHPO 2011).

Between 1915 and 1946, the US Department of the Interior used the buildings as repair shops, warehouses, and laboratories. Later, this facility was transferred to private ownership and used as the Table and Chair Shop. The ruins of the battery were exposed in 1992 during the excavations related to the San Juan waterfront development project. As a rehabilitation measure, the building was redesigned and its northern wall was recessed to provide a space for the remnant of the southern wall. The buildings were remodeled in 2004 by the Western Bank to be used as their San Juan branch. In 2010, the building was transferred to the Banco Popular de Puerto Rico and is being currently used as a banking facility (PR SHPO 2011).

Previous Evaluation of Significance. This study finds that this remnant ruin is not individually significant, but rather is significant as a contributing part of the fortification system of San Juan as a whole.

Integrity. The integrity of the San Francisco de Paula Battery is very low because only a small fragment of stone masonry remains of this largely demolished structure.

Second Line of Defense Wall Remnants



Description. Stone features along the Atlantic shoreline at the northern edge of San Juan Island were identified in public scoping as possibly a portion of the second line of defense where the parapet wall structure met the shoreline. It is uncertain if any defensive fortification fragments of some kind exist beyond the fragmented remains visible from the cliff above. Therefore, until more information is discovered, this site could not be fully assessed for this study.

Condition. The stone site is in a ruinous, fragmented condition. A small area of stone masonry is partially submerged at the shoreline and is inaccessible for survey.

History. Whether the stone ruins are part of the north-south second line of defense that was across San Juan Island in the late 18th century could not be confirmed in this study. No further site-specific history is known about this site.

Documentation. This site has not been formally documented.

Previous Evaluation of Significance. Due to the lack of information about this resource, it cannot be fully assessed for significance.

Integrity. Due to the lack of information about this resource, the second line of defense wall remnants cannot be fully assessed for integrity.

Escambrón Battery

Description. Escambrón Battery is a five-sided masonry battery built on a rocky promontory at the northeast tip of San Juan Island, called Point Escambrón. The structure faces the Atlantic to the north and the Boquerón Bay to the east and south, with the west side of the structure open to access the mainland of the island. The Escambrón Battery walls are from 10 feet to 18 feet wide. The exterior portions of the walls are sandstone ashlar, with a core filled with rubble. The exterior sandstone walls are battered, tapering from two and a half feet to three feet at the base to one and a half feet at the top of the walls. They are built from cut sandstone blocks measuring 18 inches by 32 inches by 24 inches. These blocks are laid in course or faced fieldstone laid in irregular bond. The cornering of the breast walls, steps, and walking surfaces are brick. All of the surfaces were originally covered with multiple layers of stucco.

Condition. In 2004, a restoration of the battery was completed, but with inappropriate materials, primarily portland cement. This restoration is deteriorating quickly after only eight years. The exterior walls have developed a fungus, and the portland cement covering is falling off of the structure in pieces throughout. The interior plaza and ramp has exposed aggregate that will continue to deteriorate and cause potential tripping hazards. The brick cornering atop the embrasures has deteriorated significantly. Graffiti is prevalent throughout the walls, most notably on the north and east exteriors (AME 2012).



History. Escambrón Battery was erected between 1771 and 1801, though the exact date is not known. The battery was constructed on the site of an earlier fortification by the Spanish Corps of Engineers. The old battery, fort, or bastion of Escambrón was located at the northeastern tip of San Juan Island adjacent to the present Escambrón Beach. The nature of this fortified position cannot be ascertained from the available sources, though it formed part of the first line of defense, which at one time ran from Escambrón Point across the eastern end of the island of San Juan down to San Antonio Channel. During its long course of history, the fortified position had a dual function. It complemented San Antonio and San Gerónimo forts in the protection of the eastern water approaches to the city of San Juan and prevented access by hostile ships to the Boquerón and the eastern end of the island.

In the report of Menéndez de Valdés of 1587, the Caleta de Caleta de Cabrón (Caleta de Cabrón Cove), or Goat Fort, is mentioned as one of the most feasible landing places for an enemy attempting to invade San Juan but states clearly that it was not fortified (Archivo General de Indias, *cited in* PR SHPO 2011).

During Drake's attack of 1595, some sort of defense work existed in the Escambrón Cove. Both the Morrillo and Caleta de Cabrón works, located at the eastward or short end of San Juan, fired at the English corsair (Corbett 1898, *cited in* PR SHPO 2011). The Caleta de Cabrón was fortified with two pieces of ordnance and defended by 100 men under the command of Alonso de Vargas (Hoyt 1943). Undoubtedly, it was merely a temporary position, similar to some of the other fortifications in that part of the city at that time.

In a modern chart found in Corbett's book published in 1900, the fortifications existing in 1598, the Caleta de Cabrón, are shown, but their exact position is difficult to determine. There is no evidence that Caleta de Cabrón fired at Cumberland in 1598.

During the Dutch attack of 1625, Governor Juan de Haro y Sanvítores, fearing an enemy landing in the eastern end of the island, ordered trenches to be dug at both the Boquerón and Escambrón Cove and one cannon to be placed at each position (Hoyt 1943).

The puzzling fact is that no mention of a fort in the vicinity of Escambrón Point is made in the available sources from 1625 until 1747, when it is called "Batería de Faxina." ("Mapa de la Plaza de Puerto Rico y sus contornos, etc." by Juan Francisco Valdelomar (Musea Naval, Madrid, Classif. O.-b. 7-12), cited in PR SHPO 2011).



In 1797, the major effort of the British military operations against San Juan was concentrated on the eastern defensive line, of which the Escambrón position was a part. Castor's army was prepared to defend the island at the Escambrón Battery, but the battery played no part in the British attack known as the 1797 Battle of San Juan (NRHP 1997).

After the battle, Spain sought to strengthen all the fortifications of San Juan, including Escambrón Battery, to defend against a potentially larger attack. It was later one of the defensive positions that was modernized before the Spanish American War, when it was fortified with three 24-cm (9.4 inches) howitzers (NRHP 1997).

Escambrón Battery does not appear to have been restored in 1939 when other fortifications in San Juan were restored (Hoyt 1943). In 2004, the Commonwealth of Puerto Rico restored the structure to its circa 1780 appearance, when the battery and the rest of the first line of defense were constructed at the eastern part of San Juan Island.

Documentation. Escambrón Battery is a contributing element of the "Advanced Defense Line" historic district that was listed in the National Register of Historic Places in 1997 (NRHP 1997).

Previous Evaluation of Significance. As part of the Línea Avanzada (Advanced Defense Line) National Register of Historic Places historic district, Escambrón Battery is cited as important for its role in the British blockade from April 17 to May 1, 1797. This attack was the last major assault on San Juan or Puerto Rico by a major European power. The Escambrón Battery did not serve a major role in this attack, which was concentrated in the areas to the south end of the line at Fort San Gerónimo and Fort San Antonio, but perhaps its imposing presence served to thwart attack at the north end of the line.

Integrity. Although the Escambrón Battery has deteriorated to a degree due to age, weathering, and some inappropriate repairs, the overall the structure retains a high degree of integrity for its age. The structure's design, materials, workmanship, and location are intact and evident.

San Ramón Battery



Description. Most of the San Ramón Battery is no longer extant due to 20th-century construction that removed the vast majority of the structure from its site. Remains of the battery are a sentry box and a small portion of its original masonry wall, both of which currently stand as a decorative ruin on a grassy area in front of the hotel Caribe Hilton. Although there may be additional subsurface remnants of the battery, this is currently not known.

Condition. The condition of the San Ramón Battery is poor because the site has been mostly demolished, save for a few masonry materials that are visible on the landscape. These remaining features include a sentry box, which is highly deteriorated and eroded, and a small part of the stone-block masonry wall, which also is in a state of ruin.

History. The San Ramón Battery was built by Spanish military engineers during the building program of the first line of defense, designed to prevent access to the island of San Juan from the east. San Ramón Battery provided additional firepower to Fort San Gerónimo, due east of San Ramón, and to the San Antonio Bridgehead to the southeast. The battery had flanking parapet walls that extended out from the structure to Fort San Gerónimo for the purpose of providing cover to the movement of troops and munitions behind the wall (NRHP 1997).

The San Ramón Battery was likely demolished before or during the construction of the Caribe Hilton hotel complex that was built in its place in the 1950s.

Documentation. San Ramón was documented in the National Register of Historic Places nomination for the Advanced Defense Line historic district, but the site was determined to be not eligible as a contributing element of the district due to the site's loss of integrity (NRHP 1997).

Previous Evaluation of Significance. The Advanced Defense Line National Register of Historic Places nomination notes that the San Ramón Battery was significant for its contributing role in the 1797 British attack on El Boquerón, when the battery provided reinforcements for Fort San Gerónimo and Fort San Antonio (NRHP 1997).

Integrity. The San Ramón Battery has poor integrity because the vast majority of the structure is mostly demolished, and the structure's form and design can no longer be observed. Although materials associated with the structure may exist underground on the former site of the battery, that is unknown.



Fort San Antonio Embrasures

Description. The ruins of Fort San Antonio, also known of the San Antonio Bridgehead, are at the southeast corner of the island of San Juan facing the San Antonio Channel, the secondary entrance to San Juan Bay from the east. The bridgehead has two fronts: one faces east and one faces north. Its geometrical composition responds to the fact that the fort had to defend attacks from land as well as water. The remnants of the fort consist of a parapet wall, two gun embrasures (part of the east wing battery, facing San Antonio Channel), a square sentry box that was reconstructed in concrete in the 1960s, and a small part of the bridgehead's pier. Other parts of the structure lie under the northernmost portion of the existing bridge. The visible portions of the wall reveal that it was built in ashlar block masonry (NRHP 1997).

Condition. The condition of Fort San Antonio is poor because the site is mostly demolished. It is thus in a severely fragmented, ruinous state, and very little remains of the original structure.

History. Fort San Antonio was built as both a fort and a bridgehead in 1776 and replaced an earlier fortified bridge designed to prevent invasion of San Juan Island from the San Antonio Channel. The near demolition of the fort during the 1797 British attack by Cumberland resulting in a major reconstruction in 1800. This added a two-gun upper-battery and a vaulted superstructure with a gate at the bridgehead. A masonry wall extended north from the bridgehead's eastern wing battery. A four-gun embrasure battery facing east occupied the portion of the wall nearest to the wing and was integrated with the remainder of the wall (NRHP 1997).

Both the original bridge and most of Fort San Antonio were demolished in 1894 to make way for a new steel bridge. The two wing batteries survived the demolition, but during construction of the new 20th-century bridges the merlons and parapet of the west wing battery were demolished. The fort's four-gun battery and parts of the wall were demolished during the construction of Condado Bridge. Another part of the wall was demolished during a subsequent bridge-widening project. On its southern edge, a pier is integrated to the fortification's base. A surviving 19th-century square sentry box was demolished during the 1960s and later replaced with a cylindrical sentry box made with concrete (NRHP 1997).

Recent archeological investigations carried out by Dr. Jesus Vega on the San Antonio Bridgehead detected portions of its pier. A trench was excavated parallel to the San Antonio Channel, three meters west of the Esteves Bridge's northern abutment. As result, the 1776 wall of the pier was exposed and documented for 13 meters (Vega 1997, 53).

Also, additional pier remnants were found when a second trench, inland and north of the first excavation, was excavated. The investigation's report concluded, "Fort San Antonio embodies the distinctive characteristics of Spanish permanent military installation of the 18th century. Its construction of local eolianite cutstone and rectangular brick, cemented dune with a lime-based mortar, is typical of many other forts, walls, and bulwarks" (Vega 1997, 27–28, *cited in* NRHP 1997).



Documentation. The remnants of the San Antonio Fort Embrasures are listed as contributing resources of the "Advanced Defense Line" National Register of Historic Places historic district (NRHP 1997).

Previous Evaluation of Significance. As part of the "Advanced Defense Line" historic district, Fort San Antonio is cited as important for its role on the British blockade that occurred on April 17 to May 1, 1797. This attack was the last major assault on San Juan or Puerto Rico by a major European power, and this attack was concentrated at the areas to the south end of the line at Fort San Gerónimo and Fort San Antonio. Therefore, Fort San Antonio, along with Fort San Gerónimo, played a key part in the defense of San Juan in this battle.

Integrity. The Fort San Antonio Embrasures exist in a severely fragmented, ruinous state today, and, as a result, the site no longer retains a high degree of integrity.

Polvorín de San Gerónimo

Description. Description. The Polvorín de San Gerónimo (San Gerónimo Powderhouse) was functionally the powder magazine of Fort San Gerónimo. The structure is approximately a half mile west of the fort on the grounds of Luis Muñoz Rivera Park on the island of San Juan. The building has an east-west-oriented rectangular plan; it measures 199 feet by 50 feet and is surrounded by a brick and masonry wall. The magazine's wall is 13 feet high and 1 foot thick. The outer walls has two sentry posts—one at the southeast corner and the other at the northwest corner. The north and south sides have 11 and 16 musket loops, respectively.

On the interior of the building, the vaulted ceiling is supported by 10 large, 3-foot-square buttresses on each side. The polvorín is surrounded by an 11-foot-high brick and masonry wall. Two columns, on both the north and south sides, are integral to this exterior wall. These 41-foot-high columns acted as lightning protection for the polvorín, based on its initial function of storing munitions. Two sentry posts are located at opposite corners of the exterior wall, one at the northwest corner and the other at the southeast corner. The interior of the building is a single long room, with multiple wall openings that have been sealed from the exterior with brick and plaster. Paver tiles have been installed to cover the floor. Multiple animal habitats carved into the exterior walls remain from when the structure functioned as a zoo. An electrical panel on the west interior controls lighting throughout the structure. Exterior ground floodlights line the walkway within the outer wall. The building was restored in 1992–94.

Condition. The Polvorín de San Gerónimo and its surrounding walls are in generally good structural condition; however, during restorations inappropriate materials were utilized. The entire structure is covered in a yellow paint. The paint will begin to peel and pull plaster and significant amounts of substrate as it falls. This paint also traps unwanted moisture next to the wall, promoting fungal growth throughout. Paint applied to the interior room will have the same eventual consequence. Multiple electrical boxes and fixtures are mounted in and around the structure. Some still function, and others are deteriorating; several have exposed wiring. The exterior walkway around the perimeter has been repaired and patched with inappropriate materials. As a result, there is considerable moisture being trapped, causing sections to crack and deteriorate and surfaces to blacken. Several of the exterior ground lights have moisture under the lens and do not function. Abandoned plumbing fixtures are also mounted in several of the exterior habitats that were constructed in the walls when the structure functioned as a zoo. All of the gates are weathered and corroded. The period brick steps at the south and west entrances show significant wear and deterioration. The rock steps on the north exterior of the outer wall are uneven with shallow treads that could pose a trip hazard. The installation of an electrical light panel

on the interior of the west entrance created a hole in the exterior portion of that wall, and an attempt to plaster over the area has failed to prevent further deterioration. This electrical panel could be relocated to the exterior of the historical structure because most functions at the polvorín use the more modern building to the north (AME 2012).

History. The powderhouse was constructed between 1769 and 1772 and designed by Director of Fortification and Commanding Engineer Thomas O'Daly. Construction was supervised by the engineer Juan Francisco Mestre. The building's original function was to store gunpowder, ammunition, pyrotechnic materials, weapons, and artillery equipment and accouterments during peacetime. If a land attack were imminent, however, the building was vacated and all goods transported inside the fortified city. The original masonry wall surrounding the powderhouse had an entrance facing west, away from the campaign side. Another entrance was opened on the eastern side of the wall after the 1797 attack. Also, after the 1797 attack, a covered way was built to connect the powderhouse with the advanced defense line. During the 19th century, two brick towers were added to the north and south walls of the powderhouse itself, upon which lightning rods were attached (NRHP 1997).

The powderhouse was transferred to US military authorities on October 18, 1898. The property was transferred from military to civilian ownership on January 12, 1912. No changes occurred in the structure until around 1935 when it was converted into the Museum of Natural History. The building's interior was subdivided, and a new entrance was made on the center of the south side (NRHP 1997). Offices were constructed some time before 1940 on the outside of the north wall "causing various cuttings or piercing of the 18th century materials" (Addyman 1992, 49, cited in NRHP 1997).

Further changes were carried out after 1945 when the building was converted into a zoo with animal enclosures. Eight doors were integrated into the south (two) and north (six) facades of the powderhouse. Additional structures were constructed: on the northeast and southeast corners of the interior two toilet structures; on the southwest corner a storeroom; and on the northwest corner a cafe.

In 1974–75, the powderhouse underwent a major renovation when all of the four structures were enlarged. Eight window openings were made in the north protection wall. In the 1992–94 restoration project, funded by the Commonwealth of Puerto Rico's National Parks Trust, many of the zoo cages within the alleyway were demolished. The exterior wall windows were resealed and the additions from the 1940s eliminated. The false quoins that existed originally at the exterior corners of the building were restored on the eastern façade (NRHP 1997).





Documentation. The National Register of Historic Places nomination for the "Advanced Defense Line" (NRHP 1997) identifies the Polvorín de San Gerónimo building and its outer protective wall as a contributing resource to this National Register of Historic Places historic district.

Previous Evaluation of Significance. The Polvorín de San Gerónimo is cited as significant for its role in the 1797 British attack on San Juan at the first line of defense, when the powder magazine supported the line with arms and firepower to successfully defend San Juan in what would become the last attack on Puerto Rico by a major European Power.

Integrity. Although the Polvorín de San Gerónimo is in good physical condition, the numerous functional changes that have substantially altered the building, including its conversion to a zoo with animal enclosures, have diminished the structure's ability to retain the high level of integrity required by the national historic landmark criteria.

Polvorín de Miraflores



Description. The Polvorín de Miraflores on the Miraflores Island due south of the island of San Juan is the only study site located outside of San Juan Island. The Polvorín de Miraflores is constructed of brick and masonry in a rectangular plan. The vaulted ceiling is supported on both sides by 16 three foot by four-and-one-third-foot buttresses. It is surrounded by a ten-foot-high brick and masonry wall. The main roof was extended and now incorporates a previous exterior walkway as an interior hallway surrounding the main structure. Sentry posts were constructed at opposite corners of the exterior wall, one at the northwest and the other at the southeast corner. The bell tower on the northwest corner of the roof indicates that the building was possibly used as a church, and there are drawing references to a church structure in this area of the island. This tower has metal ladder rungs secured in the walls to access the bell cradle. The interior of the building is divided into seven rooms. There are two restrooms. One room appears to have functioned as an auditorium with a stage, and there is a rear practice room behind the stage. The hallway flooring is patterned poured concrete. The interior rooms all have terrazzo flooring. The interior wall finishes are a combination of limestone plaster that has been painted, plaster, and spray-on acoustical foam.

Condition. The condition of the Polvorín de Miraflores is poor. In addition to its use as a powder magazine, the known functions of Polvorín de Miraflores are a chapel, an office building, and a private school. These different functions generated modifications throughout the structure. This structure is currently vacant and abandoned, and an overgrowth of vegetation surrounds the structure and overlies the roof. There is significant cracking throughout the front exterior wall above the lower roof. Much of the wall surface was overcome with plant growth, which may have concealed additional deficient areas. Paint applied to the exterior walls is currently peeling in various locations. The northwest sentry post has been completely demolished.

The lower clay tile roof, not original to the structure, has many cracked and missing tiles throughout. The main roof has been covered with a modified bituminous material and is currently leaking where the main roof meets the lower roof on the northeast side over the second room from the front of the building. The bell tower bell is missing from its cradle. The exterior door gates are rusted and deteriorated (AME 2012).

History. The Polvorín de Miraflores was built in 1776 as a powder magazine to provide gunpowder, weapons, and other supplies to the regular and militia troops stationed in the Río Piedras-Santurce areas for the defense of the San Antonio Bridge.

On April 25, 1797, during the British siege of San Juan (April 17–May 2), British set up artillery positions on Miraflores Island and captured the powderhouse. From April 26 to 28, 1797, there were rifle and artillery exchanges between the Spanish defenders and English infantry invaders. The building was retaken by the Spanish after the British debarked on May 2.

A century later, on July 14, 1898, the powder magazine was damaged by two explosions on the pier of Miraflores Island. The detonations were caused by the ignition of gunpowder on a boat docked at the pier. These explosions destroyed the pier and boat and killed eighteen men and wounded three. The intensity of the blast was felt in the city of San Juan, where buildings shook, clocks stopped, and crystal shattered (NPS 1996).

In 1902, the Polvorín de Miraflores became part of the Miraflores Island Quarantine Station operated by the US military. In the 1930s, the US government filled in the mangroves surrounding Miraflores Island, and the area was incorporated to the Miramar area.

In 1941, the building was adapted as a chapel for the Isla Grande Naval Station. At that time, the bell tower was added and the original roof replaced with a vaulted concrete roof. When the naval station closed in 1971, the property was transferred to the Government of Puerto Rico. It was administered by the ICP, which assigned the facilities to the San Juan Children's Choir and San Juan Ballet. In 2000, with construction of the Puerto Rico Convention Center District, many buildings ofthe former naval base were demolished; however, the old powderhouse and its guardhouse are still standing but remain closed and abandoned.

Documentation. The Polvorín de Miraflores was individually listed in the National Register of Historic Places in 1984.

Previous Evaluation of Significance. A 1984 National Register of Historic Places nomination cites the building's significance as an example of military architecture, as one of four strategically located gunpowder storage buildings included in Thomas O'Daly's defensive system for San Juan in the late 18th century.

Integrity. The poor condition of the Polvorín de Miraflores and the numerous functional changes that substantially altered the original structure have diminished its ability to retain the high level of integrity required by the national historic landmark criteria.



Chapter 3

Special Resource Study – Evaluation of the Study Sites As New, Independent Units of the National Park System



CHAPTER 3: SPECIAL RESOURCE STUDY – EVALUATION OF THE STUDY SITES AS NEW, INDEPENDENT UNITS OF THE NATIONAL PARK SYSTEM

SUMMARY OF FINDINGS

The study team finds that Fort San Gerónimo meets NPS special resource study criteria for significance and suitability, but not feasibility. The other 14 related resources evaluated do not meet the special resource study criteria for significance and were not evaluated further. Based on these findings, none of the study resources meets special resource study criteria for inclusion as new, independent units of the national park system.

EVALUATION CRITERIA FOR INCLUSION IN THE NATIONAL PARK SYSTEM

NPS *Management Policies 2006*, section 1.3, stipulates that in order to qualify as a new, independent unit of the national park system, the resources studied must:

1. Possess natural and/or cultural resources that are nationally significant;
2. Be a suitable addition to the system;
3. Be a feasible addition to the system; and
4. Require direct management by the National Park Service that cannot or will not be accomplished by another governmental entity or by the private sector.

These criteria are designed to ensure that the national park system includes only the most outstanding examples of the nation's natural and cultural resources.

Evaluation of national significance is an important step on which subsequent stages of the process depend. Generally, special resource study teams do not apply criteria for suitability, feasibility, or direct management (criteria 2 through 4 in previous paragraph) unless a positive finding of national significance is reached. Negative findings for significance therefore determine the outcome of the special resource study.

Suitability

In order to qualify as a potential addition to the national park system, an area that is nationally significant must also meet criteria for suitability. To be suitable, an area must represent a natural or cultural resource type that is not already adequately represented in the national park system or is not comparably represented and protected for public enjoyment by federal agencies, tribal, state, and/or local governments or by the private sector. Adequacy of representation is determined on a case-by-case basis through the comparison of the proposed area with other similar resources within the national park system or other protected areas. This special resource study does not contain discussions of suitability because none of the properties was determined to possess national significance.

Feasibility

To be feasible as a new unit of the national park system, an area must be of sufficient size and appropriate configuration to ensure sustainable resource protection and visitor enjoyment, and capable of efficient administration by the National Park Service at a reasonable cost.

The National Park Service considers a variety of factors in evaluating feasibility. An evaluation of feasibility is also a required component of a boundary adjustment study. For this reason, chapter 4 contains a discussion of feasibility for Fort San Gerónimo and other related resources.

NATIONAL SIGNIFICANCE CRITERIA

NPS *Management Policies 2006* 1.3 directs that proposed additions to the national park system must possess significance at the national level. For cultural resources, national significance is evaluated by applying the national historic landmarks (NHL) nomination criteria contained in 36 CFR 65.4, which states that 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

- **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 of exceptional historical or artistic significance, or outstandingly commemorate or illustrate a way of life or culture; or
- **Criterion 6** – that has 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.

Director's Order 28: *Cultural Resource Management* defines integrity as "the degree to which behavior and ideas are manifested in the form and substance of a resource. A cultural resource has integrity if it retains material attributes associated with its social values."

In addition, the National Register Bulletin, *How to Prepare National Historic Landmark Nominations*, specifies that a property with a high degree of integrity must retain the essential physical features that enable it to convey its historical significance. The essential features are those features that define both why a property is significant (NHL criteria and themes) and when it was significant (periods of significance) and without which a property can no longer be identified.

Because the Fort San Gerónimo Special Resource Study focuses on cultural resources, all of the study sites were evaluated for national significance using the national historic landmark criteria listed above.

PROCESS FOR DETERMINING NATIONAL SIGNIFICANCE

The National Park Service conducted historical research on Fort San Gerónimo and the 14 other related resources that were identified by the public during scoping. The National Park Service then considered the properties with regard to established NHL criteria (above). Input on national significance was gathered from extensive previous documentation of the sites, including National Register of Historic Places nominations and national historic landmark nominations,

research and documentation prepared by the Puerto Rico State Historic Preservation Office, and the NPS national historic landmarks program. Experienced personnel—historians, architectural historians, archeologists, and other subject matter experts with expertise in evaluating historical significance—reviewed the draft. In this way, the National Park Service reached carefully considered findings of national significance. The following statements incorporate input from this process.

EVALUATION OF NATIONAL SIGNIFICANCE FOR THE STUDY SITES

Fort San Gerónimo

Summary. After analyzing Fort San Gerónimo's history and extant resources, and considering comparable historic properties, the National Park Service concludes that Fort San Gerónimo meets established standards for national significance because it meets national historic landmark (NHL) criteria 1 and 4.

> **NHL 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

Fort San Gerónimo's primary role in the 1797 Battle of San Juan is nationally significant for several reasons. First, the 1797 assault on Puerto Rico by the British was a major turning point in Puerto Rican history because it ultimately became the last major attack on Puerto Rico by a major European power in the past 200 years since the event. The British siege of San Juan demonstrated Britain's interests in the Caribbean and San Juan's larger importance in the battle for control of key commercial trade routes and access to valued resources. These factors played a role in the ongoing contest of power in the Caribbean between Britain and Spain, and Spain's ally France, in association with the Napoleonic War of 1796–1802.

Historians have analyzed the significance of the 1797 battle for San Juan in its larger global context. In their book *The Eighteenth Century Caribbean and the British Attack on Puerto Rico in 1797*, Maria Alonso and Milagros Flores summarized the history surrounding this battle as "the story of a group of relatively small islands, thousands of miles from Europe, whose ownership was a frequent cause of war between what were at the time the most powerful nations in the world. It is a story of slavery, greed, and ambition and traces the fortunes of these islands during their heyday, before they sank into the relative obscurity of the 19th century." The World Heritage Site nomination for San Juan National Historic Site describes the larger San Juan fortification system, of which Fort San Gerónimo is a part, as follows:

> The fortifications of San Juan and the other mighty redoubts built by Spain in the Americas are premier physical evidence of the epic imperial struggles that permanently fixed the destiny of the Americas. They are key monuments of the era when the Caribbean was "the cockpit of international maritime rivalry," and its "islands played a part of almost undue importance in world strategy" that was "particularly international in its happenings."

In understanding the significance of the 1797 attack on San Juan, it is important to recognize the magnitude of San Juan's defeat of the British. Britain's navy was well-known to be the strongest navy on the international seas in the late 18th century. The fleet that aimed to overtake San Juan was led by a senior, well-seasoned commander in Abercromby. After Abercromby and Harvey's easy victory in Barbados in the months leading up to their offense on San Juan, the British commanders underestimated San Juan's military strength and its ability to successfully defend this key port in the Caribbean. In fact, by the time the attack occurred, San Juan was one of the most heavily fortified cities in the Americas. The 1797 battle demonstrated San Juan's effectiveness in protecting the city against the

navies as formidable as those commanded by the British.

That the attack focused on the eastern side of San Juan Island figured vitally important in the battle, as it had during several enemy strikes in the 200 years prior. In 1595, Sir Francis Drake attacked San Juan from the east, in the vicinity of where Fort San Gerónimo would be built. Four years later, British Lord George Clifford also attacked from the east and ultimately penetrated the city walls. Like his English predecessors, Lord Abercromby chose to penetrate the San Juan fortification system, not at the large and imposing El Morro or Castillo de San Cristóbal fortresses protecting San Juan, but at the outer eastern edge of San Juan Island where the small forts of San Gerónimo and San Antonio formed key points in the advanced defense line that was developed in the late 18th century. One can assume that the British considered this approach easier to overtake and advance on San Juan in thier quest to overtake the port. This judgment was proven wrong when Fort San Gerónimo and Fort San Antonio and the armed men who manned them stopped the British firepower after the 13-day-long battle. In review of the entire San Juan fortification system today, the small fort of Fort San Gerónimo saw more enemy fire and played a greater role in the defense of San Juan than the much larger fortress of Castillo de San Cristóbal, which did not play as central a role in a battle when compared with Fort San Gerónimo.

Today, Fort San Gerónimo is the sole surviving site in Puerto Rico that represents the 1797 battle for San Juan. It is one of only two forts, Fort San Gerónimo and Fort San Antonio, that originally bore the brunt of Sir Ralph Abercromby's well-armed and well-manned forces during that battle. Together, Fort San Gerónimo and Fort San Antonio upheld the first line of defense and prevented the British from landing on the island from the east and entering into the San Antonio Channel. Now that Fort San Antonio is no longer extant except for a few fragmented ruins, Fort San Gerónimo stands as the sole intact fortification structure that embodies this important battle in Puerto Rico's national history.

Abercromby and Harvey not only underestimated the physical strength of the defensive fortifications of San Juan but also the ability of Puerto Rican Governor Don Ramón de Castro y Gutiérrez to harness emerging feelings of patriotism among the Puerto Rican locals. This patriotism contributes to a second aspect of national significance concerning the Battle of San Juan, which involved the battle's role in crystalizing the national identify of the people of Puerto Rico. In the weeks preceding the attack, Governor Castro y Gutiérrez was able to successfully assemble an army of militia, local recruits, armed peasants, paroled prisoners, and French privateers willing to defend the Spanish Colonial capital of San Juan. Castro y Gutiérrez effectively rallied local people from all over Puerto Rico to engage in the fight to defend the island on behalf of Spain, as an extension of themselves and their interests. After the battle began, more locals volunteered to join in the effort. This show of cooperation and determination against the threat of a foreign invasion was the first organized showing of patriotism in Puerto Rico, and it would become an important milestone in the development of the cultural identity of Puerto Rico in the 19th century. San Juan's victorious defeat over the British navy served to bolster the Puerto Rican consciousness and the people's identity as a collective Puerto Rican people. This would continue to grow throughout the next century as the island's population grew and sought out greater autonomy from the Spanish Crown (NPS 1996).

> **NHL 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.

Fort San Gerónimo represents a nationally significant military fortification for two reasons. First, the structure is an excellent example of Spanish military architecture, and, second, it contributes to the significance of the complete fortification system of San Juan, the finest example of 17th- and 18th-century fortifications in the western hemisphere.

Individually, Fort San Gerónimo is a small but well-designed example of Spanish military architecture that demonstrates the skill of the Spanish military engineers of its time. Spanish chief engineers Thomas O'Daly and Juan Francisco Mestre led the undertaking to strengthen the entire 250-acre San Juan fortification system from the late 1760s through the 1780s. In this effort, they reorganized and redesigned elements of batteries and walls to make them more impregnable and rebuilt many existing batteries, forts, and other defensive structures using a variety of stone masonry. Old parapet walls were replaced by walls twice as thick, and embrasures to carry cannons were added. At Fort San Gerónimo, O'Daly and Mestre oversaw the rebuilding of San Gerónimo into a stronger stone fort capable of defending the Boquerón within the first line of defense, which protected the eastern shoreline of San Juan Island.

Important physical characteristics of the structural design of Fort San Gerónimo that demonstrate the skill of the Spanish engineers include the symmetry of the two-level structure, with a ramp system at the sides; a broad gun deck on the upper-level pierced by 10 embrasures for cannons; a sentry box for surveillance over the lagoon that surrounded the structure on four sides, and the structure's coursed, ashlar-block sandstone masonry that consist of outer shell walls filled with stone rubble to absorb the impact of heavy cannon balls. A long, arched stone bridge connects the island-fortress to San Juan Island. Fort San Gerónimo's decorative architectural details include a variety of stone moldings featuring ogee curves, a characteristic feature of Spanish military architecture.

A comparison of Fort San Gerónimo with another individual fort in San Juan, San Juan de la Cruz (also called El Cañuelo), serves to demonstrate the singular qualities of Fort San Gerónimo. San Juan de la Cruz was built at the western opening to the San Juan harbor, and the defensive structure was also built on a small island. However, San Juan de la Cruz was designed as a square, stone structure entirely covered by a broad gun deck that served as a platform from which to fire cannon. The structure lacked the living capacity of Fort San Gerónimo. Fort San Gerónimo, with seven interior rooms and two cisterns, living facilities, and a central forecourt, was designed as a larger and more complex fort intended to support a group of soldiers. Apart from San Juan de la Cruz, there are no other similar Spanish Colonial forts like Fort San Gerónimo, in terms of its size, island setting, design, and appearance, in Puerto Rico or in the Caribbean.

Although Fort San Gerónimo appears to be an isolated unit today, it is important to recognize that it was part of the interconnected series of Spanish-built defensive forts and batteries that established the largest and most impressive fortification system in the Caribbean and the Americas at the time and since. As the World Heritage Site nomination for San Juan National Historic Site states, "in their engineering art, the Spanish forts girdling the Caribbean are manifestations of the architectural-engineering and historical heritage of the Old World in the New, reminders that are poignant in many respects, but ones that retain enduring significance."

Remarkably, Fort San Gerónimo survives today virtually intact. Although its materials have deteriorated from the effects of age and weathering in its marine environment, among other stressors, the structure retains a high degree of integrity that allows it to convey its original form as a military fort as it remains poised on its rocky outcropping in the waters of the Condado Lagoon. The fort's setting has changed with the addition of 20th-century development, including several high rises.

The loss of several other structures from the first line of defense (Fort San Antonio, San Ramón Battery, and connecting parapet walls) also makes the fort's connection to San Juan's larger fortification system less apparent. Nonetheless, the military function and purpose of the fort at the eastern end of San Juan remains evident to the casual observer due to the preservation of this structure and its characteristic design elements as a whole.

Other Related Resources

An evaluation of the 14 other related fortification sites identified in the study process concludes that none of these resources meets the national historic landmark criteria for national significance as individual resources.

Santa Catalina Bastion, La Concepción Bastion, and San Justo Bastion are nationally significant as components of the entire San Juan fortification system that was built from the 1600s through the 1800s to protect and defend the city from invasion. This system has been formally recognized as nationally important through its designation as the Old San Juan Historic District National Historic Landmark and also in the World Heritage Site designation by the United Nations Educational, Scientific and Cultural Organization of La Fortaleza and San Juan National Historic Site. For the purpose of this study, these resources were evaluated individually under special resource study criteria. The significance of these resources is embodied in their contributing role in the larger fortification system as a whole, not as separate components. Therefore, these resources are found to be not nationally significant as separate, individual resources as required under national historic landmark criteria. By comparison, Fort San Gerónimo stands apart from these resources due to its exceptional, individual role in the 1797 Battle of San Juan, and this distinction allows Fort San Gerónimo to meet NHL criteria.

The Escambrón Battery is listed in the national register as a contributing element of the advanced defense line. However, the structure does not meet the national significance criteria as an individual resource because the site has not played a nationally important role in the defense of San Juan in the way in which Fort San Gerónimo has. Escambrón Battery did not play a major role in the 1797 British siege on San Juan but, instead, had a supporting role in the battle, which was concentrated at the southern end of the advanced defense line. In this way, the battery is significant as part of the defensive line that ultimately thwarted a British invasion, but, individually, it does not meet the high threshold for national significance required of national historic landmark criterion 1.

The historic powder magazines of Polvorín de San Gerónimo and Polvorín de Miraflores are individually listed in the National Register of Historic Places for their contributing roles in the San Juan fortification system. In both cases, however, the structures have undergone a series of nonhistoric alterations that preclude their ability to meet the national historic landmark's requirement for a high degree of integrity. Therefore, neither resource meets the special resource study criteria for significance according to national historic landmark criteria.

Finally, as described above in the "Description of the Study Sites" in chapter 2, eight of the other related resources evaluated do not retain the high level of integrity for a variety of reasons, including severe deterioration and partial demolition of the resource such that it no longer remains intact. These eight related resources are:

- Isabel II Bastion(San Agustin Fort)
- Taxamar (or Bajamar)
- Parque de Artillería Wall
- Santiago Bastion (the wall behind the José Julián Acosta School)
- San Francisco de Paula Battery Remnant
- Second Line of Defense Wall Remnants
- San Ramón Battery
- Fort San Antonio Embrasures

Because these resources lack the high degree of integrity, they do not meet the national historic landmark criteria for significance.

Conclusion

Of the 15 study sites evaluated, only Fort San Gerónimo meets the special resource study criteria for significance, according to national historic landmark criteria.

EVALUATION OF SUITABILITY FOR THE STUDY SITES

According to the 2006 NPS *Management Policies,*

> an area is considered suitable for addition to the national park system if it represents a natural or cultural resource type that is not already adequately represented in the national park system, or is not comparably represented and protected for public enjoyment by other federal agencies; tribal, state, or local governments; or the private sector.
>
> 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 the character, quality, quantity, rarity, interpretive or educational potential, or combination of resource values. The comparative analysis also addresses rarity of the resources, interpretive and educational potential, and similar resources already protected in the national park system or in other public or private ownership. The comparison results 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.

Because only Fort San Gerónimo meets the special resource study criteria for significance, it was the only resource evaluated for suitability. Due to the fort's singular combination of characteristics, including its historic character with a high degree of integrity, interpretive and educational potential, and its relative rarity that is not already represented in the national park system, Fort San Gerónimo is found to be suitable for inclusion in the national park system as a separate NPS unit. These elements are evaluated as follows.

Although the adjacent NPS unit San Juan National Historic Site interprets the 500-year history of the defense of San Juan and Puerto Rico, the park does not fully interpret the 13-day Battle of San Juan in 1797. Part of the reason the park does not interpret this story more fully is because the battle happened outside of the park boundary at the eastern end of San Juan Island, where it was centered primarily on Fort San Gerónimo and Fort San Antonio, at San Juan's first line of defense.

The attack did not directly involve the park's resources beyond their supporting role in assisting the defense of the first line of defense. Yet the 1797 battle was an important chapter in the military history of San Juan and Puerto Rico. Today, this history can only be adequately conveyed at Fort San Gerónimo because it is the last remaining intact structure of the first line of defense that faced severe action during this attack. Although Escambrón Battery also survives as part of the advanced line of defense, Escambrón Battery was not the focus of the British assault that centered on Fort San Gerónimo and Fort San Antonio, to the south. Because Fort San Antonio is mostly demolished and exists only as fragmented ruins today, Fort San Gerónimo is the last remaining intact site that is able to thoroughly tell this history of national importance. Recognizing the importance of this history and its relationship with the fortifications components that fall within the boundary of San Juan National Historic Site, the park does interpret the historical events of the 1797 British attack within the framework of the larger interpretive theme of the defense of San Juan, but the interpretation does not go into depth on the subject (NPS 1996b).

The Fort San Gerónimo site is owned and managed by the Institute of Puerto Rican Culture (ICP) of the Commonwealth of Puerto Rico, has been closed to the public for decades, and remains closed as of the time of this study. Although the ICP has plans to open the fort to visitation as a military museum, these plans have not yet occurred. The Battle of 1797 is not interpreted at any other historic site in Puerto Rico that is open to the public.

For its architectural significance as an excellent example of Spanish military engineering, Fort San Gerónimo demonstrates unique characteristics not found at comparable sites in Puerto Rico. It is the only freestanding fort designed as an island accessible by a bridge. As explained earlier in chapter 3, a comparison between Fort San Gerónimo and the Fort San Juan de la Cruz reveals the differences between the two structures and the greater level of facilities and design elements of Fort San Gerónimo. No other Spanish Colonial fortifications with a similar configuration of a small size, island setting, and architectural characteristics are known to exist in Puerto Rico or the greater Caribbean.

Conclusion

Fort San Gerónimo meets the special resource study criteria for suitability. The significance of the fort, which is embodied by the combination of its role in the British Battle of 1797, the larger meaning on this battle on Puerto Rican history, and the fort's military architecture, is not adequately represented in the national park system or by other agencies or organizations.

EVALUATION OF FEASIBILITY

Introduction

To be feasible as a new unit or as an addition to an existing unit of the national park system, an area must be:

1. Of sufficient size and appropriate configuration to ensure sustainable resource protection and visitor enjoyment (taking into account current and potential impacts from sources beyond proposed park boundaries); and

2. Capable of efficient administration by the National Park Service at a reasonable cost. In evaluating feasibility, the National Park Service considers a variety of factors such as size; boundary configurations; access; land ownership patterns; current and potential uses of the study area and surrounding lands; planning and zoning; public enjoyment potential; costs associated with acquisition, staffing requirements; current and potential threats to resources; existing degradation of resources; level of local and general support (including landowners); and the economic/socioeconomic impacts of designation as part of a unit of the national park system.

Because only Fort San Gerónimo has met the special resource study criteria for significance and suitability, the evaluation of feasibility involves only Fort San Gerónimo. The 14 other related resources were not evaluated for feasibility.

Feasibility factors evaluated for Fort San Gerónimo include:

- Size: Fort San Gerónimo is about 17,000 square feet, comparable to other small NPS units or unit components.

- **Boundary Configurations:** The boundary of the Fort San Gerónimo site consists of the nearly square footprint of the fort, which is set on a rocky outcropping jutting toward the Condado Lagoon, at the east side of the islet of San Juan. The site is surrounded by water on four sides and is linked to the San Juan islet via a narrow bridge that connects to the Paseo Caribe adjacent to the Caribe Hilton property. The footprint of the site extends underwater into the Condado Lagoon. Management and maintenance of this site would pose challenges for park administration and facility maintenance because it is partially submerged.

Access

For the purpose of this study, access is defined as the method in which a visitor can physically experience a site, either by means of approaching or entering a site, if possible. Having free and easy access to a site is an important factor for the ability to interpret the significance of a resource, as well as for facilitating visitor enjoyment.

Fort San Gerónimo is accessed via the Paseo Caribe, which is a broad public walkway covered in stone pavers that leads to the bridge of Fort San Gerónimo. The Paseo Caribe is accessed from Ponce de León Avenue at the eastern gateway to San Juan Island. It is a semiprivate road that allows public vehicular access and runs along the western shoreline of the Condado Lagoon and along the southeast side of the Caribe Hilton Hotel and its adjacent Condado Lagoon villas. Paseo Caribe functions as a wide pedestrian walkway that also allows vehicular access. It is currently gated. Although the paseo is owned by the private corporation, the Caribbean Property Group Corporation, the Commonwealth of Puerto Rico has an easement that allows for public access along the paseo to access the fort.

Vehicle entrance to the road is currently blocked by four highway traffic cones. The Paseo terminates at five parking spaces for the fort, the entrance gate to the fort, and the rear entrance delivery gate to the Caribe Hilton. Cars and small shuttles would be able to use the Paseo Caribe to drop off visitors, but larger shuttle vehicles with trailers attached would be too long to turn around in this area.

Parking near the fort is limited to off-street parking in the vicinity of the Caribe Hilton hotel and to nearby parking garages.

IIn 2015, the Caribe Hilton corporation that manages the hotel resort complex adjacent to the fort expressed interest in supporting the preservation of Fort San Geronimo and its future development for public access. To support this effort, Caribe Hilton offered the use of the hotel's 438-space parking lot at a special rate for fort park visitors that could be negotiated at a future time (personal communication between National Park Service and Lemuel Gonzales, Manager, Caribe Hilton, San Juan. September 30, 2015.

Fort San Gerónimo itself is closed to all public access by a tall metal gate closing off the entrance of the bridge at the paseo due to life and safety concerns from the structure's unstable condition. The fort has been closed to the public since at least 2010, and is not interpreted for visitor enjoyment or education.

Landownership Patterns

The Commonwealth of Puerto Rico has owned the Fort San Gerónimo site since the 1950s, when the US military transferred the fort to the government of Puerto Rico. It is managed by the ICP, a commonwealth agency. Federal ownership under the National Park Service would be consistent with the past ownership history of the site by government agencies.


Fort San Gerónimo Special Resource Study (SRS)
San Juan, Puerto Rico
National Park Service
U.S. Department of the Interior
Fort San Gerónimo Detalle
Detalle
San Juan
Caribe Hilton Resort
Fort San Gerónimo
puente (bridge)
Caribe Hilton Resort
5 accesible plazas de aparcamiento (5 accessible parking places)
Caribe Hilton Resort
Condado Lagoon Villas at Caribe Hilton
Potential Shuttle Stop
Paseo Caribe
Calle Los Rosales
LAGUNA DEL CONDADO
Paseo Caribe
Bahia Plaza
0
200
Feet
Puerto Rico 25
Produced by NPS Denver Service Center Planning Division
April 2016

Current and Potential Uses of the Study Area and Surrounding Lands

Fort San Gerónimo is not being used and is currently closed to the public due to its deteriorated condition and safety concerns. As of January 2016, the ICP no longer employs a security guard to monitor or prevent access to the fort, and the site remains vulnerable to vandalism and inappropriate use. Although there is an iron gate intended to prevent access to the bridge that leads to the fort at the landside of the bridge, the parapet wall to which the gate is secured is only 3.5 feet high and can is easily climbed over. Trespassing onto the fort has been observed.

Most of the lands surrounding this site are privately owned, including the Caribe Hilton, a privately held hotel complex. The Paseo Caribe walkway access leading to the entrance of the Fort San Gerónimo bridge is open to the public and could be used as public access to the fort.

Planning and Zoning

The municipality of San Juan identified Fort San Gerónimo as a "CR-H: Conservation/ Historical Resources Conservation" zone, a designation that indicates the site is reserved and protected for historical purposes.

Climate-Related Stressors and Natural Hazards

Built on a rocky outcropping in the Condado Lagoon, Fort San Gerónimo is partially submerged by water at all sides. The impacts of climate change can be expected to contribute to the ongoing weathering of this late-eighteenth-century structure in a coastal environment. The structure is subject to earthquakes, coastal storm surge, flash floods, tsunamis, and hurricanes. The fort is located within the coastal flood zone with velocity hazard (wave action) of the 100-year flood zone as determined by Federal Emergency Management Administration (FEMA). The fort is also directly subject to impacts by sea level rise, which will cause an increased rate of degradation of the exterior walls. Such stressors are ongoing threats to the structural stability and integrity of the fort that would require additional funding and management to preserve the fort in perpetuity.

Public Enjoyment Potential and Potential Future Uses of the Study Area and Surrounding Areas

Fort San Gerónimo has a high level of public enjoyment potential in light of its important history, its ability to convey this history, and its unique island setting. However, the site is not ready for visitation because of the fort's deteriorated condition, and considerable rehabilitation would be required to make the structure safe for visitors.

Costs Associated with Restoration, Development, Operation, and Acquisition

For this study, the cost estimates associated with deferred, recurring, and cyclic maintenance are derived from an NPS commissioned condition assessment conducted in 2012 to allow for this analysis. This cost estimate was updated in January 2016. This revised cost estimate not only accounts for this rolling forward of already recognized costs but identifies newly developed deficiencies since 2012.

The costs for repairs to the structure were calculated collectively as deferred maintenance. The items that were 'less significant' in the 2012 report that were estimated as "component renewal" tasks have increased in severity over the past four years. By the time construction could begin, these items will be within the category of deferred maintenance. The estimated cost of deferred maintenance is $17,128,000. This estimate comprises $6,409,201 for the major tasks required to address deferred maintenance and $10,719,043 for cumulative construction add-ons such as compliance with environmental and historic preservation measures, permitting, safety measures, and numerous other fees required.

The findings of the 2016 assessment are that deferred maintenance costs will continue to escalate exponentially in the years to come. Please refer to appendix C for the condition assessment summary for Fort San Gerónimo.

There is no cost estimate to acquire the property. If the property should change ownership from the Commonwealth of Puerto Rico to the National Park Service, it would be transferred at no cost.

Staffing Requirements

The size and location of Fort San Gerónimo would require two fulltime employees stationed onsite for the purpose of protection and law enforcement and possibly interpretation. The site would also require considerable staff time for the indefinite future to regularly perform skilled maintenance and repair of this historic masonry structure.

Current and Potential Threats to Resources

Current threats to the fort consist of environmental degradation and general erosion of the entire fort due to age and weathering and forces such as continual wave action against the structure's foundation walls and unmitigated vegetation growth throughout the site. Current threats are wear and tear to the structural surfaces from visitor use, as well as vandalism, such as graffiti and inappropriate use of the resource from people who trespass to the site. These threats are likely to continue at the site until the fort is appropriately secured.

Existing Degradation of Resources

The fort is in very poor condition due to significant structural failure, environmental deterioration such as wave action and vegetative growth, and inappropriate repairs and changes that have severely eroded much of the materials and structural components of the fort.

Level of Local and General Support (Including Landowners)

Public scoping indicates that there is strong local support for the National Park Service to become involved in the protection of Fort San Gerónimo at some level. Many respondents to a public survey expressed concern for the poor condition of the fort and for the cultural significance that the fort represents to many Puerto Ricans. They commented that they believe that the Puerto Rican government does not have the resources to restore and maintain Fort San Gerónimo. Some respondents noted that there is a level of trust in the ability of the National Park Service to manage the site in light of their positive observation of the management and good condition of the fortifications included in San Juan National Historic Site. Commenters also provided a strong consensus that all of the resources associated with the San Juan fortification system should be managed together as one unit. Some commenters suggested the possibility of establishing partnerships to help restore and preserve the fort. The Commonwealth of Puerto Rico, the official landowner of the fort, has supported the development of this study but has not provided written comment on the potential findings of this study.

Economic/Socioeconomic Impacts

The development of Fort San Gerónimo as an independent unit of the national park system would mostly have beneficial economic and social impacts. Opening the fort for public enjoyment is consistent with the goals of San Juan's tourism-based economy and could support tourism-related development in San Juan by expanding tourist attractions on the island. Public access to Fort San Gerónimo would benefit locals and visitors by providing a special place to understand the important role that the fort played in defending San Juan in the Battle of 1797 and the political and cultural consequences of Puerto Rico's victory in this battle. Because Fort San Gerónimo is currently not open to the public, newfound access to the fort and interpretive programming would offer these new visitor experiences and opportunities.

Another socioeconomic impact from the designation as an independent park unit could include increased visitation to the vicinity of the fort in San Juan. The opening of Fort San Gerónimo to the public could encourage increased tourism, such as longer lengths of stay, sales and hotel tax revenues, and other visitor-related expenditures in the area (e.g., dining). Because Fort San Gerónimo would require staff to operate the facility and care for the structure, this expansion would also create jobs and generate revenue within the local economy. Adverse impacts could include trespass by visitors onto adjacent private lands and possible access conflicts in the area adjacent to the fort.

Summary of Feasibility Findings

An overall evaluation of feasibility was made after taking into account all factors discussed in this section. Given this analysis, Fort San Gerónimo is not feasible as a new, independent unit of the national park system. Foremost is the fort's severely deteriorated condition, which would result in a high cost of deferred maintenance estimated to be $17,128,000 (cost valued in 2016 dollars). This cost is determined to be infeasible. Because the special resource study criterion for feasibility is not met, Fort San Gerónimo is not recommended as a separate unit of the national park system.

EVALUATION OF DIRECT NPS MANAGEMENT

Management of the study sites by the federal government is not the only option to ensure the continued protection of Fort San Gerónimo and other related resources. Alternatives to federal management include continuation of state and private ownership (by the current owner or by others) or management of the sites by entities other than the owner. In a review of the organizations that might provide suitable management, the National Park Service looked at their mission statements and proven expertise in managing historic sites. The option of private ownership and some of the potential candidate organizations for management are discussed below.

The current management and protection of Fort San Gerónimo was found to be inadequate due to the Commonwealth of Puerto Rico's lack of preservation and protection. Since the fort has been owned and managed by the commonwealth since the 1950s it has suffered significant deterioration due to environmental factors, neglect, and inappropriate repairs that ultimately have caused the structure to fall into its current state of very poor condition. Although the fort has remained wholly intact overall, substantial portions are now in danger of structural failure.

Although in 2010 the ICP set forth plans to rehabilitate and repair the fort's substantial structural problems and to eventually open the fort for public visitation and interpretation, this project stopped in 2013, well short of its goals of preservation, and the fort continues to deteriorate in a state of very poor condition. Additionally, although the US Army Corps of Engineers (USACE) completed stabilization at and below the fort's waterline, the fort's poor condition continues overall. The ICP's phased plans for the fort conclude with opening the fort for public enjoyment as a future naval museum that would be open to the public. Without the fort's immediate stabilization, however, it will not be possible to realize these plans in the near future.

In addition, the Save America's Treasures matching grant funding acquired by the ICP expired in September 2015 without being used toward the rehabilitation of the fort.

Although the ICP cites plans to establish a memorandum of understanding with the owners of the adjacent private properties, the Paseo Caribe and Caribe Hilton hotel, to provide future public access to the fort upon the completion of the ICP's rehabilitation project, this has not been accomplished.

The ICP has invited the National Park Service to collaborate on the future maintenance and preservation of the fort upon completion of the phases one, two, and three of the rehabilitation project of the ICP (see ICP letter sent June 21, 2012), but no formal agreements toward this has been made. The National Park Service is limited in its legal ability to expend resources (staff and funding toward other technical assistance) toward the preservation of non-NPS resources.

In May 2015, the ICP contacted the superintendent of San Juan National Historic Site to request NPS technical assistance in addressing emergency structural repairs to the fort's bridge, specifically to the large hole in the bridge floor that has formed over the past two years (described in the 2016 comprehensive condition report in appendix C). The ICP's request reveals that the agency feels it does not have the capacity to adequately protect and stabilize the fort and thus requires technical assistance to do so. The very poor and deteriorating condition of the fort is further evidence of this reality.

The findings of this study are that the ICP has not been able to execute its plans to stabilize, rehabilitate, and protect Fort San Gerónimo, and therefore the fort's management by the ICP as part of the Commonwealth of Puerto Rico is found to be not adequate. Other than the National Park Service, no other organizations have been identified as potential management entities for Fort San Geronimo.

CONCLUSION

Fort San Gerónimo's current management is found to be inadequate. The fort is not being preserved by the Commonwealth of Puerto Rico and the ICP and is in very poor condition that continues to worsen without corrective action. Although the Commonwealth's ICP developed a plan to rehabilitate and preserve the fort in 2010, it has not been able to execute that plan. It also was not able to execute the $300,000 five-year Save America's Treasures matching grant funds it received in 2010, and those funds have since expired.

Chapter 4

Boundary Study—Evaluation Of Study Sites As An Addition To San Juan National Historic Site



CHAPTER 4: BOUNDARY STUDY—EVALUATION OF STUDY SITES AS AN ADDITION TO SAN JUAN NATIONAL HISTORIC SITE

SUMMARY OF FINDINGS

This chapter provides a boundary study that evaluates Fort San Gerónimo and 14 other related sites for inclusion within the boundary of San Juan National Historic Site.

Fort San Gerónimo does not meet the criteria to be included as an addition to San Juan National Historic Site. Although Fort San Gerónimo has a high level of public enjoyment potential in light of its important history, its ability to convey this history, and its unique island setting, it is infeasible due to the considerable rehabilitation required to make the structure publicly accessible and safe for visitors. In particular, the fort's severely deteriorated condition would result in a high cost of repairs (deferred maintenance) that is estimated to be about $17,128,000 (cost valued in 2016 dollars), which raises serious feasibility concerns.

The National Park Service also found nine of the related resources (Isabel II Battery, Taxamar, Parque de Artillería wall, Santiago Bastion, San Francisco de Paula Battery remnants, second line of defense remnants, San Ramón Battery, Fort San Antonio embrasures, and Polvorín de Miraflores) to be in severely deteriorated conditions that result in a lack of historic integrity and ability to enhance public enjoyment related to park purpose and significance. The remaining five related resources (Santa Catalina Bastion, La Concepción Bastion, San Justo Bastion, Escambrón Battery, and Polvorín de San Gerónimo) were found to have the potential to enhance opportunities for public enjoyment related to the purpose of San Juan National Historic Site, however these resources are being adequately managed by the Commonwealth of Puerto Rico, and none of the sites has been determined to be feasible for management as part of the park. This evaluation finds that none of the study sites, including Fort San Gerónimo, meets all of the required criteria for a boundary adjustment to the existing NPS unit San Juan National Historic Site.

BACKGROUND

As described in chapter 3, only Fort San Gerónimo was determined to meet the NHL criteria for national significance and suitability as part of the evaluation of special resource study (SRS) criteria as an independent unit of the national park system. Fort San Gerónimo did not meet the SRS criterion for feasibility. The other 14 related resources did not meet the NHL criteria and thus were not evaluated under the suitability or feasibility criteria as independent units of the national park system.

In the interest of protecting the resources at Fort San Gerónimo and expanding visitor opportunities of this resource, the National Park Service analyzed the potential of including Fort San Gerónimo and other related resources within the national park system through an addition to the boundaries of the adjacent existing NPS unit San Juan National Historic Site. Although the National Park Service requires congressional authority to investigate a site's potential as a new national park unit, it can initiate potential adjustments to boundaries of existing park units at its own discretion.

CRITERIA FOR BOUNDARY ADJUSTMENTS TO EXISTING NATIONAL PARK UNITS

According to the 2006 NPS *Management Policies:*

> The boundary of a national park may be modified only as authorized by law. For many parks, such statutory authority is included in the enabling legislation or subsequent legislation that specifically authorizes a boundary revision. Where park-specific authority is not available, the Land and Water Conservation Fund Act of 1965, as amended, provides an additional but limited authority to adjust boundaries.
>
> The act provides for boundary adjustments that essentially fall into three distinct categories: (1) technical revisions; (2) minor revisions based upon statutorily defined criteria; and (3) revisions to include adjacent real property acquired by donation, purchased with donated funds, transferred from any other federal agency, or obtained by exchange. Adjacent real property is considered to be land located contiguous to but outside the boundary of a national park system unit.

This boundary study evaluates Fort San Gerónimo and 14 other related resources according to the following criteria published in NPS *Management Policies 2006* (section 3.5).

The first step in evaluating sites is to apply the following three boundary adjustment criteria, at least one of which must be met for inclusion within the San Juan National Historic Site boundary:

1. Protects significant resources and values, or enhances opportunities for public enjoyment related to unit purposes.
2. Addresses operational and management issues, such as the need for access or the need for boundaries to correspond to logical boundary delineations such as topographic or other natural features or roads.
3. Otherwise protects unit resources that are critical to fulfilling the unit's purposes.

This chapter provides an analysis of the potential for Fort San Gerónimo and 14 other related resources to enhance opportunities for public enjoyment related to the purpose of San Juan National Historic Site, as defined in the designation order (criterion 1 above).

Therefore, the study sites must meet one of the above three criteria in order to move forward to step 2, below. Secondly, all recommendations for additions must meet both of the following two criteria in order to meet all boundary criteria:

- The added lands will be feasible to administer, considering their size, configuration, and ownership; costs; the views and impacts on local communities and surrounding jurisdictions; and other factors such as the presence of hazardous substances or exotic species.
- Other alternatives for management and resource protection are not adequate.

The study team applied these criteria to the 15 study sites using this two-step approach.

ELEMENTS OF THE BOUNDARY STUDY

In evaluating Fort San Gerónimo and the 14 other related resources for possible inclusion within the San Juan National Historic Site boundary, the study process involved the following elements:

1. Review of the San Juan National Historic Site designation order and consideration of the unit's purpose and significance.
2. Evaluation of Fort San Gerónimo and the 14 other related resources' potential to enhance the public

enjoyment of San Juan National Historic Site's unit purposes.

3. Application of the boundary study criteria, including an evaluation of feasibility factors such as size; boundary configurations; access; land ownership patterns; planning and zoning; current and potential uses of the study area and surrounding lands; public enjoyment potential; costs associated with acquisition, restoration, development, and operation; current and potential threats to resources; existing degradation of resources; level of local and general support (including landowners); and the economic/socioeconomic impacts of designation as part of a unit of the national park system.
4. Evaluation of alternatives to National Park Service management.

REVIEW OF THE ENABLING LEGISLATION FOR SAN JUAN NATIONAL HISTORIC SITE

San Juan National Historic Site encompasses the historic fortifications of Castillo San Felipe del Morro (also known as El Morro), Castillo San Cristóbal, Fort San Juan de la Cruz (also known as El Cañuelo), and most of what remains of the fortress wall that surrounds Old San Juan, Puerto Rico. In 1949, the Secretary of the Interior designated San Juan National Historic Site under the provisions of the 1935 Historic Sites Act. The 1949 establishment order recognized the historic significance of San Juan's Spanish Colonial Empire fortifications and authorized the development of a cooperative agreement between the Secretary of the Interior and of the Secretary of the Army to preserve El Morro, Castillo San Cristóbal, El Cañuelo, and parts of the city wall. The 1949 establishment order mandates the preservation of San Juan's historic fortifications through the designation of San Juan National Historic Site, as follows:

> Whereas, the Congress of the United States has declared it to be a national policy to preserve for the public use historic sites, buildings, and objects of national significance for the inspiration and benefit of the people of the United States;
>
> Whereas, the ancient fortifications of San Juan, Puerto Rico, particularly the massive masonry works of El Morro and San Cristóbal and their connecting walls, are outstanding monuments of the past, possessing exceptional historical and architectural interest for the National, and have been declared by the Advisory Board on National Parks, Historic Sites, Buildings, and Monuments to possess exceptional important as commemorating the history of the United States;
>
> Whereas, with the approval of the President, a cooperative agreement has been made between the Secretary of the Interior and the Secretary of the Army providing for the preservation of the ancient fortifications of San Juan and their designation as a national historic site;
>
> Now, therefore, I. J. A. Krug, Secretary of the Interior, under and by virtue of the authority conferred by section 2 of the act of August 21, 1935 (49 Stat. 666; 16 U.S.C. 462) do hereby designate the fortresses of El Morro and San Cristóbal, Casa Blanca[1], El Cañuelo on Cabras Island, including the areas shown on the diagram, marked 'Exhibit A,' annexed hereto and made a part hereof, to be a national historic site, having the name "San Juan National Historic Site."

In 1966, the US Army declared all lands under its jurisdiction at Fort Brooke in San Juan as excess, which initiated the eventual transfer of most of the fortification properties in San Juan from the US Army to the National Park Service. Today, San Juan National Historic Site encompasses 75 acres in Old San Juan.

[1] The Casa Blanca site in San Juan did not become part of the San Juan National Historic Site and was ultimately transferred to the ownership and management of the Commonwealth of Puerto Rico.

In addition to the 1949 establishment order for San Juan National Historic Site, the study team also used the current park purpose statement for San Juan National Historic Site, which identifies and articulates the specific reason for the establishment of a particular park. Purpose statements are crafted through a careful analysis of the enabling legislation and legislative history that influenced the development of San Juan National Historic Site, which was designated on February 24, 1949, through an establishment order issued by the Secretary of the Interior. The purpose statement reinforces the foundation for future park management administration and use decisions. The following purpose statement was based on the review of park legislation, previous management documents, and discussions with park staff:

Representing 500 years of history and the importance of the island's strategic location in the Caribbean, San Juan National Historic Site preserves, protects, and interprets the oldest and largest Spanish fortification system in the United States.

Significance statements express why the resources and values of San Juan National Historic Site are important enough to merit national park unit designation. Statements of significance describe why an area is important within a global, national, regional, and systemwide context. These statements are linked to the purpose of the park unit and are supported by data, research, and consensus. Significance statements describe the distinctive nature of the park and inform management decisions, focusing efforts on preserving and protecting the most important resources and values of the park unit.

The following significance statements have been identified for San Juan National Historic Site (please note that the statements are in no particular order):

- San Juan National Historic Site preserves and protects an internationally significant example of a complex system of fortifications built by the Spanish Crown to defend its empire and interests in the New World.
- San Juan National Historic Site is a premier example of military engineering and architectural design and is one of the best preserved examples of Spain's grand colonial coastal and land defense system in the Americas.
- The fortifications have been adapted architecturally and functionally over the past 500 years to serve as a center of Spanish and US political, social, and military global influence.
- Designated in 1983 as a World Heritage Site, San Juan National Historic Site is a potent symbol of cultural heritage linking the history of Puerto Rico to the Hispanic culture and provides a common identity with other Latin American countries.
- Because of Puerto Rico's strategic location, control of San Juan's fortifications enabled military powers command of and access to the Caribbean and the commercial routes to and from the Americas.
- For over 500 years, the fortifications of San Juan have remained an important element of the community and cultural landscape of Puerto Rico.

ANALYSIS OF THE SAN JUAN NATIONAL HISTORIC SITE DESIGNATION ORDER

The 1949 establishment order for San Juan National Historic Site broadly states that the NPS park unit was designated to protect fortifications that are significant for their historical importance and because they exemplify important developments in military architecture and engineering spanning almost five centuries (see appendix A for designation order). It is important to understand that San Juan National Historic Site designation included the largest and most impressive architectural components of the San Juan fortification system, but it left out many components that were instead

transferred to the Commonwealth of Puerto Rico or to the municipality of San Juan. Thus, the 1949 designation left the ownership and management of the fortification system in a fragmented state, with different sections managed by different entities. However, all of the components of the fortifications are part of the greater whole fortification system that was designed as a single, huge integrated network of defensive structures that surrounded the old city of San Juan in layers. As a result, Fort San Gerónimo and all of the related study sites are components of this greater fortification system.

CRITERION 1: POTENTIAL TO ENHANCE PUBLIC ENJOYMENT OF SAN JUAN NATIONAL HISTORIC SITE

An analysis of boundary adjustment criterion 1 finds that Fort San Gerónimo protects significant resources and values that are directly related to the purpose and significance of San Juan National Historic Site. Because Fort San Gerónimo is the only remaining site in Puerto Rico that experienced firsthand the gunfire of the 1797 Battle of San Juan, it has the highest potential for interpreting this important chapter in Puerto Rican history. The history of the 1797 battle is also encompassed by the long historical continuum that is represented by San Juan National Historic Site and the park's primary significance: its history of 500 years of defending San Juan against European world powers in the Caribbean. Therefore, the addition of Fort San Gerónimo to San Juan National Historic Site would enhance opportunities for public enjoyment related to the purposes of the park because it would add a resource that can directly interpret the 1797 attack from British. Currently, no resource within the park boundary is able to interpret this battle to the same degree because the park's fortifications, namely Castillo de San Cristóbal and El Morro, played a secondary, supporting role in this battle. Moreover, although the Institute of Puerto Rican Culture (ICP) has plans for public visitation, and historical interpretation at Fort San Gerónimo may involve onsite interpretation and education of the Battle of 1797 and San Juan's advanced line of defense, these plans have not come to fruition as of the development of this study. Among the 14 related resources, five sites were found to have the potential to enhance the opportunities for public enjoyment related to the purpose of San Juan National Historic Site. These five resources are the Santa Catalina Bastion, La Concepción Bastion, San Justo Bastion, Escambrón Battery, and Polvorín de San Gerónimo. All five of these sites are significant components of the nationally important San Juan fortification system. Moreover, all five sites retain a sufficient degree of integrity to convey its significance and have the potential to enhance opportunities for public enjoyment related to the purposes of the park. These five resources were evaluated in step 2 of the evaluation of boundary adjustment criteria below.

The other nine related resources (Isabel II Battery, Taxamar, Parque de Artillería wall, Santiago Bastion, San Francisco de Paula Battery remnants, second line of defense remnants, San Ramón Battery, Fort San Antonio embrasures, and Polvorín de Miraflores) do not retain sufficient integrity to convey their significance as components of the San Juan fortification system or to substantially enhance opportunities for public enjoyment at San Juan National Historic Site.

Conclusion

Fort San Gerónimo and five related resources (Santa Catalina Bastion, La Concepción Bastion, San Justo Bastion, Escambrón Battery, and Polvorín de San Gerónimo) meet boundary adjustment criterion 1 for significance related to San Juan National Historic Site's park purpose because they are intact components of the greater San Juan fortification system that has been determined to be nationally important.

The nine remaining related resource that do not meet this criterion fail to do so because of their severely deteriorated condition that results in a lack of historic integrity and ability to enhance public enjoyment related to park purpose and significance.

CRITERION 2: POTENTIAL TO ENHANCE OPERATIONAL AND MANAGEMENT ISSUES

The inclusion of Fort San Gerónimo and the 14 other related resources would not address operational and management issues at the park such as the need for access or the need for boundaries to correspond to logical boundary delineations such as topographic or other natural features or roads. The study identified no issues of this nature.

Conclusion

None of the 15 study sites, including Fort San Gerónimo, would aid any operational or management issues at San Juan National Historic Site. The study sites' potential value for the inclusion within the park boundary is their historic significance as resources that support park purpose and significance.

CRITERION 3: POTENTIAL TO PROTECT PARK RESOURCES CRITICAL TO SAN JUAN NATIONAL HISTORIC SITE PARK PURPOSES

The inclusion of Fort San Gerónimo and the 14 other related would not otherwise protect unit resources that are critical to fulfilling the unit's purposes; San Juan National Historic Site is successfully meeting its mandated purpose without Fort San Gerónimo today. Although Fort San Gerónimo would enhance interpretive opportunities at San Juan National Historic Site, its inclusion is not critical to the park's designation, purpose, or significance. Similarly, the 14 other related resources are similar to the types of fortification structures that the park already protects, and their inclusion would not fulfill a critical need at the park.

Conclusion

None of the 15 study sites was found to be critical to San Juan National Historic Site's park purpose. The park is currently able to fulfill its park purpose without the inclusion of these sites, individually or collectively.

CONCLUSION OF THE EVALUATION OF BOUNDARY CRITERIA, STEP 1

Fort San Gerónimo and five related resources (Santa Catalina Bastion, La Concepción Bastion, San Justo Bastion, Escambrón Battery, and Polvorín de San Gerónimo) meet criterion 1 of boundary adjustment step 1 for their ability to protect significant resources and values related to San Juan National Historic Site's purpose and significance. Because these resources meet at least one of the boundary adjustment criteria in step 1, they are analyzed further under boundary adjustment step 2 criteria, described below.

EVALUATION OF FEASIBILITY, STEP 2

Introduction

This discussion considers the feasibility of Fort San Gerónimo and five other related resources as additions to San Juan National Historic Site.

To be feasible as a new unit or as an addition to an existing unit of the national park system, an area must be:

1. Of sufficient size and appropriate configuration to ensure sustainable resource protection and visitor enjoyment (taking into account current and potential impacts from sources beyond proposed park boundaries); and

2. Capable of efficient administration by the National Park Service at a reasonable cost. In evaluating feasibility, the National Park Service considers a variety of factors such as size; boundary configurations; access; land ownership patterns; planning and zoning; current and potential uses of the study area and surrounding lands;

public enjoyment potential; costs associated with acquisition, restoration, development, and operation; current and potential threats to resources; existing degradation of resources; level of local and general support (including landowners); and the economic/socioeconomic impacts of designation as part of a unit of the national park system.

Fort San Gerónimo was evaluated for these same feasibility factors in the special resource study evaluation in chapter 3, which found that the fort does not meet the special resource study criterion for feasibility primarily due to the high cost of repairs and annual maintenance because of the severely deteriorated condition of the fort. A condition assessment of the fort estimated that the deferred maintenance of the fort is $17,128,000.

The five other related study sites of Santa Catalina Bastion, La Concepción Bastion, San Justo Bastion, Escambrón Battery, and Polvorín de San Gerónimo are evaluated below according to the factors of feasibility.

Size

Santa Catalina Bastion (31,000 square feet), La Concepción Bastion (2,700 square feet), and San Justo Bastion (10,248 square feet) are each parts of the city wall in the southeastern part of Old San Juan that are currently owned and managed by the Commonwealth of Puerto Rico. Their sizes are comparable to other sections of the wall that are administered by San Juan National Historic Site. The wall is adjacent to La Fortaleza, the current official residence of the governor of Puerto Rico, but is not part of La Fortaleza.

The Escambrón Battery site is approximately 17,000 square feet. This size of this site is comparable to other components of the park.

The Polvorín de San Gerónimo consists of an approximately 6,000-square foot building. Although relatively small, the size of this site is comparable to other structures in the park, such as Polvorín de Santa Elena, adjacent to El Morro.

Boundary Configurations

The boundary for the city wall sections of Santa Catalina Bastion, La Concepción Bastion, and San Justo Bastion are linear configurations that follow the shoreline of the San Juan Bay beyond the park boundary and park-managed city wall. These site boundaries are contiguous with the portion of the city wall already managed by San Juan National Historic Site. Because the city wall is managed by two different entities, the National Park Service and the Commonwealth of Puerto Rico, there are inconsistencies in the management and preservation treatments of the city wall as a whole. The adjacent boundaries of these resources would allow for more efficient administration and consistent maintenance and preservation if they were conducted by one entity, such as San Juan National Historic Site.

Escambrón Battery is located within in the Parque del Tercer Milenio at the northeast tip of San Juan Island. The boundary of this site is relatively isolated from San Juan National Historic Site, about 1.4 miles from the easternmost edge of the park boundary. Park staff believes that this distance would pose only minor challenges for administration and maintenance if the site were to be included in the park boundary.

The Polvorín de San Gerónimo is located within in the Luis Muñoz Rivera Park at the east side of San Juan Island, about 1.8 miles from the easternmost edge of the boundary of San Juan National Historic Site. Park staff believe this distance would pose only minor challenges for park administration and maintenance if the site were to be included in the park boundary.

Access

For the purpose of this study, access is defined as the method in which a visitor can physically experience a site, either by means of approaching or entering a site, if possible. Having free and easy access to a site is an important factor in the ability to interpret a resource and its significance, as well as for facilitating visitor enjoyment.

The city wall sections of Santa Catalina Bastion, La Concepción Bastion, and San Justo Bastion are surrounded by city streets and broad public sidewalks that include ramps. The walls are easily accessible from the public right-of-way.

Escambrón Battery is open and fully accessible to the public via public sidewalks and a ramp with a railing leading to the central platform area of the structure.

The Polvorín de San Gerónimo building is located in a public park, but is only accessible at the exterior, where visitors can walk up to the building. The interior courtyard and the building itself are closed to the public.

Landownership Patterns

The city wall sections of Santa Catalina Bastion, La Concepción Bastion, and San Justo Bastion are owned by the Commonwealth of Puerto Rico and managed by the commonwealth's Department of Transportation. Escambrón Battery and the Polvorín de San Gerónimo are owned by the Commonwealth of Puerto Rico and are managed by the National Park Company. For all these resources, this ownership status is not expected to change.

Current and Potential Uses of the Study Area and Surrounding Lands

The city wall sections of Santa Catalina Bastion, La Concepción Bastion, and San Justo Bastion are prominent historic features in the vicinity of San Juan's cruise ship port and La Fortaleza, which receives a high degree of visitor foot traffic. The surrounding area consists of urban development, featuring broad public sidewalks and a mixture of public buildings and commercial development.

The Escambrón Battery site is a historic structure within a city park. It is surrounded by grassy fields for outdoor sports and recreation and the adjacent San Juan Beach. The Polvorín de San Gerónimo building is within a city park area that includes government buildings. This site is not currently used but has potential for a variety of visitor-oriented uses within the park.

Zoning and Planning

Santa Catalina Bastion and La Concepción Bastion are located in nonresidential zoned areas under public ownership. The San Justo Bastion is located in an area of Old San Juan zoned for commercial tourism. The Escambrón Battery is located in a nonresidential zone for sports and recreation. Polvorín de San Gerónimo is located in a nonresidential zone for plazas and green acres.

Climate-related Stressors and Natural Hazards

All of the related study sites are subject to earthquakes, coastal storm surge, flash floods, tsunamis, and hurricanes. The impacts of climate change can be expected to contribute to the ongoing weathering of these historic structures in a coastal environment. The sites are located within the coastal flood zone with velocity hazard (wave action) of the 100-year flood zone determined by Federal Emergency Management Administration (FEMA). The sites are also directly subject to impacts by sea level rise because their structural foundations are currently within several feet of mean sea level. Such stressors are ongoing threats to the structural stability and integrity of the related resources that would require additional funding and management to preserve them in perpetuity.

Public Enjoyment Potential and Potential Future Uses of the Study Area and Surrounding Areas

The city wall sections of Santa Catalina Bastion, La Concepción Bastion, and San Justo Bastion have a high level of public enjoyment potential because they are located in an area of high visitation and tourism with high foot traffic in Old San Juan. This potential is currently being fulfilled.

Escambrón Battery also has a high level of public enjoyment potential as a historic site open to public visitation in San Juan. Because the site is open to the public in a city park, this potential is currently being fulfilled.

Polvorín de San Gerónimo has a high level of public enjoyment potential as a historic site visible in a public city park in San Juan. However, the building could offer more opportunities for public enjoyment if it were opened to the public for historical interpretation for its history as part of the advanced line of defense.

Costs Associated with Restoration, Development, Operation, and Acquisition

The average annual expenditure of Santa Catalina Bastion is estimated to be $676,933 (costs are reflected in 2012 dollars). The total cost over a 20-year period is estimated to be $13,538,673. The average annual expenditure of La Concepción Bastion is estimated to be $210,888. The total cost over a 20-year period is estimated to be $4,217,771. The average annual expenditure of San Justo Bastion is estimated to be $24,710. The total cost over a 20-year period is estimated to be $494,204. The average annual expenditure of the Escambrón Battery is estimated to be $68,809. The total cost over a 20-year period is estimated to be $1,376,183. The average annual expenditure of the Polvorín de San Gerónimo is estimated to be $119,616. The total cost over a 20-year period is estimated to be $2,392,327.

Santa Catalina Bastion, La Concepción Bastion, and San Justo Bastion would require 1.5 full-time employees stationed on-site for the purpose of protection / law enforcement and possibly interpretation. The addition of these resources to the San Juan National Historic Site boundary would also require staff time to regularly perform skilled maintenance and repair of this historic masonry wall for the indefinite future.

The addition of the Escambrón Battery and the Polvorín de San Gerónimo to the San Juan National Historic Site boundary would require staff time to regularly perform skilled maintenance and repair of these sites for the indefinite future. Additionally, the size and remote location of these sites may require on-site staff for protection patrols and possibly interpretation.

The acquisition of the study sites and their addition to the park boundary would not involve the purchase of these properties.

Current and Potential Threats to Resources

Current threats to all five of the related resources consist of erosion due to age and weathering, and vegetative growth on the wall surfaces throughout the site. Potential threats are inadvertent wear and tear from visitor use, such as foot traffic, and vandalism, such as graffiti. In addition, areas of the Escambrón Battery where portland cement was used during a 2004 rehabilitation project need to be remediated to meet current preservation practices as defined by *The Secretary of the Interior's Standards for the Treatment of Historic Properties*. For the Polvorín de San Gerónimo, additional threats include trapped moisture in the masonry structure and exposed electrical wiring.

Existing Degradation of Resources

The city wall sections of Santa Catalina Bastion, La Concepción Bastion, and San Justo Bastion are each in relatively fair condition. The sentry post shows deterioration and exposed brick. Other forms of degradation include vandalism, cracking, spalling, scaling, vegetative and other biological growth, and deteriorated foundations. San Justo's sentry post has significant cracking, and the metal gate is rusted. In addition to vegetation, fungal growth and trapped moisture are evident throughout the masonry wall surfaces. Escambrón Battery is in fair condition overall. Actions to preserve the structure are needed, but they are not immediately required. The Polvorín de San Gerónimo is in relatively good condition for its age. Areas of deterioration include trapped moisture, repairs using inappropriate materials, cracking of the plaster walls, metal corrosion at the gates, and significant wear at the brick steps.

Level of Local and General Support (Including Landowners)

Public scoping indicates that there is strong local support for the National Park Service to become involved in the protection of Fort San Gerónimo and the city wall sections of Santa Catalina Bastion, La Concepción Bastion, and San Justo Bastion at some level. Many respondents to a public survey expressed concern for the poor condition of the Fort San Gerónimo, in particular, and for the cultural significance that the fort represents to many Puerto Ricans. They commented that they believe that the Puerto Rican government does not have the resources to restore and maintain Fort San Gerónimo and the city wall sections. Some respondents noted that there is a level of trust in the ability of the National Park Service to manage the site in light of their positive observation of the management and good condition of the fortifications included in San Juan National Historic Site. Commenters also provided a strong consensus that all of the resources associated with the San Juan fortification system should be managed together as one unit. Some commenters suggested the possibility of establishing partnerships to help restore and preserve the fort. The Commonwealth of Puerto Rico, the official landowner of the fort, has supported the development of this study, but has not provided written comment on the potential findings of this study.

Economic/Socioeconomic Impacts

The inclusion of Fort San Gerónimo to San Juan National Historic Site would largely have beneficial economic and social impacts. Opening the fort for public enjoyment is consistent with the goals of San Juan's tourism-based economy and could support tourism-related development in San Juan by expanding tourist attractions on the island. Public access to Fort San Gerónimo would benefit locals and visitors by providing a special place to understand the important role that the fort played in defending San Juan in the Battle of 1797, and the political and cultural consequences of Puerto Rico's victory in this battle. Because Fort San Gerónimo is currently not open to the public, newfound access to the fort, and the interpretive programming that would happen, would offer these new visitor experiences and opportunities.

Other socioeconomic impacts of designation as part of the San Juan National Historic Site would include increased visitation to the vicinity of the fort in San Juan. The opening of Fort San Gerónimo to the public could encourage increased tourism, such as longer lengths of stay, sales and hotel tax revenues, and other visitor-related expenditure in the area (e.g., dining). The inclusion of Escambrón Battery and the city wall sections of Santa Catalina Bastion, La Concepción Bastion, and San Justo Bastion would likely have little to no direct social or economic impacts because the sites are already open to the public for visitation and enjoyment, and change in their visitation would not be expected to substantially change if they became part of San Juan National Historic Site.

Because Fort San Gerónimo and the city wall sections would require staff to operate the facilities and care for the structures, this expansion would create jobs and generate revenue within the local economy. Adverse impacts could include trespass on adjacent private lands by visitors and possible access conflicts in the area adjacent to these sites.

SUMMARY OF FEASIBILITY FINDINGS

As a whole, the five related resources of Santa Catalina Bastion, La Concepción Bastion, San Justo Bastion, Escambrón Battery, and Polvorín de San Gerónimo do not appear to be feasible due to the high cost of repairs (deferred maintenance) and ongoing maintenance (recurring maintenance and cyclic maintenance). Of all the sites, Fort San Gerónimo would be the most costly site to repair and maintain, with cost estimates approximating $17,128,000 in deferred maintenance (cost is valued in 2016 dollars). This estimate comprises $6,409,201 for the major tasks required to address deferred maintenance and $10,719,043 for cumulative construction add-ons, such as compliance with environmental and historic preservation measures, permitting, safety measures, and numerous other fees required. In a scenario where Fort San Gerónimo would become part of San Juan National Historic Site, there could be potential for some of the costs of construction add-ons to be reduced by using a variety of inhouse methods.

The five sites would also require additional staffing needs, such as ranger patrols at a minimum, which would be an added cost to the operations of San Juan National Historic Site. As a result, the addition of Santa Catalina Bastion, La Concepción Bastion, San Justo Bastion, Escambrón Battery, and Polvorín de San Gerónimo is found to be not feasible.

EVALUATION OF DIRECT NPS MANAGEMENT, STEP 2

Management of the study sites by the federal government is not the only option to ensure the continued protection of Fort San Gerónimo and other related resources. Alternatives to federal management include continuation of state and private ownership (by the current owner or by others) or management of the sites by entities other than the owner. In review of the organizations that might provide suitable management, the National Park Service looked at their mission statements and proven expertise in managing historic sites. The option of private ownership and some of the potential candidate organizations for management are discussed below.

Fort San Gerónimo

The current management and protection of Fort San Gerónimo is determined to be inadequate due to its lack of preservation and maintenance. Since the fort has been owned and managed by the Commonwealth of Puerto Rico since the 1950s, it has suffered significant deterioration due to environmental factors, neglect, and inappropriate repairs, causing the structure to fall into very poor condition. The fort has remained wholly intact overall, but substantial portions are now in danger of structural failure. Although the ICP developed plans to correct the fort's substantial structural problems in 2010, the fort's poor condition continues to worsen and its entire structural stability is now in jeopardy. The site is currently closed to the public and is not interpreted for visitor enjoyment or education.

Other Related Resources

The current management and protection of the five other related resources that meet the boundary criteria in step 1, Santa Catalina Bastion, La Concepción Bastion, San Justo Bastion, Escambrón Battery, and Polvorín de San Gerónimo, is adequate. All of these five resources have been owned and managed by the Commonwealth of Puerto Rico since the 1950s, when the commonwealth regained ownership and control of many of the fortifications of San Juan. The commonwealth has and continues to preserve and protect

these resources for the purposes of historic preservation and public enjoyment as nationally important historic sites. All five sites are open to the public (to varying degrees) in areas of San Juan with high visitation. Their prominent visibility makes them readily available for public enjoyment.

CONCLUSION

This study finds that the current management of Fort San Gerónimo by the Commonwealth of Puerto Rico is inadequate, as evidenced by the fort's severe condition, ongoing deterioration, and the commonwealth's inability to protect and stabilize the fort despite efforts to do so. The five related resources of Santa Catalina Bastion, La Concepción Bastion, San Justo Bastion, Escambrón Battery, and Polvorín de San Gerónimo are in relatively good or fair condition and are thus found to be adequately managed by the Commonwealth of Puerto Rico.

SUMMARY AND CONCLUSION OF BOUNDARY STUDY FINDINGS

None of the study sites evaluated meets all of the required boundary study criteria for inclusion in the park unit as outlined in the 2006 NPS *Management Policies*.

Fort San Gerónimo was found to have the potential to enhance the opportunities for public enjoyment related to the purpose of San Juan National Historic Site, and the alternatives for management are inadequate for preserving and protecting the fort. The estimated cost of $17,128,000 required to address Fort San Geronimo's deferred maintenance is determined, however, to be infeasible as a potential inclusion in the national park unit of San Juan National Historic Site.

The five related resources evaluated for the boundary study were also found to have potential to enhance public enjoyment related to San Juan National Historic Site, but these sites are preserved in relatively good or fair condition, and thus were found to be adequately managed by the Commonwealth of Puerto Rico. Therefore, none of the study sites meets the boundary adjustment criteria.

OPPORTUNITIES

The National Park Service recognizes that despite the negative study findings, there is strong public support and a potential opportunity for enhancing the interpretation and preservation of Fort San Gerónimo and many of the related resources evaluated in this study.

Additionally, in cases where resources meet special resource study criteria for national significance but do not meet other criteria for inclusion in the national park system, an alternative designation such as affiliated area can apply. Affiliated areas are sites that are managed and owned by others but for which the National Park Service provides assistance under the terms of a formal agreement. Affiliated areas are not units of the national park system, but affiliated area designation recognizes the significance of an area's resources and affirms that they are being managed consistent with standards that apply to NPS units.

To be eligible for designation as an affiliated area, the study area's resources must (1) meet the same standards for significance and suitability that apply to units of the national park system; (2) require some special recognition or technical assistance beyond what is available through existing NPS programs; (3) be managed in accordance with the policies and standards that apply to units of the national park system; and (4) be assured of sustained resource protection, as documented in a formal agreement between the National Park Service and the nonfederal management entity. Because Fort San Geronimo meets both of the special resource study criteria for significance and suitability, there is potential for the site to be considered as an affiliated area in the future.

Chapter 5

Public Involvement, Consultation, And Coordination



CHAPTER 5: PUBLIC INVOLVEMENT, CONSULTATION, AND COORDINATION

SUMMARY OF PUBLIC MEETINGS

Public scoping meetings were held on February 1st and 3rd, 2011, in San Juan. A newsletter describing the purpose and steps of the special resource study were distributed in both Spanish and English prior to these meetings. The public was also invited to these meetings using press releases and local television announcements featuring interviews with NPS staff concerning the study and the purpose of the scoping meetings.

At the public meetings, NPS staff presented the purpose and goals of the special resource study, project background, and an outline of the study steps. The National Park Service presented this information in both Spanish and English. Project managers from the Institute of Puerto Rican Culture (ICP) and the US Army Corps of Engineers (USACE) also participated in both meetings for the purpose of updating the public on their respective projects that involve the stabilization and rehabilitation of Fort San Gerónimo.

In addition to the two public meetings, the NPS study team held a stakeholder meeting on February 2, 2011, with representatives from USACE, the Puerto Rico State Historic Preservation Office (PR SHPO), Puerto Rico Tourism Co., municipality of San Juan / Old San Juan Urban Center, Congressman Pierluisi's office, ICP, and staff from the NPS San Juan National Historic Site. At this meeting, representatives from both Congressman Pierluisi's office and the municipality of San Juan expressed their support for Fort San Gerónimo being repaired and developed as a tourist site. The USACE, ICP, and SHPO representatives provided overviews of their current Fort San Gerónimo projects and involvement. Issues and threats facing Fort San Gerónimo, as well as opportunities and management options, were discussed during this meeting.

SUMMARY OF PUBLIC COMMENTS

A number of salient points concerning Fort San Gerónimo and related resources involved in this study became apparent from the public comments received.

1. Management of Fort San Gerónimo

The majority of the commenters expressed the sentiment that the Puerto Rican government should be managing this site but is not adequately doing so. They expressed that, although responsibility should lie within local government, this may not be realistic. Many respondents cited past mismanagement of the fort that has led to Fort San Gerónimo's deteriorated state, and that the Puerto Rican government does not have the resources to restore and maintain the sites as they should. In addition to these sentiments, the nonprofit Corporation for Conservation of the San Juan Bay Estuary also cited safety concerns at the fort as another reason for the National Park Service to take over management of the site.

A number of respondents were positive to the idea of the National Park Service managing Fort San Gerónimo. They expressed a level of trust in the ability of the National Park Service to manage the site based on the manner in which San Juan National Historic Site manages its fortifications and the relatively good condition of the park resources. Respondents remarked the contrast between the condition of structures at San Juan National Historic Site and Fort San Gerónimo.

Several respondents identified partnerships as one method to accomplish the preservation of Fort San Gerónimo.

2. Management of the Entire Fortification System

There was strong consensus that all of the sites associated with the fortification system of San Juan should be managed together as one unit or entity.

3. Resource Condition

There was very strong sentiment that the current condition of Fort San Gerónimo is unacceptable and that restoration is needed immediately before the resources are deteriorated beyond repair.

4. Access

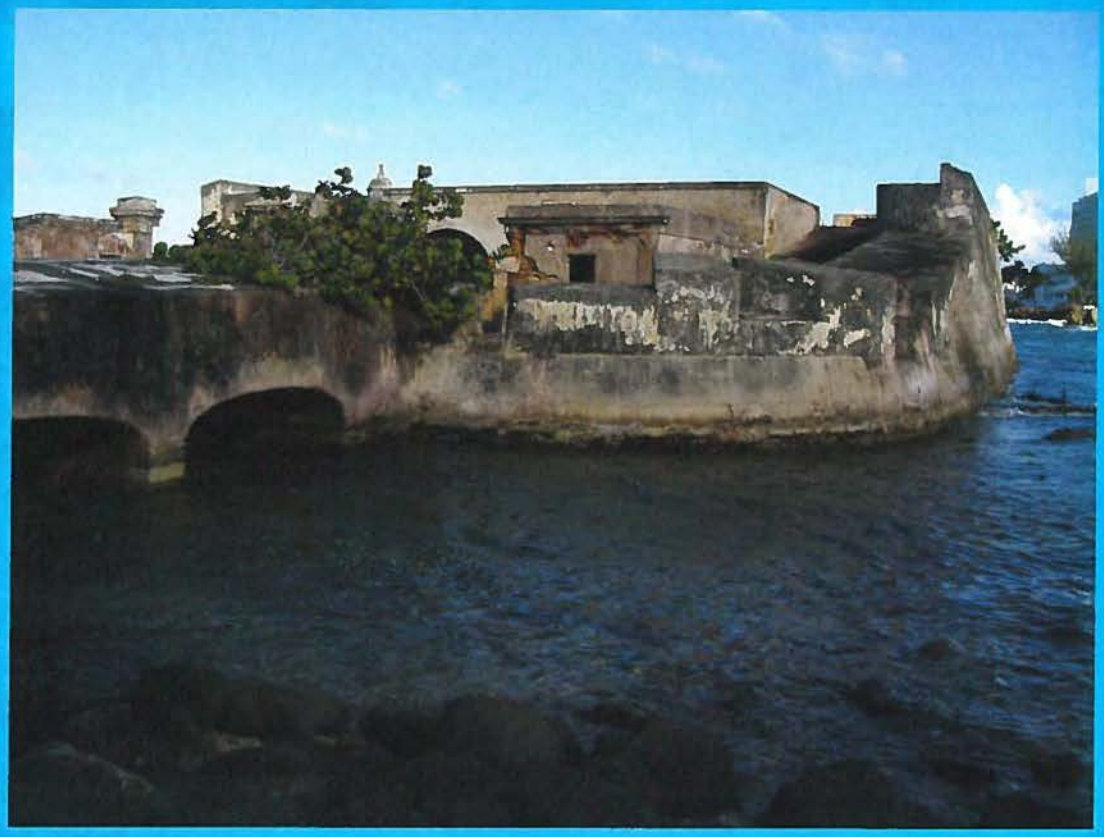
Some respondents expressed concern that access to the sites, particularly to Fort San Gerónimo, be maintained and opened to the public. Some respondents stated that the fort has cultural significance to Puerto Ricans.

CONSULTATION AND COORDINATION

Throughout the study, the National Park Service has consulted with the Puerto Rico State Historic Preservation Officer (PR SHPO) and the Commonwealth of Puerto Rico's Institute of Puerto Rican Culture (ICP). Most notably for the purposes of this study, in 2011, the Puerto Rico State Historic Preservation Officer sent the National Park Service a letter of support for this special resource study that included detailed information on the history and description of the study sites evaluated in this document. The information contained in this letter is referenced throughout this document (PR SHPO 2011). On June 21, 2012, the ICP sent the National Park Service a letter outlining its phased plan to rehabilitate Fort San Gerónimo. The letter described the ongoing and completed work on the fort up to that date. The study team consulted with the US Army Corps of Engineers on their work on Fort San Gerónimo's concrete apron in 2013 to mitigate damage to the foundation. The study team also consulted with various local agencies and landowners, including the Caribe Hilton, the property manager and owner adjacent to Fort San Gerónimo, concerning access to the fort and potential visitor opportunities.

Please see appendix B for copies of these letters.

Appendixes, References, And Study Team And Advisors



APPENDIX A: LEGISLATION

Executive Order

WHEREAS, by Executive Orders of June 30, 1903, certain lands in Porto Rico, including a tract of land known as Las Animas Bastion, were reserved for military purposes, and San Juan Bastion and land adjacent to San Juan Bastion were reserved for lighthouse purposes, in accordance with "An Act authorizing the President to reserve public lands and buildings in the Island of Porto Rico for public uses, and granting other public lands and buildings to the Government of Porto Rico, and for other purposes," approved July 1, 1902; and

WHEREAS, by Executive Orders of November 5 and November 23, 1903, the said Executive Order of June 30, 1903, was modified in such manner as to exclude from the military reservation all of the tract known as Las Animas Bastion, except a strip of land 16 feet wide along the parapet of the Bastion, and the portion of Las Animas Bastion so excluded was thereby returned to the people of Porto Rico; and

WHEREAS, Las Animas Bastion is required by the United States for lighthouse purposes; and

WHEREAS, by Joint Resolution "Providing for the transfer to the people of the United States of the land known as 'Baluarte de Las Animas' belonging to the people of Porto Rico and which was transferred to the latter by the Municipality of San Juan, and for other purposes," approved December 12, 1918, the Legislature of Porto Rico assigned and transferred to the people of the United States the said Las Animas Bastion or Baluarte de Las Animas, conditional upon the people of the United States assigning and transferring to the people of Porto Rico, land known as Baluarte de San Justo, also known as San Juan Bastion, and land adjacent to the San Juan Bastion; and

WHEREAS, the San Juan Bastion and land adjacent thereto are not needed for purposes of the United States; and

WHEREAS, by Section Seven of "An Act to provide a civil government for Porto Rico, and for other purposes," approved March 2, 1917, the President is authorized to convey to the people of Porto Rico such lands, buildings, or interests in lands or other property now owned by the United States and within the territorial limits of Porto Rico as in his opinion are no longer needed for purposes of the United States, and to accept by legislative grant from Porto Rico any lands, buildings, or other interests or property which may be needed for public purposes by the United States;

NOW, THEREFORE, the land known as San Juan Bastion, beginning at the southeast corner of the Bastion, thence North 12 degrees 45 minutes west, 36.5 feet; thence along curb line south 87 degrees 45 minutes west, 104.5 feet; thence south 5 degrees 15 minutes west, 39.5 feet; thence south 68 degrees east, 63.2 feet; thence north 61 degrees east, 63 feet, to point of beginning, containing 0.111 acre, and land adjacent to San Juan Bastion, beginning at the northeast corner of San Juan Bastion, thence north 78 degrees 30 minutes east, 86.4 feet; thence south 16 degrees east, 41.7 feet; thence south 39 degrees 45 minutes west, 67.6 feet; thence south 88 degrees west, 91.6 feet; thence north 18 feet; thence north 61 degrees east, 63 feet; thence north 12 degrees 45 minutes west, 32.5 feet, to point of beginning containing 0.168 acre, are hereby transferred and conveyed to the people of Porto Rico; and

The parcel of land known as Las Animas Bastion, situate in the northern part of the City of San Juan and beginning at Point No. 43, thence north 37 degrees 30 minutes east, 97.8 feet, more or less, to Point No. 44; thence north 68 degrees 51 minutes east, 68.5 feet, more or less, to Point No. 45; thence south 77 degrees 27 minutes east, 109.2 feet, more or less, to Point No. 46; thence south 24 degrees east, 81.0 feet, more or less, to Point No. 47; thence south 89 degrees west, 269.9 feet, more or less, to starting Point No. 43, containing 18412.47 square feet, equal to 1710.52 square meters, is hereby accepted by the United States and reserved for lighthouse purposes.

CALVIN COOLIDGE

THE WHITE HOUSE,
February 26, 1926.

[No. 4386]

21. San Juan

February 14, 1949, 14 F.R. 871

DESIGNATION OF SAN JUAN NATIONAL HISTORIC SITE, PUERTO RICO

Whereas, the Congress of the United States has declared it to be a national policy to preserve for the public use historic sites, buildings, and objects of national significance for the inspiration and benefit of the people of the United States;

Whereas, the ancient fortifications of San Juan, Puerto Rico, particularly the massive masonry works of El Morro and San Cristobal and their connecting walls, are outstanding monuments of the past, possessing exceptional historical and architectural interest for the Nation, and have been declared by the Advisory Board on National Parks, Historic Sites, Buildings, and Monuments to possess exceptional importance as commemorating the history of the United States; and

Whereas, with the approval of the President, a cooperative agreement has been made between the Secretary of the Interior and the Secretary of the Army providing for the preservation of the ancient fortifications of San Juan and their designation as a national historic site:

Now, therefore, I, J. A. Krug, Secretary of the Interior, under and by virtue of the authority conferred by section 2 of the act of August 21, 1935 (49 Stat. 666; 16 U.S.C. 462), do hereby designate the fortresses of El Morro and San Cristobal, Casa Blanca, and El Canuelo on Cabras Island, including the areas shown on the diagram, marked "Exhibit A", annexed hereto and made a part hereof, to be a national historic site, having the name "San Juan National Historic Site."

The administration, protection, and development of this national historic site shall be exercised in accordance with the provisions of the above-mentioned cooperative agreement and the act of August 21, 1935, supra.

Warning is expressly given to all unauthorized persons not to appropriate, injure, destroy, deface, or remove any feature of this historic site.

In witness whereof, I have hereunto set my hand and caused the official seal of the Department of the Interior to be affixed, at the City of Washington, this 14th day of February 1949.

[SEAL]

J.A. KRUG,
Secretary of the Interior.

Public Law 86-179

AN ACT

August 24, 1959
[S. 822]

To authorize the conveyance of certain property administered as a part of the San Juan National Historic Site to the municipality of San Juan, Puerto Rico, in exchange for its development by the municipality in a manner that will enhance the historic site, and for other purposes.

San Juan National Historic Site.
Conveyance.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That, in order to enhance the setting and to promote the public appreciation and enjoyment of the San Juan National Historic Site, the Secretary of the Interior is authorized, in his discretion, to convey to the municipality of San Juan, Puerto Rico, that certain tract of land described below: *Provided*, That in exchange therefor and in accordance with the requirements hereinafter set forth, the municipality shall develop and thereafter maintain such tract for public recreational purposes only, in accordance with such plans as may be approved by the Secretary which shall complement and enhance the national historic site.

Beginning at point 1 which is at the northwesterly corner of Tetuan and Santo Cristo Streets, thence south 85 degrees 48 minutes west, 56.6 feet to point 2; thence north 6 degrees 46 minutes west, 15.3 feet to point 3; thence north 80 degrees 35 minutes east, 4.0 feet to point 4; thence north 7 degrees 42 minutes west, 22.7 feet to point 5; thence south 81 degrees 07 minutes west, 57.5 feet to point 6; thence south 10 degrees 07 minutes east, 9.5 feet to point 7; thence south 78 degrees 26 minutes west, 149.2 feet to point 8; thence south 78 degrees 26 minutes west, 17.5 feet to a point located 5 feet east of the retaining wall for access road to Conception Bastion; thence south 11 degrees 11 minutes east, 30 feet to a point 0.75 feet north of the north edge of the scarf wall; thence northeasterly in a straight line 260.13

feet, more or less, to a point on the Capilla del Cristo Building 2.0 feet north of the scarf wall; thence along the wall of said building north 4 degrees 06 minutes east, 7.95 feet to a corner of the said Capilla del Cristo Building; thence still along said building north 85 degrees 54 minutes east, 13.6 feet to the westerly line of Santo Cristo Street, produced; thence along the line of said street north 11 degrees 97 minutes west, 18.1 feet to the point or place of beginning, already described, comprising an area of 0.36 acres, more or less, and being a portion of the 0.54-acre tract accepted by the Department of the Interior by transfer from the Secretary of the Army on February 15, 1956.

Conditions.

SEC. 2. The deed effecting the conveyance and exchange authorized by the first section of this Act shall include but need not be limited to the following conditions:

(a) Prohibit use of the premises as an outdoor dining facility or for any other comparable purpose that, as may be determined by the Secretary of the Interior, would interfere with the use of the area as a public park;

(b) Reserve permanently to the United States, for the purpose of maintaining and preserving the old city wall, a right or rights of access to the said wall through the conveyed property;

(c) Reserve permanently to the United States all right, title, and interest in and to the vaults and tunnels connected to the old city wall and extending in part under the property to be conveyed, together with all rights of ingress and egress thereto; and

(d) Provide that in the event the municipality of San Juan, Puerto Rico, does not proceed with the development of the aforesaid area as a public park and promenade for the benefit and enjoyment of the people in a manner and period of time satisfactory to the Secretary of the Interior, or if the municipality ceases to use the said area for the purposes for which it was conveyed, as determined by the Secretary of the Interior, all or any portion thereof, not so utilized, in its then existing condition, shall, upon a declaration to that effect by the Secretary, revert to the United States.

Approved August 24, 1959.

SEC. 7212. FORT SAN GERÓNIMO, PUERTO RICO.

(a) DEFINITIONS.—In this section:

(1) FORT SAN GERÓNIMO.—The term "Fort San Gerónimo" (also known as "Fortín de San Gerónimo del Boquerón") means the fort and grounds listed on the National Register of Historic Places and located near Old San Juan, Puerto Rico.

(2) RELATED RESOURCES.—The term "related resources" means other parts of the fortification system of old San Juan that are not included within the boundary of San Juan National Historic Site, such as sections of the City Wall or other fortifications.

(b) STUDY.—

(1) IN GENERAL.—The Secretary shall complete a special resource study of Fort San Gerónimo and other related resources, to determine—

(A) the suitability and feasibility of including Fort San Gerónimo and other related resources in the Commonwealth of Puerto Rico as part of San Juan National Historic Site; and

(B) the methods and means for the protection and interpretation of Fort San Gerónimo and other related resources by the National Park Service, other Federal, State, or local government entities or private or non-profit organizations.

(2) STUDY REQUIREMENTS.—The Secretary shall conduct the study in accordance with section 8(c) of Public Law 91–383 (16 U.S.C. 1a–5(c)).

(c) REPORT.—Not later than 3 years after the date on which funds are made available to carry out this section, the Secretary shall submit to the Committee on Natural Resources of the House of Representatives and the Committee on Energy and Natural Resources of the Senate a report containing—

(1) the results of the study; and

(2) any recommendations of the Secretary.

APPENDIX B: LETTERS FROM CONSULTING AGENCIES

United States Department of the Interior
NATIONAL PARK SERVICE
DENVER SERVICE CENTER
12795 W. ALAMEDA PARKWAY
P.O. BOX 25287
DENVER, COLORADO 80225-0287

IN REPLY REFER TO:

D18 (DSC-P)
FOSG

April 23, 2014

Lilliana Ramos Collado, Director of the Instituto de Cultura
Instituto de Cultura Puertorriqueña
Calle Norzagaray Final
Frente al Cuartel de Ballaja
Viejo San Juan, Puerto Rico 00902

Dear Dr. Ramos Collado,

In 2010, National Park Service (NPS) began work on a Special Resource Study for Fort San Geronimo and related resources, as directed by Congress as part of the Omnibus Public Lands Management Act of 2009. On June 21, 2012, your office responded to our request for information about your rehabilitation project of Fort San Geronimo. This letter is attached for your reference.

At this point in the study, we have gathered information on the study resources, including Fort San Geronimo, and are continuing to analyze them to determine whether they meet NPS criteria for potential inclusion in the NPS San Juan National Historic Site. As part of this effort, a full understanding of how Fort San Geronimo is currently managed by the Commonwealth of Puerto Rico is required. Therefore, the purpose of this letter is to request updated information concerning the status of the projects your agency has recently undertaken on Fort San Geronimo since your last update in June 2012.

If you would, please send this information electronically to me at carrie_miller@nps.gov, or by mail to the following address by May 23, 2014.

National Park Service
Attn: Carrie Miller
401 West Hillcrest Drive
Thousand Oaks, CA 91360

Thank you for your time and attention to this request. We greatly appreciate your assistance in our efforts to continue the special resource study. Although the special resource study is being conducted through the NPS Southeast Regional Office, please feel free to contact me if you have any questions or concerns, at (805) 370-2371.

Sincerely,

Carrie K. Miller

Carrie K. Miller, Project Manager
Denver Service Center, Planning Division
National Park Service

United States Department of the Interior
NATIONAL PARK SERVICE
DENVER SERVICE CENTER
12795 W. ALAMEDA PARKWAY
P.O. BOX 25287
DENVER, COLORADO 80225-0287

IN REPLY REFER TO

D18 (DSC-P)
FOSG

June 7, 2012

Mercedes Gómez Marrero, Director of the Instituto de Cultura
Instituto de Cultura Puertorriqueña
Calle Norzagaray Final
Frente al Cuartel de Ballaja
Viejo San Juan, Puerto Rico 00902

Dear Ms. Gómez Marrero,

Over the last year, the National Park Service (NPS) has continued work on a Special Resource Study for Fort San Geronimo and related sites, as directed by Congress as part of the Omnibus Public Lands Management Act of 2009. At this point in the study, we have gathered information on the study sites and are analyzing them to determine whether they meet NPS criteria for potential inclusion in the NPS San Juan National Historic Site. As part of this effort, a full understanding of how Fort San Geronimo is currently managed by the Commonwealth of Puerto Rico is required. Therefore, the purpose of this letter is to request updated information concerning the status of the projects your agency has recently undertaken on Fort San Geronimo. We would also like to receive a description of future plans for management of the fort and, if applicable, plans for public use. More specifically, we would like to receive information that answers the following questions:

1. What is the project status of the stabilization and/or rehabilitation work being conducted? What are the estimated dates of completion and what funds have been appropriated for this work? Please provide any supporting material, such as project scope, that would assist the study team in better understanding the work currently being done and work to be completed in the near future.

2. What type of public access is currently available to public visitors, if any? Concerning public access, what, if any, modifications are being made to ensure public access to Fort San Geronimo in the future? Are there any existing plans or known future plans that describe how Fort San Geronimo would be open for public enjoyment? If so, can you provide a copy of those plans?

3. What plans or strategies address the current management and preservation of Fort San Geronimo? What plans or strategies address the future long-term management and preservation of Fort San Geronimo? What planning, stabilization and/or rehabilitation work is planned for the future?

If you would, please send this information electronically to me at andrew_coburn@nps.gov, or by mail to the following address by June 21, 2012.

National Park Service
Attn: Andrew Coburn
Denver Service Center – Planning Division
12795 West Alameda Parkway
Lakewood, CO 80228

Thank you for your time and attention to this request. We greatly appreciate your assistance in our efforts to continue the special resource study. Although the special resource study is being conducted through the NPS Southeast Regional Office, please feel free to contact me if you have any questions or concerns, at (303) 969-2725.

Sincerely,

Andrew Coburn, Project Manager
Denver Service Center, Planning
National Park Service

ESTADO LIBRE ASOCIADO DE PUERTO RICO
INSTITUTO DE CULTURA PUERTORRIQUEÑA

PO BOX 9024184
SAN JUAN DE PUERTO RICO 00902-4184

June 21, 2012

Mr. Andrew Coburn
National Park Service
Denver Service Center – Planning Division
12795 West Alameda Parkway
Lakewood, CO 80228

Dear Mr. Coburn:

Greetings from the *Instituto de Cultura Puertorriqueña.* In response to the letter received regarding information on the progress of Fort San Geronimo's rehabilitation, the information compiled follows. There were three phases established by the ICP in order to organize and manage the entire rehabilitation project on the Fort. Of these phases, Phases I and III are being conducted by the Instituto de Cultura Puertorriqueña (ICP) and Phase II by the US Corps of Engineers (USACOE).

Project Scope.

Phase I: The ICP is currently working with the utilities' systems of the Fort. The project consists in providing water, sanitary and electrical systems from the Rosales street up to the security building inside the Fort. As part of the project, the ICP is re-plastering with lime, brick dusk and sand mix, and rehabilitating the security building to include two bathrooms and an office.

Phase II: The work being carried by the USACE consists on the construction of a sequence of physical barriers around the perimeter of the Fort. The first would consist of an underwater apron of concrete mortar (grout) that will provide long term suitable protection by forming a physical-chemical barrier between the Fort and the salt water. This concrete mortar apron would be adhered to the Fort and would physically protect it directly from chemical and biological corrosion. The apron itself would not provide enough structural protection to the external walls of the Fort against the impact of the waves and sediments carried by the water. In order to fully protect the walls and the apron of these effects, the construction of a rock barrier is recommended on portions of the wall. They will be located on the areas of high dynamic wave activity.

Phase III: The elements to be worked on at this phase are the restoration of interior and exterior pavement, restoration of windows and doors, rehabilitation of ceilings (interior and exterior), re-plaster

with lime, brick dusk and sand mix (of all interior walls), restoration of bridge pavement, artillery square, lime mortar plaster for firing steps and bridge interior with historic compliance materials.

Project Status.

Phases I and II: The progress through June 21, 2012 in completing the objectives towards the rehabilitation of Fort San Geronimo under the projects managed by the ICP is as follows:

Over the last year, a lot has happened at Fort San Geronimo. Phase I: infrastructure and utilities update, is scheduled for substantial completion during July 2012 and Phase II: interior and bridge rehabilitation, is under revision of bid documents in order to start bidding process by August 2012 and is scheduled for substantial completion during June 2013.

The funding for both of these phases is as follows: Phase I: funds assigned through local Legislature, and the project has a cost of $450,000; and Phase II: funds from a grant by Save America's Treasures awarded to the ICP, and the project has a cost of $625,000 (50% cost shared). The required non-Federal matching share ($325,000) has been provided by local legislature funds assigned to the ICP for historic conservation.

Phase III: The progress through June 21, 2012 in completing the objectives towards the stabilization of Fort San Geronimo under the project managed by the USCOE is as follows:

Currently, the USACE is working with the access around the Fort to prepare the area for the construction of the concrete mortar apron. At the same time they are monitoring the structural system and cracks of the Fort. This project is scheduled for substantial completion on November 2012.

The funding for this phase is as follows: funds assigned to the USCOE through Section 103, and the project has a cost of $2,400,000 (50% cost shared). The required non-Federal matching share ($1,200,000) has been provided by local legislature funds assigned to the ICP for historic conservation.

Public access.

As of now, there is no public access to the fort due to the work that is under way. Once the rehabilitation project is completed, the ICP will ensure this access. During the construction of Paseo Caribe, an MOU was signed by the developer of Paseo Caribe, Caribe Hilton Hotel and the ICP in order to stipulate the ownership of the "paseo", which gives access to the Fort, emphasizing the importance to maintain, at all times, public access to the Fort. Our legal department is working with the legal documentation in order to formalize the MOU. In addition, the ICP has to incorporate in this new legal document the easement agreement as stipulated by the Save America's Treasures Grant; likewise with the USACE contract.

Management and Preservation Plans.

Since Phase III of the rehabilitation project is still pending commencement, we decided to start working on both of these plans at the beginning of our next fiscal year. As management is concerned, the

3

Museums and Parks Program of the ICP is responsible for managing the Fort and its grounds. They have already started working on the compilation of the historical documentation and design of the museography that will be displayed both in the interior and exterior of the fortification. The ICP will establish an information center and military museum that interprets the importance of this Fort to Puerto Rican history.

The ICP is developing a long term maintenance plan for all its structures. Fort San Geronimo is included in this plan. In terms of the preservation and maintenance plans, we have communicated our interest to include the NPS at this stage due to their expertise and resources.

No other stabilization or rehabilitation work is planned for the future due to lack of funding. The work left to be done is highly technical and meticulous; it involves the restoration of the exterior walls with sandstone repair mortar and void injection mortar, and lime and brick dust plastering within the sandstone blocks.

We could formalize an agreed upon cooperative association with the NPS as collaborator towards maintenance assessment and execution focused on the continuous preservation and conservation of the Fort, which can include the work left to be done.

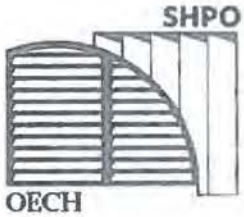
Cordially,

Mercedes Gómez Marrero
Executive Director

INSTITUTO DE CULTURA PUERTORRIQUEÑA

OFICINA ESTATAL DE
CONSERVACIÓN HISTÓRICA
OFICINA DEL GOBERNADOR

STATE HISTORIC
PRESERVATION OFFICE



March 29, 2011

Mr. Ben West, Chief
Planning and Compliance Division
National Park Service
Southeast Regional Office
Atlanta Federal Center
1924 Building
100 Alabama St., SW.
Atlanta, Georgia 30303

SHPO: 12-01-10-04 SPECIAL RESOURCE STUDY ON THE FORT SAN GERONIMO SITE AND RELATED RESOURCES, SAN JUAN, PUERTO RICO

Dear Mr. West:

Our Office has received and reviewed the above referenced project in accordance with Section 106 of the *National Historic Preservation Act of 1966,* as amended and 36 CFR Part 800: *Protection of Historic Properties* from the Advisory Council on Historic Preservation. The Puerto Rico State Historic Preservation Officer (PRSHPO) is to advise and assist federal agencies and other responsible entities when identifying historic properties, assessing effects upon them, and considering alternatives to avoid or reduce the project's effects.

Since August 26, 2010, PRSHPO has assisted National Park Service in the information gathering phase of this special project. In addition to providing copies of the National Register nominations, our Office has provided copies of plans, drawings, documents and graphic recreations pertaining to properties mentioned in the study. Our goal is to provide as much assistance as possible to National Park Service for the evaluation of the historic significance of these properties.

The Fort San Gerónimo Special Resource Study encompasses sixteen resources that are associated with the masonry and brick fortifications built by the Spanish Crown in the San Juan Islet from the 16th to 19th century. These resources, as well as the buildings, structures and sites of the San Juan National Historic Site, are linked to the defense of the city of San Juan. All these resources, except the Powder Magazine at Miraflores, are located within the San Juan Islet. These exterior defensive works built for the city of San Juan during the Spanish Regime are unique in the United States. The San Juan Historic Zone was listed on October 10, 1972 in the National Register of Historic Places. This historic district, listed at national level of significance, encompassed civilian, institutional and military properties on the western end of the San Juan Islet that are associated with the development of the city of

WWW.OECH.GOBIERNO.PR

P.O. Box 9023935
San Juan, PR 00902-3935

Teléfono/Phone | 787.721-3737
Fax | 787.721-3773

OFICINA ESTATAL DE CONSERVACIÓN HISTÓRICA OFICINA DEL GOBERNADOR
STATE HISTORIC PRESERVATION OFFICE

SHPO: 12-01-10-04 SPECIAL RESOURCE STUDY ON THE FORT SAN GERONIMO SITE AND RELATED RESOURCES, SAN JUAN, PUERTO RICO

San Juan from 1519 to 1898. Below, we briefly describe these resources and past efforts to evaluate and nominate them.

City Wall of San Juan

The Santa Catalina Bastion, Concepción Bastion and San Justo Bastion (that together with the San Justo Wall) formed part of the oldest defensive wall; built between 1634 and 1656, enclosing the city of San Juan. These fortifications were modified by the Spanish Corps of Engineers between 1766 and 1830, strengthening the city of San Juan's defenses. The 2003 report "Historic Fortification Wall of Old San Juan" for the Santa Catalina Bastion, Concepción Bastion, San Justo Wall, and San Justo Bastion states:

> Santa Catalina Bastion
>
> The Santa Catalina Bastion presents one of the most complex histories of construction phases and subsequent transformations. The oldest construction on this site is the *Real Fortaleza de Santa Catalina* (Royal Fortress of Saint Catherine), better known as *La Fortaleza*. This earliest fortification of San Juan was constructed between 1532 and 1540 to guard over the entrance to San Juan Bay. Similar to medieval and early Renaissance European fortifications, the original construction consisted of a square courtyard plan with thick, crenellated stone and tabby walls and two circular turrets facing the bay. An engraving, showing a general view of San Juan from the bay, clearly depicts the fortification as it appeared circa 1625, during the Dutch siege on San Juan. A barrier wall, constructed from the angle formed by south turret and the western curtain of the old fort, followed the natural slope down to the bayshore. The city walls had been built at the time of this engraving.
>
> The first construction phase of the city walls incorporated *La Fortaleza* as part of the primitive enceinte of the city. Field observations and historical period plans suggest that prior to the formation of the existing Santa Catalina Bastion, a series of wall segments led from the San Juan curtain to the north side of the north turret of La Fortaleza, and continued southward from the southern turret toward the La Concepción Bastion. The 26' X 26', lower-east section of the Santa Catalina north flank corresponds to an original section of the primitive wall. An existing garden wall, which contains the height difference between the bastion's terreplein and the sunken gardens of the Governor's Palace, appears to coincide with the original trajectory of the city wall and aligns with a surviving remnant of the original wall, adjacent to the north tower. According to this theoretical reconstruction, the two circular towers of La Fortaleza served as early bastions in and of themselves, from

P.O. Box 9023935 Teléfono/Phone (787) [illegible]
San Juan, PR 00902-3935 Fax (787) 721-3737

OFICINA ESTATAL DE CONSERVACIÓN HISTÓRICA OFICINA DEL GOBERNADOR
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which stemmed continuations of the city walls. The small primitive version of the Santa Catalina Bastion was probably constructed during this first phase of the city walls, or between 1640 and 1678. It first appears in Venegas Osorio's 1678 plan of the city. The old barrier wall shown in 1625 engraving was apparently reused as the north flank of the small bastion which protected the castle's south tower. This primitive version of the Santa Catalina Bastion possessed an obtuse salient angle and two approximately 90 degree shoulder angles. The south flank of the primitive bastion connected at an obtuse angle with the Old Santa Catalina Curtain, which is currently buried behind the existing curtain wall.

Alejandro O'Reilly's 1765 map of [the San Felipe del] Morro and the southwest section of the city walls, and other maps prepared between 1750 and 1783, demonstrate that, at the time, the Santa Catalina Bastion had already been expanded northwards, as to protect the entire bay-front of La Fortaleza. This second generation bastion incorporated the primitive bastion as part of a new south and a new salient angle, located on the site of the existing salient angle. The new north face of the bastion extended a short distance beyond the north tower of La Fortaleza, where it met with the north shoulder angle and north flank of the bastion. The short north flank of the bastion connected with the old curtain wall which led toward the old section of the existing north flank, adjacent to the Ochoa fountain.

As result of O'Reilly's recommendations and Field Marshal Juan Francisco Mestre's construction plans, the bastion was significantly renovated in 1792, to a physiognomy similar to that which survives today. At this time, the short section of the wall that projected westward from the San Juan curtain was raised in height approximately 13 feet (including the parapet), and extended westward 34 feet, incorporating a canon-vault over the old Ochoa Fountain. This section of the wall became the north flank of the new Santa Catalina Bastion. The north face of the bastion was built out along its current lines. The south face was renovated up to its junction with the old barrier wall or north flank of the first-generation Santa Catalina Bastion. The south face of the bastion was subsequently raised and renovated, probably by Ignacio Mascaró circa 1808-1811, upon which the south face of the bastion received its curved south shoulder angle. As result of this last major improvement, the old Santa Catalina Bastion was almost entirely buried, leaving only the old south shoulder angle, isolated between the new curved angle and the Santa Catalina Curtain.

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La Concepción Bastion

The La Concepción Bastion presents architectural features and materials which respond to the three principal periods of construction and modifications. The bastion was built along the current alignment during the original phase of construction, between 1634-1637; but the similarity was only in plan, since all of the walls have undergone significant changes since then.

Similar to other contemporaneous sections of the city walls, the first walls at La Concepción were laid atop the hillside, and constructed out of nearly square white limestone blocks, bound together by a bright white setting mortar, and faced with a similar finish stucco. These walls conformed to the existing topography, therefore rising upwards at the west face and east flank, in order to accommodate the significant change in levels. Evidence of the existence of a higher parapet exists on west end of the San José curtain, where it meets with the east flank of La Concepción. A large, cylindrical sentry box, built upon a stone corbel and crowned by a domed roof, sat over the salient angle of the bastion.

The first main alteration entailed the cutting-back of the natural hillsides below the [17th] century walls, and facing them with a red-orange rough mortar, followed by a cream/grey finish stucco. Historic plans of the city and its fortification suggest that the slope below the west face was cut back and rendered at some point between 1640 and 1766. The slopes blow the south face and east flank were apparently cut back at some point between 1792 and 1835. The slopes were no longer present on the plan of the La Puntilla peninsula, prepared in 1835 by Ignacio Mascaró, in which the new La Princesa Jailhouse first appears, upon lands previously used by an artillery school.

Other major modifications took place on the walls and within the bastion, over the 150 year period spanning from the original construction to the late [18th] century. The ground level at the bastion lies below the ground level in the vicinity of the Fortaleza and the Concepción hospital and chapel. In the original bastion, the slope was resolved by virtue of a retaining wall, built within the bastion along an east-west axis, more or less on axis with the adjacent San José Curtain. An artillery ramp located toward the east end of the bastion provided access to it, through a gate which perforated the retaining wall. The terrace that was created above the bastion as result of the retaining wall became site for the new Concepción Chapel, ascribed to the Sister of Charity nuns. The simple masonry, wood and tile-roof structure grew over time and eventually occupied the entire terrace. The south terreplein of the

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bastion was eventually occupied by a new building for the Inmaculada Concepcion hospital, which administered by the church. This building consisted of a gabled wood and tile roof, built over most of the south terreplein of the bastion, using the parapet and the retaining walls as support for the roof structure. The bastion itself was thus limited to the terreplein above the western flank. This hospital appears on the bastion as late as 1792. The hospital still occupies part of the bastion, within a new building, reconstructed during the 1930's.

Preparation for the Spanish-American War also affected the La Concepción Bastion. At that time, in 1897, the Spanish Army removed the old XVII century sentry box and filled in the existing embrasures adjacent to it, in order to install a mounted battery for a 15 cm B.L.R. type machine gun. The new battery incorporated concrete stuccoes and brick soldier course aristae. Apart from subsequent repair patches throughout most of the bastion's wall surfaces, the bastion has conserved its late XIX century appearance up to today.

The San Justo Curtain

The morphology of the San Justo Curtain wall is rather straightforward, as it has evolved much in the same manner as the San José Curtain and Bastion. The upper scarp of the wall, made of cut limestone, was built upon the natural hillside and belongs to the first major period of construction, between 1634 and 1637. The original wall rose approximately four (4) feet above street level in the form of a covered way or parapet, with a curved profile. The lower part of the wall was made from the battered stone hillside, faced with red-brown rough-cast and finished with blue-grey, between 1792 and 1835. In contrast with the lower scarps of the San José Curtain and the La Concepción and San José Bastions, the cutting down of the hillsides under the San Justo Curtain was never fully completed, and a slope to the west and toward the wall remained, reaching its highest point at the joint between San Justo Curtain and the San José Bastion's East Flank. This gentle slope was paved during the late [20th] century in order to create the sculpture platform and ramp that currently abuts the curtain. The curtain's parapet conserved its original curved profile until the late [19th] century, and probably until circa 1920, when the cantilevered concrete sidewalks and rails were constructed. The various patching and repair campaigns of the [20th] century, observed throughout the previously described wall areas, are also present at this curtain wall. In addition, large patches of concrete, applied so as to imitate rubblework, are found near the eastern end of the curtain. The [barrel vault] concrete bomb shelter, carved and built into the

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eastern end of the curtain, was constructed during World War II, circa 1942, and subsequently sealed with concrete in the late 1960's.

San Justo Bastion:
The San Justo Bastion was constructed in its entirety during the XVII century fortification campaign, out of near-square limestone blocks, set in a white mortar and surfaced with a white plaster. As did other parts of the XVII century walls, it possessed parapets and merlons with curved profile. During the XVIII century renovations campaign, the parapets and merlons were replaced with higher, angular parapets and merlons, similar to those installed at the San José Bastion and other areas of the walls. The [17th] century sentry box was also selectively repaired with new stuccoes. The scarp walls of the bastion were completely surfaced with red-orange rough scratch, followed by a hard, gray, smooth and sheen stucco, up to just below the parapets, where a small segment of the original, [17th]century white stucco is still visible at the west flank. No further significant alterations had occurred at the San Justo Bastion, until the 1920's, when a concrete sidewalk and rail was installed atop of it, much in the manner as over the San Justo Curtain, except that here it did not cantilever over the bastion. For many years, dense foliage was allowed to proliferate on the bastion, until it was finally removed in preparation for the 1992 celebrations. A large fichus tree had become embedded into the bastion's walls and sentry box, threatening the sheer existence of the architectural feature. The removal of the tree and concrete railing and the consolidation of the cracks and voids were highly successful. The intervention included the surfacing of the flat tops with rough-textured materials visible today, and the installation of metal railing.

[We would like to clarify: In 1994, the Commonwealth carried out a rehabilitation project on the San Justo Bastion. The main goal of the project was to build a plaza in the area close to the bastion which was decorated with sculpture, fountain, metal railing and shrubbery. Later in 2010, the Municipality of San Juan converted the road behind the San Justo Curtain and San Justo Bastion into a pedestrian walkway. As part of this new walkway, the road was removed. During the excavation, evidence was found of a rail that ran the length of the road that was probably used by the Spanish Army to ferry equipment and ordinance.]

Parque Artillery Wall

This area was probably the site of the Hermitage of Santa Barbara construction started in 1529. This hermitage was closed between 1757 and 1775, because it was in a position vulnerable to enemy fire. The hermitage was also used during the 18th century as gun powder warehouse. In 1846, the structure in this area – identified as Ammunition

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Warehouse (*Almacen de Pertrechos*) – was converted for lodging of the Spanish Artillery Corps. This wall was built in 1856 to keep apart the former *Cuartel* de Santa Bárbara or barracks from the pavement built to provide access to the Market Place Building. By 1863 the barrack building was used provisionally by Spanish Artillery Corps for their *Maestranza de Artillery* or workshops where the cannon and their implements were repaired. This wall has been joined in the 20th century to a concrete wall.

Wall behind the José Julián Acosta School

This wall is likely associated with the Santiago Bastion built in the 16th century. The José Julián Acosta School was built in 1907, above the remnant of a wall. When the southern and eastern defensive were demolished in 1897, this remnant and another section to the west (where the so-called Doña Fela Parking is today) survived. Therefore, this is the only surviving resource associated to the city's southeastern wall. As in case of the Parque Artillery Wall, this brick and masonry wall has been joined to a concrete wall in the 20th century.

San Francisco de Paula Battery

This floating battery, known as the lower battery of Santiago, was constructed in 1783. It defended against invading forces entering the San Juan Bay by way of the San Antonio Channel. In 1795, the permanent battery was started with the construction of a dike built into the bay. When the battery was completed, two years later, the dike collapsed and the battery was surrounded on the southern, eastern and western sides by water. The cannon from this structure could support Spanish troops retreating from Puerta de Tierra and controlled the passage toward the marina and Puntilla area. The battery had six embrasures, a guard house and a covered way. At the beginning of the 19th century, the battery lost its defensive importance and by 1834 was closed. In 1895, two new buildings were constructed on this battery, one to serve as officers' pavilion and another as the military ovens. An officers' pavilion was built on the battery's embrasures, while the ovens were constructed on the western end (where the guard house had been located). In the latter part of the 19th century, the battery ended up inland as a result of the dredging and filling work conducted on the San Juan Bay and the southern coast of the San Juan Islet.

Between 1915 and 1946, the Department of the Interior used the buildings as repair shops, warehouses and laboratories. Later, this facility was transferred to private ownership and used as the Table and Chair Shop. The ruins of the battery were exposed in 1992, during the excavations related to the San Juan waterfront development project. As a rehabilitation measure, the building was redesigned and its northern wall was recessed to provide a space

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for the remnant of the southern wall. The buildings were remodeled in 2004, by the Western Bank, to be use as their San Juan branch. In 2010, the building was transferred to the Banco Popular de Puerto Rico and is being currently used as a banking facility.

Bajamar or Taxamar

Little is known about this structure that was built by the Spanish Corps of Engineers. In 1953, the Historic American Building Survey/Historic American Engineering Record documented the property as part of "Fortifications of San Juan, Outer Defenses, Puerta de Tierra, San Juan County, PR" (HABS-PR-53). The report concluded that this structure was a pier of the Third Defensive Line of San Juan. However, we did not find additional evidence of a Third Defensive Line. Some authors, like Dr. Adolfo de Hostos, identify the structures of the San Cristobal Outerworks as the Third Defensive Line. One thing should be kept in mind concerning the Bajamar, to the east of this construction the Spanish maintained a deep trench or *zanjón*. This *zanjón*, which was later filled up in the 20th century, served as the last barrier to an enemy advancing from the east before facing the outerworks of San Cristóbal and the city walls of San Juan. For this reason, we believe that this structure is an extension of the San Cristobal's outerworks. We believe that it probably served as protection against enemy debarkation in the area and as an observation post. From this structure, there is a clear line of sight to the Escambrón Battery, San Cristóbal and the San Felipe del Morro.

Second Defensive Line of San Juan

In this area the study identified the remnants of a sea battery on the northern coast (identified as 2 defense line wall remnants) and the triangular shaped battery (identified in the study as the Isabel II Battery). During the 18th century, the Spanish Engineers, when alerted of enemy incursions, would prepare compact earthen parapets and trenches that crossed the Islet from north to south. After the 1797 British Campaign, the Spanish Engineers began construction of permanent brick and masonry parapets and batteries in the same area. By 1801, there was a clear development of a permanent trenches system and artillery positions of the First and Second Defensive Line were well underway on the eastern coast of the Islet of San Juan. The Defensive Systems were completed within the first half of the 19th century.

The sea battery, located at top of precipice north of the Muñoz Rivera Avenue, provided firing position against ships approaching the coast. The triangular shaped two-embrasure battery, towards south Ponce de León Avenue (which followed the alignment of the old Spanish Royal Road), provided a good defensive position for any enemy attack advancing from the eastern shore of the islet. Both batteries were protected by dry moat facing east and were connected by masonry parapets for infantry and embrasures for cannon. In 1867

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the lands between the First and Second Defensive Line were transferred to the Spanish Treasury. However, in 1897, prior to the demolition of the southern and eastern segments of the city wall, the Spanish Crown returned the lands – except those sold to the Municipality of San Juan – to the Spanish military. The area between the First and Second Defensive Lines became the new defensive perimeter for the city of San Juan.

After the change in sovereignty, except for the two batteries, the parapets and artillery positions of the Second Defensive Line were demolished to make way for the Wireless Naval Station and the Muñoz Rivera Avenue. The battery and moat, south of the Ponce de León Avenue, were converted for use as a park by the Municipality of San Juan. In 1953, when HABS completed a photographic documentation and plans of the land battery (HABS-PR-51 Ravelin Second Line of Defense), the battery's moat remained uncovered and a fence was built above the retaining wall. One year later (1954), HABS photographed the remnants of the masonry wall immediately below the sea battery (HABS-PR-53 Fortifications of San Juan, Outer Defenses, Puerta de Tierra, San Juan County, PR). After 1953, the moat was filled and a sidewalk built around the battery. In 1967, the Municipality of San Juan placed a sculpture of Isabel La Católica (Elizabeth the Catholic), created by the Spanish artist Pablo Serrano, in the open interior area of the land battery. A newspaper article (El Mundo, 14 de octubre de 1967, page 21) identified this land battery as San Agustin Fort in Puerta de Tierra.

Currently, the sea battery is at an advanced state of deterioration and is covered almost in its entirety by shrubbery.

First Defensive Line of San Juan

In this area, the study identifies the Polvorín San Gerónimo, Escambrón Battery, San Ramón Battery, Sentry box of the 1st line of defense, Fort San Gerónimo, and Fort San Antonio embrasures. In 1997, the nomination of the Advanced Defense Line, prepared by the PRSHPO, was listed in the National Register of Historic Places. This discontinuous district included almost all of the Spanish fortifications of the First Advanced Line of San Juan. The district included Redoubt San Gerónimo (San Gerónimo Fort), San Gerónimo Powderhouse, Remnants of Bridgehead San Antonio and Battery Escambrón. The remnants of the San Ramón Battery (wall and guard post) formed part of the first defensive line serving as a defensive position and the junction for the parapets lines that connected to the Escambrón Battery, San Gerónimo Fort, San Antonio Fort and with the San Gerónimo Powder House.

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Polvorín de Miraflores

Of all of the resources listed above, this is the only one located outside the San Juan Islet. The Miraflores Powder House, built on the Miraflores Island in 1776, was used to provide gun powder, weapons and other supplies to the regular and militia troops stationed in the Río Piedras-Santurce areas for the defense of the San Antonio Bridge. On April 25, 1797, during the British siege of San Juan (April 17-May 2), British set up artillery positions on the Miraflores Island and captured the powder house. From April 26-28, 1797, there were rifle and artillery exchanges between the Spanish defenders and English infantry invaders. The building was retaken by the Spanish after the British debarked on May 2.

In July 14, 1898, the Powder Magazine was damaged by two explosions on the Miraflores Island's pier. The detonations were caused by the ignition of gun powder on a boat that was docked at the pier. These explosions destroyed the pier and boat, killed eighteen men and wounded three. The intensity of the blast was felt in the city of San Juan where buildings shook, clocks stopped and crystal shattered.

In 1902, the building and structures became part of the Miraflores Island Quarantine Station. In the 1930's, the Government filled in the mangroves surrounding the island and it was incorporated to the Miramar area. Later, in 1941, the building was adapted as a chapel for the Isla Grande Naval Station. At that time, the bell tower was added and the original roof was replaced with a curved concrete roof. When the Naval Station closed in 1971, the property was transferred to the Government of Puerto Rico. It was administered by the Institute of Puerto Rican Culture, which assigned the facilities to the San Juan Children's Choir and San Juan Ballet. In 2000, with construction of the Puerto Rico Convention Center District, many buildings of the former naval base were demolished. However, the old powder house and its guard house remain closed and abandoned. It is our opinion that the Polvorín de Miraflores is significant as part of the network of forts, batteries and powder houses that served for the defense of the Islet of San Juan and because of the events that occurred there during the 1797 British attack.

Documentation Efforts by PRSHPO

Early in the 1980s, the Puerto Rico State Historic Preservation Office nominated the Fortin de San Gerónimo del Boqueron (listed October 11, 1983) and Polvorín de Miraflores (listed March 9, 1984) to the National Register of Historic Places. Three years later (in 1987), the PRSHPO sponsored a subgrant to survey the cultural resources in the area of Puerta de Tierra (*San Juan Extramuros La Puntilla-Marina, Puerta de Tierra*). As a result of this survey, the Battery of the Second Defensive Line, Escambrón Battery and the Bajamar were

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documented. Also, preliminary nominations were prepared of the First and Second Advance.

Concerned with future development by public and private sector in the area, the PRSHPO undertook an in-house project in 1991 to focus on those remnants associated with the first and second defensive lines of the city of San Juan. This project's goal was to coordinate action between the agencies of the Government of Puerto Rico to develop a preservation plan for the remnants of the defensive lines. In 1992-1994, as part of this effort, the Puerto Rico Trust of National Parks successfully completed the restoration of the San Gerónimo Powder Magazine.

Later in 1995, the PRSHPO began a collaborative effort with Mr. Erick Pérez, a local artist, to assist his efforts to produce accurate and documented graphic recreations of ruined, lost or relatively unknown historic properties in San Juan. This effort focused primarily on the drawings which present historic recreation of the properties associated with the defense of San Juan. By August 14, 1997, the Advance Defense Line was listed in the National Register of Historic Places. In 1998, PRSHPO sponsored an analysis of 4,238 ceramic shards (16th and 17th century) taken from the San Justo Bastion during the restoration project. In 2003-2004, the Government of Puerto Rico undertook the restoration project for the Escambrón Battery. Included as part of the proposal for this project was Mr. Pérez' graphic recreation of the Escambrón Battery. The restoration project, that cost $874,527.00, was supervised by the Puerto Rico State Historic Preservation Office.

In 2004, the National Park Service sponsored an exhibition of the graphic recreations of historic sites in San Juan at San Juan National Historic Site. This exhibition introduced graphic recreations of the San Antonio Fort and the Escambrón Battery. Later in 2007, the PRSHPO sponsored a second exhibition that included the Miraflores Powder house and the Isabel II battery. In June 2, 2010, the PRSHPO and Mr. Erick Pérez presented the Project – Advanced Defense Line of San Juan at the ICOFORT activity in San Cristóbal Fort. This presentation provided new illustrations of the general view of the First Defense Line and recreations of the San Ramón Battery and San Gerónimo Fort (as it was connected to the Advanced Lines).

The cluster of defensive artifacts (forts, batteries, powder magazines, observation post, parapets and trenches) were developed by the Spanish military to protect San Juan. The Puerta de Tierra area and Miraflores Island became the logical expansion of the defensive network of the city. They formed a discontinuous district inherently linked to the defense of the city of San Juan from 1519 to 1898. This district meets those conditions required by the

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Mr. Ben West
March 29, 2011
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National Register of Historic Places for a discontinuous district (National Register Bulletin "How to Apply the National Register Criteria for Evaluation"). These are:

- Elements are spatially discrete;
- Space between the elements is not related to the significance of the district; and
- Visual continuity is not a factor in the significance."

It should be noted that, in 1983, La Fortaleza and San Juan National Historic Site where inscribed as an UNESCO World Heritage Site under Criterion (vi) because they "outstandingly illustrate the adaptation to the Caribbean context of European developments in military architecture from the 16th to the 20th centuries. They represent the continuity of more than four centuries of architectural, engineering, military, and political history." (http://whc.unesco.org/en/list/266). For this reason, we believe that the properties in the Fort San Gerónimo Special Resource Study are of national and international significance.

At this early stage of the consultation, we cannot provide substantive comments on the possible effects of this resource study on these historic properties. It is our hope that the information provided here contributes to your documentation and evaluation of the properties that form part of the special resource study.

If you should have any questions please contact Berenice R. Sueiro, Architect, Deputy SHPO or José E. Marull, Senior Historic Property Specialist.

Sincerely,

Carlos A. Rubio Cancela, Architect
State Historic Preservation Officer

CARC/BRS/MB/JEM/jvr

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DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT CORPS OF ENGINEERS
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REPLY TO
ATTENTION OF

JUN 2 6 2012

Programs and Project Management Division
Water Resources Branch

National Park Service
Attn: Andrew Coburn
Denver Service Center- Planning Division
12795 West Alameda Parkway
Lakewood, Colorado 80228

Dear Mr. Coburn:

This is in response to your letter dated June 7, 2012, regarding the National Park Service's request for updated project information for Fort San Geronimo. The purpose of this letter is to provide you, based on the questions in the referenced document, an understanding of the various aspects of the project.

Construction for Fort San Geronimo began in November 2011 and coral relocation has been completed. The rehabilitation work currently underway is coral monitoring and revetment. Our upcoming work consists of a concrete apron which is currently pending. We are on schedule to meet our estimated date of completion, September 2012.

We would like to thank you for taking the opportunity for our staff to provide additional information for the project. If you have any further questions or need additional information, please feel free to contact me at 904-232-1018.

Sincerely,

James S. Suggs

James Suggs
Project Manager
Water Resources Branch

APPENDIX C: CONDITION ASSESSMENT SUMMARY

Comprehensive Condition Assessment: Summary Report
Fort San Geronimo and Related Resources
Task Order P11PD73803
Prepared by Applied Management Engineering, Inc.
For the National Park Service
2012

Introduction

Applied Management Engineering, Inc. (***AME***) assessed the 10 subject locations and assets scheduled for acquisition by NPS on the Fort San Geronimo greater area using the experience from participation in a previous task for NPS to study unique assets which involved San Juan National Historic Site (SAJU). The approach for documenting asset characteristics, determining asset boundaries, and projecting maintenance needs was based on the prior effort at SAJU, specifically the Castillo San Felipe del Morro (El Morro) and portions of the Old San Juan City Wall. ***AME*** worked in conjunction with SAJU Facility Manager, Edwin Colon, and his staff to properly document and utilize the park's costing of materials and labor for the specialized functions of repair and restoration of the fortified walls at SAJU. The ability to restore and maintain these types of structures built by Colonial Spain (or in the same style) represent certain challenges. The NPS subject matter experts at SAJU have developed processes and procedures to repair and restore these structures. AME assisted these subject matter experts in determining the best way to categorize the structures and their assets as well as report the maintenance needs of these assets and locations. The magnitude of the effort in restoring these structures requires the work to be phased over time and requires staff experienced with the materials and application procedures.

AME utilized personal computer tablets for field data collection along with software developed specifically for conducting inventory and condition assessments. This technology allowed for consistent on-site data collection. Drawings and site plans were annotated in the field to identify changes and validate existing measurements of all structures. Data was collected using distometers, GPS, and digital cameras. All assets and deficiencies were photographed to allow analysis during preparation of the deliverable.

The initial deliverables included:

- Asset Inspection Template –This file categorizes the assets/features for each location/site with attributes, a description, quantity, estimated installation date, remaining life and a GPS position, if recorded.
- Deficiency Template with RAC and extended cost – This excel file listed the deficiencies identified for each site as categorized by WBS Sub-component (Uniformat Level III), work type, and priority year, recommended year for accomplishment. The descriptions for the deficiencies included specific locations and the severity of the deficiency was categorized. A cost backup file was also provided stating the justification for the deficiency cost estimations.

Resource Name:	Battery Escambron
Location:	San Juan Beach at the northeast part of San Juan islet
GPS Coordinates	18.467038298, -66.086459683
Gross Dimensions	170' x 100'

Satellite Image of Site



Overall Description

The Battery Escambron is built on sandstone bedrock. Its walls vary in width from 10' to 18'. The exterior portions of the walls are comprised of sandstone brick with rubble filling the core. The exterior sandstone shells taper from 2'6" -3' at the bottom to 1'6" at the top of the walls and are built from cut sandstone blocks measuring 18" X 32" X 24". Theses blocks are laid in course or faced field stone laid in irregular bond. The cornering of the breast walls, steps, and walking surfaces are bricks. All of the surfaces were originally covered with stucco of multiple layers.

Physical Condition and Deficiencies

In 2004, a restoration of the battery was completed but with inappropriate materials, primarily Portland Cement. This restoration is deteriorating quickly after only 8 years. The exterior walls have developed a

fungus and the Portland cement covering is falling off of the structure in pieces throughout. The interior plaza and ramp has exposed aggregate which will continue to deteriorate and cause potential tripping hazards. The brick cornering atop the embrasures has deteriorated significantly. Graffiti is prevalent throughout the walls, most notably on the north and east exteriors.



Photo 1: East Exterior (showing black fungus and deterioration).



Photo 2: West Exterior



Photo 3: Deteriorating embrasure walls and brick cornering.



Photo 4: Interior plaza, walls, and firing steps.

Life Cycle and Costs

- Component Renewal (CR) – Actions that are not immediately required. Determining a timeline for the occurrence of these structural façade failures is difficult. These corrections were frequently projected over several years based on observation and discussion with subject matter experts at SAJU. The CR costs at the Battery are associated with removing inappropriate repairs, repair of the walls and surfaces along with the reapplication of the appropriate surface covering. The

replacement of the steel railing on the ramp to the battery is projected for year 10 due to the intense corrosion causing metal fatigue on the island. The total CR cost over twenty years is $1,371,549.

- Deferred Maintenance (DM) – Corrective Actions that were not accomplished in the past and are now required or are needed to accommodate public visits. The DM costs at the Battery consist of the cutting and point of bricks on the firing steps and on the brick edging on the top of the embrasures. The total DM cost is $4,634.
- Recurring Maintenance needs (RM) – Actions that recur based on a frequency such as removal of vegetative growth, painting, or staining wood components. There is no recurring maintenance needs projected at this time for the Battery.

Battery Escambron Total Deficiency Costs (2012-2031)										
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
CR Cost					$23,598	$98,101	$102,205	$81,438		$10,961
DM Cost	$3,833	$801								
RM Cost										
TOTAL COSTS	**$3,833**	**$801**	**$0**	**$0**	**$23,598**	**$98,101**	**$102,205**	**$81,438**	**$0**	**$10,961**
	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
CR Cost					$175,874	$175,874	$175,874	$175,874	$175,874	$175,874
DM Cost										
RM Cost										
TOTAL COSTS	**$0**	**$0**	**$0**	**$0**	**$175,874**	**$175,874**	**$175,874**	**$175,874**	**$175,874**	**$175,874**

Accessibility Assessment

Battery Escambron is located in Third Millennium Park at San Juan beach on the northeast part of San Juan islet. The resources are surrounded by the public infrastructure so a defined accessible route was not reviewed in our survey. Accessibility was determined by reviewing access within the resource and in general the public infrastructure that surrounds the resource. The Battery is accessible via public sidewalks and a public ramp with railing. The ramp leading into the battery is deteriorated with the aggregate exposed.

Resource Name:	City Wall Section
Location:	Wall south of Jose Julian Acosta School
GPS Coordinates	18.465242778, -66.094141919
Gross Dimensions	534' x 18'

Satellite Image of Site



Overall Description

This 534' long section is part of the Old San Juan City Wall located behind Jose Julian Acosta School above Paseo Carvadonga. The wall is constructed of sandstone brick with rubble filling the core. The walls taper from the bottom to the top. It is uncertain how the thick the walls are because the top of the walls have been paved with concrete or asphalt for parking. The top of the wall is bordered with a concrete railing. This railing is not true to the period.

Physical Condition and Deficiencies

This wall is primarily comprised of two sections, east and west. It appears that the east section has been covered in concrete at different times as multiple lines of different aged sections are visible. This probably resulted from the failure of previous applications of cement and concrete. There considerable vegetation and trees which are growing out of this section of wall. The concrete railing that is affixed at the top of the wall is significantly deteriorated and could present a fall hazard to anyone walking on the sidewalk below. The west section of the wall shows the original outline of the sandstone blocks. This

was has also been covered at different times with inappropriate repairs. The concrete railing at the top of this wall is deteriorated. A large tree with a substantial root system is growing out of the west section about halfway down the wall.



Photo 1: West section of wall



Photo 2: View from Southwest side of wall. Trees growing out of and near wall.



Photo 3: Deteriorated Concrete railing



Photo 4: East section of wall

Life Cycle and Costs

- Component Renewal (CR) – Actions that are not immediately required. Determining a timeline for the occurrence of these structural façade failures is difficult. These corrections were frequently projected over several years based on observation and discussion with subject matter experts at SAJU. The CR costs associated with the City Wall section behind Jose Julian Acosta School are primarily removing inappropriate repairs and repair of the walls and surfaces along with the reapplication of the appropriate surface covering. The total CR cost over twenty years is $405,431.

- Deferred Maintenance (DM) – Corrective Actions that were not accomplished in the past and are now required or are needed to accommodate public visits. The DM costs are primarily the initial removal of vegetation that is growing throughout the wall. The large tree growing out of the western section of the wall is a significant concern. The removal of the concrete railings at the top of the wall is necessary to remove a falling hazard for pedestrians on the sidewalk. The total DM cost over twenty years is $192,308.
- Recurring Maintenance needs (RM) – Actions that recur based on a frequency such as removal of vegetative growth, painting, or staining wood components. Vegetation removal on a recurring basis is needed yearly to prevent plant life intrusion on the walls. The total RM cost over twenty years is $69,686.

City Wall Section Total Deficiency Costs (2012-2031)										
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
CR Cost					$77,972	$77,972	$77,972	$77,972	$77,972	$15,571
DM Cost	$171,806		$20,502							
RM Cost				$4,099	$4,099	$4,099	$4,099	$4,099	$4,099	$4,099
TOTAL COSTS	**$171,806**	**$0**	**$20,502**	**$4,099**	**$82,071**	**$82,071**	**$82,071**	**$82,071**	**$82,071**	**$19,671**
	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
CR Cost										
DM Cost										
RM Cost	$4,099	$4,099	$4,099	$4,099	$4,099	$4,099	$4,099	$4,099	$4,099	$4,099
TOTAL COSTS	**$4,099**	**$4,099**	**$4,099**	**$4,099**	**$4,099**	**$4,099**	**$4,099**	**$4,099**	**$4,099**	**$4,099**

Accessibility Assessment

The resources are surrounded by the public infrastructure so a defined accessible route was not reviewed in our survey. Accessibility was determined by reviewing access within the resource and in general the public infrastructure that surrounds the resource. This section of the City Wall is accessible via public sidewalks which are not currently deficient.

Resource Name:	San Agustin Fort
Location:	At Calle San Agustin and Calle Fernandez in Puerta de Tierra of the San Juan islet
GPS Coordinates	18.464544169, -66.094292115
Gross Dimensions	78' x 89'

Satellite Image of Site



Overall Description

San Agustin Fort was part of the second line of defense that crossed the island of San Juan just west of Munoz Rivera Park. The only remains of the second line of defense are the wall remnants at its west end and the triangular battery. The walls of the battery are constructed from masonry shells with a rubble core. The shells are either tapered or stepped towards the top with the faces inclined. Transverse walls at the embrasures provide support to the masonry shell walls. All of the masonry is field stone and local sandstone with brick cornering and steps.

Physical Condition and Deficiencies

The remains of the battery are essentially ruins. All of the finishes have completely deteriorated and the walls are eroded. The center cores of the walls have settled. There is no evidence of the original pavement within the battery. The firing steps on the southern interior are completely gone. The walls are covered in vegetation, especially on the southern exterior. Significant deterioration of the wall foundation is noticeable on the south walls in several areas where the vegetation has not completely overtaken the

wall. Trash has been deposited at the site. Flood lights were mounted on the top of the north wall sometime in the past. These fixtures are completely deteriorated and should be removed.



Photo 1: Front view of battery, east exterior, remove vegetation, repair walls and resurface.



Photo 2: South exterior is completely overgrown, remove vegetation, repair walls and resurface.



Photo 3: Interior walls in ruinous condition. Trash deposited and overgrown vegetation.



Photo 4: South Exterior wall overgrown and foundation has completely fallen away in places.



Photo 5: Remove deteriorated floodlights off of north wall.



Photo 6: Repair foundation of southeast wall.

Life Cycle and Costs

- Component Renewal (CR) – Actions that are not immediately required. Determining a timeline for the occurrence of these structural façade failures is difficult. These corrections were frequently projected over several years based on observation and discussion with subject matter experts at SAJU. The CR costs associated with San Agustin Fort are primarily removing inappropriate repairs and repair of the walls and surfaces along with the reapplication of the appropriate surface covering. The total CR cost over twenty years is $274,741.
- Deferred Maintenance (DM) – Corrective Actions that were not accomplished in the past and are now required or are needed to accommodate public visits. The DM costs are primarily the initial removal of vegetation that is growing throughout the wall. Repair of the north firing steps, the replacement of the south firing steps, and the initial repair of some of the worse areas of the fortification walls should be addressed within the first three years. Removal of the deteriorated flood lights on the north wall is also considered DM since their deterioration could further impact the structure. The total DM cost over twenty years is $166,873.
- Recurring Maintenance needs (RM) – Actions that recur based on a frequency such as removal of vegetative growth, painting, or staining wood components. Vegetation removal on a recurring basis is needed yearly to prevent plant life intrusion on the walls. The total RM cost over twenty years is $93,738.

San Agustin Fort Total Deficiency Costs (2012-2031)										
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
CR Cost				$63,839	$83,223	$63,839	$63,839			
DM Cost	$67,458	$2,717	$96,698							
RM Cost			$2,717	$47,552	$2,717	$2,717	$2,717	$2,717	$2,717	$2,717
TOTAL COSTS	**$67,458**	**$2,717**	**$99,415**	**$111,392**	**$85,940**	**$66,556**	**$66,556**	**$2,717**	**$2,717**	**$2,717**
	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
CR Cost										
DM Cost										
RM Cost	$2,717	$2,717	$2,717	$2,717	$2,717	$2,717	$2,717	$2,717	$2,717	$2,717
TOTAL COSTS	**$2,717**	**$2,717**	**$2,717**	**$2,717**	**$2,717**	**$2,717**	**$2,717**	**$2,717**	**$2,717**	**$2,717**

Accessibility Assessment

The resource should not be accessed by the public to maintain any remaining identity of its original construction and intent as well as to minimize additional deterioration. Temporary fencing around the block would help deter vandals and eliminate trash. Construction of a kiosk or similar structure would provide the public information on the resource and a visual perspective of the site is an alternative to providing direct access to the site itself. If this alternative is pursued, accessibility by the public to the information point (kiosk) should be included in the design. Once repairs are made to the structure, an accessible path in and around the Fort could be constructed if so desired.

Resource Name:	San Justo Bastion
Location:	Adjacent to Paseo de la Princesa
GPS Coordinates	18.463797838, -66.115740359
Gross Dimensions	384' x 21'

Satellite Image of Site



Overall Description

San Justo Bastion is a six section part of the Old San Juan City Wall. It is located adjacent to Paseo de la Princesa. The wall is constructed of sandstone brick with rubble filling the core. The walls taper from the bottom to the top. It is uncertain how the thick the walls are because the top of the walls have been paved in either concrete or asphalt for sidewalks and the adjoining streets.

Physical Condition and Deficiencies

The physical condition overall of San Justo Bastion is good compared to other sites. Since the bastion is adjacent to a very high profile street, it has been adequately maintained. The sentry post has some notable significant cracking along its face. While this sentry post does a have a gate to prevent entrance, it does accumulate trash and debris from pedestrian traffic. The gate also shows noticeable rusting and deterioration. Throughout the walls there are signs of previous repairs with inappropriate materials.

Vegetation removal is also needed as the propagation of plant growth can cause significant deterioration. The western most section of the bastion has been covered in concrete. The appearance of moisture and fungal growth (black spots) indicate that there is deterioration behind this newer facade.



Photo 1: Sentry post with significant lateral cracking across face.



Photo 2: Central section needing vegetation and inappropriate repair removal.



Photo 3: East Section, small percentage of inappropriate repair and vegetative removal.



Photo 4: West section that has been covered with a mixture of lime and concrete. Dark spots indicate trapped moisture and fungal growth from underneath.

Life Cycle and Costs

- Component Renewal (CR) – Actions that are not immediately required. Determining a timeline for the occurrence of these structural façade failures is difficult. These corrections were frequently projected over several years based on observation and discussion with subject matter experts at SAJU. The CR costs associated with San Justo Bastion are primarily removing inappropriate repairs and repair of the walls and surfaces along with the reapplication of the appropriate surface covering. The total CR cost over twenty years is $261,354.

- Deferred Maintenance (DM) – Corrective Actions that were not accomplished in the past and are now required or are needed to accommodate public visits. The DM costs consist of the initial removal of vegetation that is growing throughout the wall, repairing cracks throughout the walls, removing inappropriate repairs, power washing the concrete western wall, and painting the metal gate on the sentry post. The total DM cost over twenty years is $80,589.
- Recurring Maintenance needs (RM) – Actions that recur based on a frequency such as removal of vegetative growth, painting, or staining wood components. Vegetation removal on a recurring basis is needed yearly to prevent plant life intrusion on the walls. Power washing the concrete covered wall and painting the metal gate on the sentry post are items that need to be addressed on a recurring basis to be maintained properly. The total RM cost over twenty years is $152,261.

San Justo Bastion Total Deficiency Costs (2012-2031)										
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
CR Cost				$6,012	$9,949	$15,584	$15,584	$36,457	$40,734	$40,734
DM Cost	$71,309	$579	$8,700							
RM Cost		$4,794	$4,794	$4,794	$4,794	$65,977	$4,794	$4,794	$4,794	$4,794
TOTAL COSTS	**$71,309**	**$5,373**	**$13,494**	**$10,805**	**$14,743**	**$81,561**	**$20,378**	**$41,251**	**$45,528**	**$45,528**
	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
CR Cost	$25,150	$25,150	$26,364	$4,368	$4,368	$4,368	$3,266	$3,266		
DM Cost										
RM Cost	$65,977	$4,794	$4,794	$4,794	$4,794	$65,977	$4,794	$4,794	$4,794	$4,794
TOTAL COSTS	**$91,127**	**$29,944**	**$31,158**	**$9,161**	**$9,161**	**$70,344**	**$8,060**	**$8,060**	**$4,794**	**$4,794**

Accessibility Assessment

The resources are surrounded by the public infrastructure so a defined accessible route was not reviewed in our survey. Accessibility was determined by reviewing access within the resource and in general the public infrastructure that surrounds the resource. The Bastion is accessible via adjacent public sidewalks and small ramps on the sidewalks on the top of the walls.

Resource Name:	Santa Catalina Bastion
Location:	Adjacent to Paseo de la Princesa in the Compania de Turismo complex
GPS Coordinates	18.463960500, -66.117150820
Gross Dimensions	768' x 75'

Satellite Image of Site



Overall Description

Santa Catalina Bastion is five sections of the Old San Juan City Wall. It is located adjacent to Paseo de la Princesa in the Compania de Turismo complex. The wall is constructed of sandstone brick with rubble filling the core. The walls taper from the bottom to the top. It is uncertain how the thick the walls are because the top of the walls have been paved in either concrete or asphalt for sidewalks and the adjoining streets. Even though the bastion is adjacent to a very high profile street, it is located within the compound of the Compania de Turismo and is not viewable to the public from the lower approach.

Physical Condition and Deficiencies

The physical condition overall of Santa Catalina Bastion is not as well maintained compared to other sites. The sentry post has some exposed brick substrate along its roof edge. This sentry post was boarded up at the time of assessment but shows evidence of vandalism and vagrancy because of its location in a

small park. The wayside in the park also shows signs of vandalism. Significant signs of deterioration and inappropriate repairs are evident in the brick steps surrounding the sentry post. There is significant cracking, scaling, spalling, and deteriorated foundations throughout these sections of wall. There are also signs of previous repairs with inappropriate materials throughout these walls. Vegetation and biological growth are present throughout.



Photo 1: Significant vegetation and removal of inappropriate repairs needed.



Photo 2: Significant vegetation and removal of inappropriate repairs needed.



Photo 3: Inappropriate repairs which require removal.



Photo 4: Inappropriate repairs which require removal.

Life Cycle and Costs

- Component Renewal (CR) – Actions that are not immediately required. Determining a timeline for the occurrence of these structural façade failures is difficult. These corrections were frequently projected over several years based on observation and discussion with subject matter experts at SAJU. There are no deficiencies classified as CR.

- Deferred Maintenance (DM) – Corrective Actions that were not accomplished in the past and are now required or are needed to accommodate public visits. The DM costs include repairing damage due to cracking, scaling, spalling and deteriorated foundation. Removing inappropriate repairs throughout the walls and surfaces along with the reapplication of the appropriate surface covering is also needed in association with these repairs. The total DM cost over twenty years is $9,681,797.
- Recurring Maintenance needs (RM) – Actions that recur based on a frequency such as removal of vegetative growth, painting, or staining wood components. Vegetation removal on a recurring basis is needed yearly to prevent plant life intrusion on the walls. The total RM cost over twenty years is $3,856,876.

Santa Catalina/Las Palmas Bastion Total Deficiency Costs (2012-2031)										
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
CR Cost										
DM Cost	$9,681,797									
RM Cost	$192,844	$192,844	$192,844	$192,844	$192,844	$192,844	$192,844	$192,844	$192,844	$192,844
TOTAL COSTS	**$9,874,641**	**$192,844**	**$192,844**	**$192,844**	**$192,844**	**$192,844**	**$192,844**	**$192,844**	**$192,844**	**$192,844**
	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
CR Cost										
DM Cost										
RM Cost	192,844	192,844	192,844	192,844	192,844	192,844	192,844	192,844	192,844	192,844
TOTAL COSTS	**192,844**	**192,844**	**192,844**	**192,844**	**192,844**	**192,844**	**192,844**	**192,844**	**192,844**	**192,844**

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Accessibility Assessment

The resources are surrounded by the public infrastructure so a defined accessible route was not reviewed in our survey. Accessibility was determined by reviewing access within the resource and in general the public infrastructure that surrounds the resource. The only approach is from within the Compania de Turismo fenced complex. The Bastion is accessible from the top of the wall via public sidewalks next to it and small ramps on the sidewalks. A small park is located adjacent to the sentry post with an accessible ramp.

Resource Name:	La Concepcion Bastion
Location:	Adjacent to Paseo de la Princesa at the Convento de Siervas de Casa de Salud
GPS Coordinates	18.463870267, -66.118449163
Gross Dimensions	269' x 55'

Satellite Image of Site



Overall Description

La Concepcion Bastion is three sections of the Old San Juan City Wall. It is located adjacent to Paseo de la Princesa at the Convento de Siervas de Casa de Salud complex. The wall is constructed of sandstone brick with rubble filling the core. The walls taper from the bottom to the top. It is uncertain how the thick the walls are because much of the top of the walls have been paved in concrete or asphalt for sidewalks and driveway areas.

Physical Condition and Deficiencies

The physical condition overall of La Concepcion Bastion is fair compared to other sites. Since the bastion is adjacent to a very high profile street, it has been adequately maintained. There is some exposed brick substrate along the wall corners. Some significant cracking exists along the eastern section about one-third of the way up. There is significant cracking, scaling, spalling, and deteriorated foundations throughout these sections of wall. There are also signs of previous repairs with inappropriate materials throughout these walls. There is a significant vegetative and biological growth throughout this bastion.



Photo 1: Removal of vegetative growth, removal of inappropriate repairs, and reapplication of limestone plaster is necessary.



Photo 2: Removal of vegetative growth, removal of inappropriate repairs, and reapplication of limestone plaster is necessary.



Photo 3: Removal of vegetative growth and inappropriate repairs.

Life Cycle and Costs

- Component Renewal (CR) – Actions that are not immediately required. Determining a timeline for the occurrence of these structural façade failures is difficult. These corrections were frequently projected over several years based on observation and discussion with subject matter experts at SAJU. There are no deficiencies classified as CR.
- Deferred Maintenance (DM) – Corrective Actions that were not accomplished in the past and are now required or are needed to accommodate public visits. The DM costs include repairing damage due to cracking, scaling, spalling and deteriorated foundation. Removing inappropriate repairs throughout the walls and surfaces along with the reapplication of the appropriate surface

covering is also needed in association with these repairs. The total DM cost over twenty years is $2,528,425.

- Recurring Maintenance needs (RM) – Actions that recur based on a frequency such as removal of vegetative growth, painting, or staining wood components. Vegetation removal on a recurring basis is needed yearly to prevent plant life intrusion on the walls. The total RM cost over twenty years is $1,689,346.

La Concepcion Bastion Total Deficiency Costs (2012-2031)										
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
CR Cost										
DM Cost	$2,528,425									
RM Cost	$84,467	$84,467	$84,467	$84,467	$84,467	$84,467	$84,467	$84,467	$84,467	$84,467
TOTAL COSTS	**$2,612,892**	**$84,467**	**$84,467**	**$84,467**	**$84,467**	**$84,467**	**$84,467**	**$84,467**	**$84,467**	**$84,467**
	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
CR Cost										
DM Cost										
RM Cost	$84,467	$84,467	$84,467	$84,467	$84,467	$84,467	$84,467	$84,467	$84,467	$84,467
TOTAL COSTS	**$84,467**	**$84,467**	**$84,467**	**$84,467**	**$84,467**	**$84,467**	**$84,467**	**$84,467**	**$84,467**	**$84,467**

Accessibility Assessment

The resources are surrounded by the public infrastructure so a defined accessible route was not reviewed in our survey. Accessibility was determined by reviewing access within the resource and in general the public infrastructure that surrounds the resource. The only approach is on the upper level from within the Convento de Siervas de Casa de Salud, a private entity. In several places the edge of the convent is within a few feet of the top of the walls. Construction of a kiosk or similar structure at the base of the wall near the Crecimiento (spiked sculptures) on the extension of Paseo de la Princes would provide the public information on the resource and a visual perspective of the site. If this alternative is pursued, accessibility by the public to the information point (kiosk) should be included in the design.

Resource Name:	Taxamar (Bajamar)
Location:	San Juan Beach below Munoz Rivera Avenue
GPS Coordinates	18.467725099, -66.101891364
Gross Dimensions	124' x 80'

Satellite Image of Site

Overall Description

The small fort at Taxamar was part of the third line of defense that stretched from the Abanino Fort, next to San Cristobal, to La Princesa Fort, east of San Cristobal. Taxamar was located at the very end of this line and is shaped similar to a backward "P". The walls are constructed of sandstone, fieldstone and brick with rubble as the core. The walls taper from the bottom to the top, but not as significantly as many of the other structures throughout San Juan. There would have been two levels as evidenced by the remnants of the staircase on the west side.

Physical Condition and Deficiencies

Only ruins exist from the small fort at Taxamar. The northeast section of the fort has split and fallen onto its outer exterior. The northwest rounded corner of the fort remains intact. The interior construction of the fort has completely been eroded by the ocean. Structural remnants survive of a staircase and support columns. Excavation of the sand on the interior of the fort could yield more insight into the construction of this structure. No deficiencies were written for this structure given its location and current state of ruin.



Photo 1: Northwest corner in ruinous condition.



Photo 2: Northeast corner has fallen on exterior side and split into pieces.



Photo 3: East exterior still standing, approximately 20' long section closest to street is lying on its side underneath the sand.



Photo 4: Possible interior or west exterior wall that has been displaced, now located south towards street.

Accessibility Assessment

The resource should not be accessed by the public to maintain any remaining identity of its original construction and intent. Construction of a kiosk or similar structure along the sidewalk of Munoz Rivera Avenue would provide the public information on the resource and a visual perspective of the site. If this alternative is pursued, accessibility by the public to the information point (kiosk) should be included in the design.

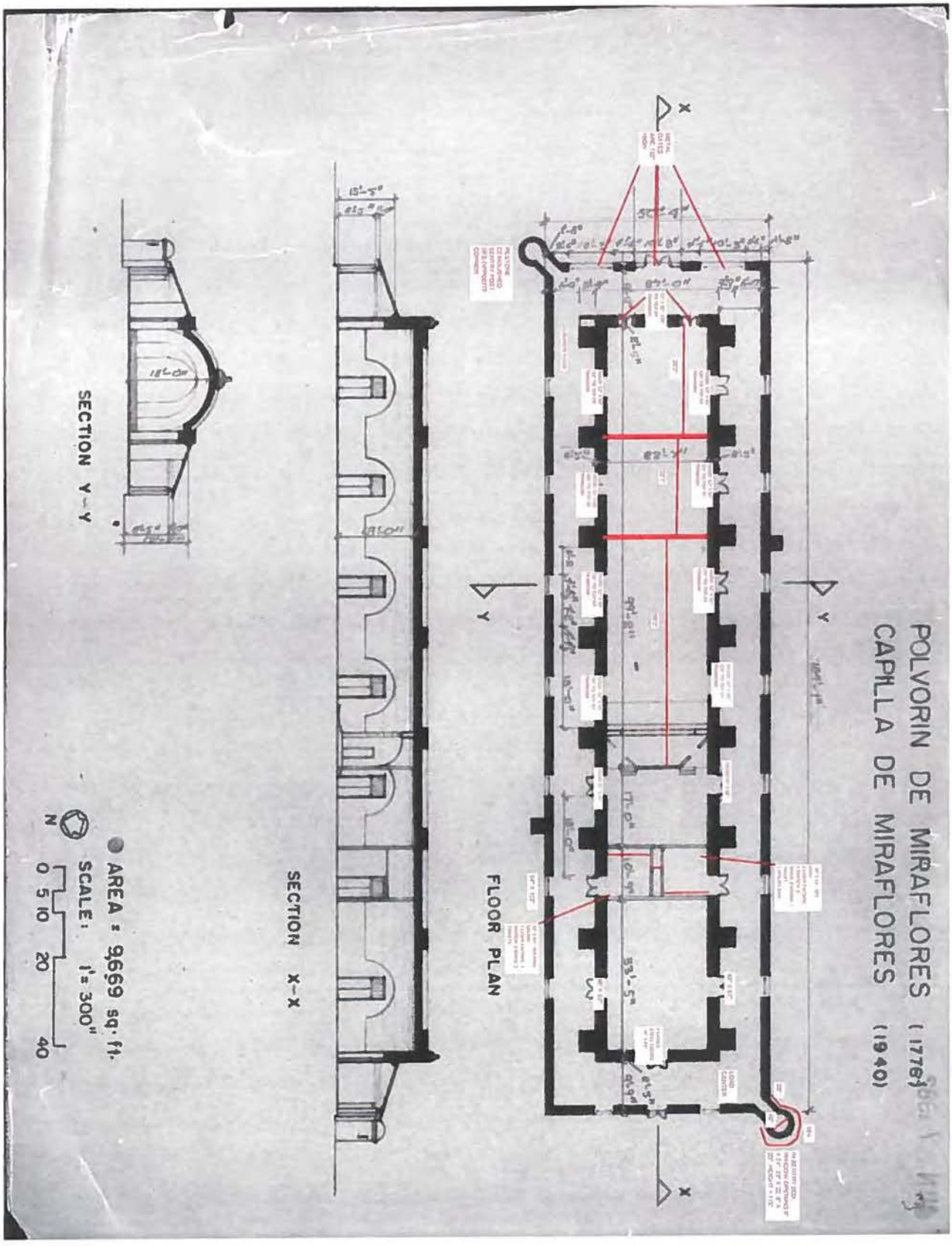
Resource Name:	Polvorin de Miraflores
Location:	Miramar, facing Cll Aramania
GPS Coordinates	18.449527, -66.09379
Gross Dimensions	189' x 50'

Satellite Image of Site



Overall Description

The Polvorin de Miraflores is constructed of brick and masonry in a rectangular plan. The vaulted ceiling is supported on both sides by sixteen 3' X 4'4" buttresses. It is surrounded by a 10' high brick and masonry wall. The main roof was extended and now incorporates a previous exterior walkway as an interior hallway surrounding the main structure. Sentry posts were constructed at opposite corners of the exterior wall, one at the northwest and the other at the southeast corner. The bell tower on the northwest corner of the roof indicates potential usage as a church, which is supported by the structure being referenced as Capilla de Miraflores 1940 on drawings received onsite (see next page). This tower has metal ladder rungs secured in the walls to access the bell cradle. The interior of the building is divided into seven rooms. There are two restrooms. One room appears to have functioned as an auditorium with a stage and there is a rear practice room behind the stage. The hallway flooring is patterned poured concrete. The interior rooms all have terrazzo flooring. The interior wall finishes are a combination of limestone plaster that has been painted, plaster, and spray-on acoustical foam. In the hallway, the ceiling


POLVORIN DE MIRAFLORES (1776)
CAPILLA DE MIRAFLORES (1940)
FLOOR PLAN
SECTION X-X
SECTION Y-Y
AREA = 9669 sq. ft.
SCALE: 1" = 300"
0 5 10 20 40
N

is a plaster finish while in the very rear room the vaulted ceiling has been covered in spray-on acoustical foam. The restrooms and backstage room have lowered painted plaster ceilings with access to the vaulted ceiling through an access panel in the women's restroom. The auditorium has a 2' X 4' acoustic tile ceiling. The front two rooms of the structure have painted plaster on the vaulted ceiling. The front room has remnants of a 2' X 4' acoustic tile ceiling that has not been fully removed. All of the rooms have electrical service and overhead lighting capabilities. The restrooms have modern fixtures.

Physical Condition and Deficiencies

In addition to its use as a powder magazine, Polvorin de Miraflores' known functions have been a chapel, office building, and private school. These different functions generated modifications throughout the structure. This structure is currently vacant and abandoned. There is an overgrowth of vegetation surrounding the structure and over the roof. There is significant cracking throughout the front exterior wall above the lower roof. Much of the wall surface was overcome with plant growth, which may have concealed additional deficient areas. Paint applied to the exterior walls is currently peeling in various locations. The northwest sentry post has been completely demolished. The lower clay tile roof, not original to the structure, has many cracked and missing tiles throughout. The main roof has been covered with a modified bituminous material and is currently leaking where the main roof meets the lower roof on the northeast side over the second room from the front of the building. This not an appropriate roofing material for this structure and a replacement similar to the sealed roof on Polvorin de San Geronimo is recommended. The bell tower bell is missing from its cradle. The exterior door gates are rusted and deteriorated.

Paint on the interior plaster throughout the walls and ceilings are peeling, causing the substrate to fall as well. The patterned concrete floor in the hallway and majority of the terrazzo floors are in very good condition and only require cleaning. The terrazzo floor in the rear practice room has been modified and restoration is recommended to match the rest of the flooring in the room. The application of spray-on acoustic foam in the rear practice room makes it unclear how the removal of this material from the walls will affect the substrate. Most the interior doors are wooden and need to be replaced or refinished. Both steel doors at the restrooms need to be replaced. The restroom fixtures are damaged and missing hardware throughout. Replacing them with modern, accessibility compliant fixtures is recommended, provided the plumbing system can support use. The lowered acoustic tile ceiling in the auditorium along with the remnants of the acoustic tile ceiling in the front office should be removed. Interior partitions and gates were constructed near the front of the building in the hallways. These should be removed to prevent further damage to the walls where they are attached. Many of the existing lighting fixtures and electrical devices show signs of deterioration and should be replaced for safety. An air conditioning unit was mounted above the rear door to the rear practice room. The covers have been removed and much of the

interior components appear deteriorated. Replacement with a more suitable unit in a less damaging location is recommended to reduce impact on the historic structure.



Photo 1: Demolished northwest sentry post with opening bricked up with CMU.



Photo 2: Gutted electrical service



Photo 3: Original roof covered with Modified Bituminous roofing that is currently leaking.



Photo 4: Deteriorated roof tiles



Photo 5: Repair cracking and refinish exterior walls.



Photo 6: Deteriorated plumbing fixtures.

Life Cycle and Costs

- Component Renewal (CR) – Actions that are not immediately required. Determining a timeline for the occurrence of these structural façade failures is difficult. These corrections were frequently projected over several years based on observation and discussion with subject matter experts at SAJU. The CR costs associated with the Polvorin are primarily removing inappropriate repairs and repair of the walls and surfaces along with the reapplication of the appropriate surface covering. Replacement of the modified bituminous roof with more appropriate roofing material is also needed. The total CR cost over twenty years is $1,784,230.
- Deferred Maintenance (DM) – Corrective Actions that were not accomplished in the past and are now required or are needed to accommodate public visits. The DM costs include replacement of the electrical system and devices, replacement of the clay roof tiles, replacement of the deteriorated exterior gates, reconstruction of the northwest sentry post, replacement of the interior wood doors, replacement of plumbing fixtures, replacement of the air conditioning system, and the removal of vegetation that has overrun the exterior and roof of the structure. The total DM cost over twenty years is $248,446.
- Recurring Maintenance needs (RM) – Actions that recur based on a frequency such as removal of vegetative growth, painting, or staining wood components. Vegetation removal on a recurring basis is needed yearly to prevent plant life intrusion on the walls. The total RM cost over twenty years is $93,805.

Polvorin de Miraflores Total Deficiency Costs (2012-2031)										
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
CR Cost				$203,471	$221,582	$203,471	$203,471	$203,471	$252,198	$252,667
DM Cost	$146,476	$101,971								
RM Cost		$5,376	$9,381	$9,381	$9,381	$9,381	$9,381	$9,381	$9,381	$9,381
TOTAL COSTS	**$146,476**	**$107,347**	**$9,381**	**$212,852**	**$230,962**	**$212,852**	**$212,852**	**$212,852**	**$261,579**	**$262,048**
	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
CR Cost	$48,727	$48,727	$48,727	$48,727	$48,989					
DM Cost										
RM Cost	$9,381	$9,381	$9,381	$9,381	$9,381	$9,381	$9,381	$9,381	$9,381	$9,381
TOTAL COSTS	**$58,107**	**$58,107**	**$58,107**	**$58,107**	**$58,369**	**$9,381**	**$9,381**	**$9,381**	**$9,381**	**$9,381**

Accessibility Assessment

Polvorin de Miraflores is not currently accessibility compliant. There are no existing ramps providing entrance to the building. However, one of the four exterior entrances to the building could easily be adapted for compliant access. While all of the exterior and interior doorways are compliant for width standards, some doors are missing and none have accessible hardware. Neither of the bathrooms has accessible fixtures, but replacement of the current deteriorated fixtures with complaint fixtures is recommended.

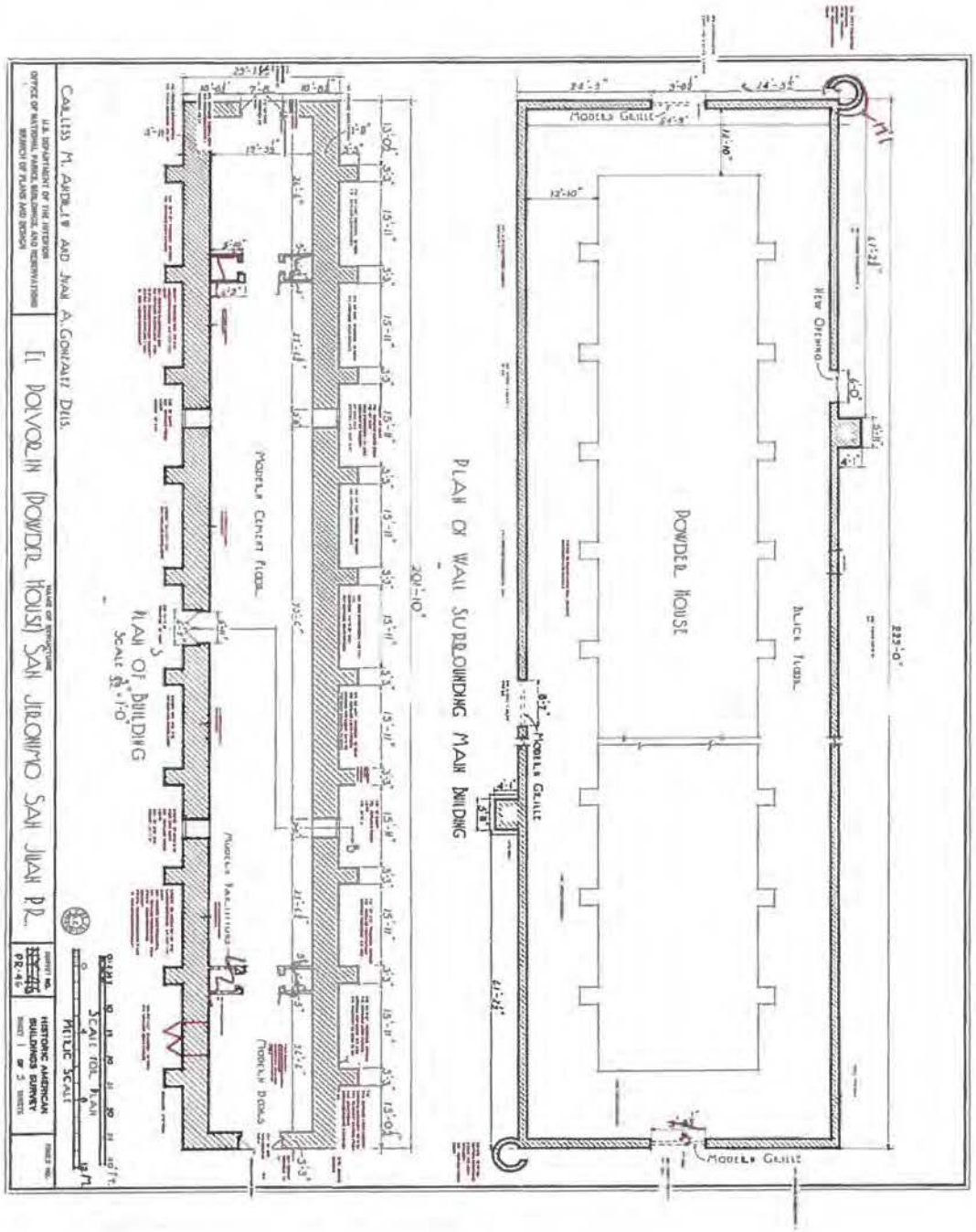
Resource Name:	Polvorin de San Geronimo
Location:	Parque Munoz Rivera
GPS Coordinates	18.464658009, -66.090216823
Gross Dimensions	229' x 29'

Satellite Image of Site



Overall Description

The Polvorin de San Geronimo is constructed of brick and masonry in a rectangular plan. The vaulted ceiling is supported on both sides by twenty 3'3" X 3'3" buttresses. It is surrounded by an 11 foot high brick and masonry wall. Two columns are integral to this exterior wall on both the north and south sides. These 41' high columns acted as lightning protection for the Polvorin based on its initial function of storing munitions. Two sentry posts are located at opposite corners of the exterior wall, one at the northwest and the other at the southeast corner. The interior of the building is one long room with multiple wall openings that have been sealed from the exterior using brick and plaster. Paver tiles have been installed to cover the floor. Multiple habitats carved into the exterior walls remain from when the structure functioned as a zoo (see drawing next page). An electrical panel on the west interior controls the lighting throughout the structure. Exterior ground flood lights line the walkway within the outer wall. The building was restored in the early 1990s.



Physical Condition and Deficiencies

The Polvorin and its surrounding walls are in generally good structural condition. However, during restorations inappropriate materials have been utilized. The entire structure is covered in a yellow paint.

The paint will begin to peel and pull plaster and significant amounts of substrate as it falls. This paint is also trapping unwanted moisture next to the wall promoting fungal growth throughout. Paint has also been applied to the interior room with the same eventual consequence. Multiple electrical boxes and fixtures are mounted in and around the structure. Some still function and others are deteriorating; several have exposed wiring. The exterior walkway around the perimeter has been repaired and patched with inappropriate materials. As a result, there is considerable moisture being trapped causing sections to crack and deteriorate and surface blackening. Several of the exterior ground lights have moisture under the lens and do not function. Abandoned plumbing fixtures are also mounted in several of the exterior habitats that were constructed in the walls when the structure functioned as a zoo. All of the gates are weathered and corroded. The period brick steps at the south and west entrances show significant wear and deterioration. The rock steps on the north exterior of the outer wall are uneven with shallow treads that could pose a trip hazard. These could be considered for replacement with more period appropriate steps. The installation of an electrical light panel on the interior of the west entrance created a hole in the exterior portion of that wall where an attempt to plaster over the area has failed to prevent further deterioration. This electrical panel could be relocated to the exterior of the historical structure since most functions at the Polvorin utilize the more modern building to the north.



Photo 1: Continued application of inappropriate repair material and paint further deteriorates walls and promotes fungal growth.



Photo 2: Previously installed electrical components are not utilized or properly covered to prevent deterioration.



Photo 3: Remove inappropriate paint and repairs to properly apply limestone plaster.



Photo 4: West exterior wall damaged from installation of light panel box on interior of west entrance.



Photo 5: Remove inappropriate paint and repairs to properly apply limestone plaster.



Photo 6: Refinish exterior doors and window frames.

Life Cycle and Costs

- Component Renewal (CR) – Actions that are not immediately required. Determining a timeline for the occurrence of these structural façade failures is difficult. These corrections were frequently projected over several years based on observation and discussion with subject matter experts at SAJU. The CR costs associated with the Polvorin are primarily removing inappropriate repairs and repair of the walls and surfaces along with the reapplication of the appropriate surface covering. The total CR cost over twenty years is $2,354,956.
- Deferred Maintenance (DM) – Corrective Actions that were not accomplished in the past and are now required or are needed to accommodate public visits. The DM costs include removal of abandoned electrical components throughout the structure, movement of electrical panel at west end of structure to a less intrusive location, refinishing of window frames, cut and repoint of the brick

steps at three entrances, and repair of the concrete steps at the east entrance. The total DM cost over twenty years is $36,412.

- Recurring Maintenance needs (RM) – Actions that recur based on a frequency such as removal of vegetative growth, painting, or staining wood components. In order to protect and maintain the condition of the wooden doors at the Polvorin, refinishing them on a cyclic basis is essential. The total RM cost, which concerns only the cost to protect and maintain the wooden doors over twenty years, is $959. (See Component Renewal, above, for estimated costs associated with wall repairs and maintenance.)

Polvorin de San Geronimo Total Deficiency Costs (2012-2031)										
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
CR Cost				$79,415	$18,239	$15,355	$95,830	$213,854	$270,727	$327,692
DM Cost	$7,939	$28,474								
RM Cost							$320			
TOTAL COSTS	**$7,939**	**$28,474**	**$0**	**$79,415**	**$18,239**	**$15,355**	**$96,149**	**$213,854**	**$270,727**	**$327,692**
	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
CR Cost	$79,415	$79,415	$79,415	$149,446	$223,857	$144,442	$144,442	$144,442	$144,442	$144,529
DM Cost										
RM Cost		$320					$320			
TOTAL COSTS	**$79,415**	**$79,734**	**$79,415**	**$149,446**	**$223,857**	**$144,442**	**$144,761**	**$144,442**	**$144,442**	**$144,529**

Accessibility Assessment

Parque Munoz Rivera, Polvorin de San Geronimo is accessible via the northwest outer wall entrance; the other entrances to the outer wall have steps. Both entrances to the interior are accessible as is the interior route since the structure has a single long interior room and no restrooms.

Resource Name:	Fort San Geronimo
Location:	Eastern section of the Puerta de Tierra area of San Juan, at the entrance into the Laguna del Condado
GPS Coordinates	18.462848002, -66.083954815
Gross Dimensions	170' x 100'

Overall Description

The Fort is built on sandstone bedrock. The lower and outer walls are constructed from the same sandstone cut in blocks approximately 16" X 18" X 32" and laid in courses. The heavier walls and shell walls contain a rubble filled core. The breast walls and interior walls are generally rubble masonry in a lime mortar that was set up in forms. Brick was used throughout for lining, coping vaults and arches, and on some interior walls. The roofs over the rooms and house located in the forecourt as well as the latrine are brick on asubo beams. These structures have barrel vaults covered with lime concrete. Several different sizes of brick were used throughout the construction. The original pavements and walking surfaces are a hard lime concrete mortar with burnt clay and brick fragment aggregate. All of the walls were originally covered with lime plaster. Evidence of the original lime plaster still exists in areas throughout the structure.

There are two main levels in the Fort. The upper level, otherwise known as the gun deck, is connected by two ramps to the forecourt. All ramps and vaults except Room 7 and Cistern 2 are on the forecourt level. These two rooms are located slightly lower than the forecourt. Cistern 2 is accessible from Room 7 but there is no visible access to Cistern 1.

Physical Condition and Deficiencies

The present condition of the Fort is poor. The foundation is a particular concern. Failures of the walls at the foundation are notable on the east wall, southeast and southwest corners. At all three locations wall material is significantly eroded and loose material moves in and around the voids that have been created by continued wave action. All of the exterior walls are eroded and require removal of inappropriate repairs in addition to repointing and refinishing. All of the embrasures have deteriorated to exposed substrate and the metal railing is badly deteriorated. The sentry box on the north side of the gun deck has significant cracking and spalling throughout. The sentry box located in the forecourt at the gate is also in very poor condition. Inappropriate repairs are evident throughout its exterior and the plaster covering it is deteriorated. There is also significant deterioration on the east and south edges of the roof where electrical devices had been installed. The west corner of the roof has a large hole through the brick. All of the pavements in the Fort are in poor condition. The gun deck shows significant vegetative growth

across the entire area. A walkway was installed at over the original pavement and is severely deteriorated.

The brick roof over Rooms 3 and 4 show significant weathering throughout the exterior surface with many bricks losing thickness with continued exposure and rain. The beams on the underside of this roof appear to be in good condition, however, some of the mortar and brick is resting on the beams. The roof of House I has many deteriorated bricks in addition to vegetative growth on the south side. The supporting beams for this roof are noticeably deflected and some of the mortar and brick on the underside of the roof have failed.

The exterior of both the forecourt house and the latrine are in very poor condition. Throughout much of their exteriors, the plaster covering is completely deteriorated. Inappropriate repairs with Portland cement and other mixtures have caused the brick and sandstone substrate to deteriorate rapidly. At one time the house on the forecourt was used as an office or gift shop. Two restrooms were added. The fixtures and associated hardware are completely deteriorated. The window and door frames have deteriorated beyond repair and require complete replacement.

As stated in the description, no visible access to Cistern 1 was located and it can be assumed that the drains leading to and from it have been blocked by rubble and debris since there is no visible leaking in or around its exterior. The drains at the gate from Cistern 2 appear to be blocked and the cistern is full of debris. The drains along both sides of the gate have deteriorated and require restoration along with the pavement. The gate and its framing leading from the bridge to the Fort itself have been removed leaving the interior of the columns exposed to weather.

The interior walls of every room have been painted. When the paint begins to peel, the plaster and substrate will fail as well. Many of the rooms have significant fungal growth caused by inappropriate repairs and paint. All of the rooms have wood window frames and doors that are in varying states of deterioration and should be replaced. Aged lighting and electrical components are positioned through both levels of the Fort with the main electrical panel located on the east interior wall of the forecourt house. Moisture damage has occurred to all of these components requiring complete replacement and a new electrical service should be installed using existing routes.

The bridge to reach the Fort is in poor condition. The foundations of the bridge are significantly eroded. The aprons under the bridge have been scoured and show significant signs of erosion. The brick underside of the bridge shows cracking along the arches in several places. The fortified wall on the south side of the bridge has significant vegetative growth and all bridge walls are covered with inappropriate repairs requiring removal. The pavement for the bridge is completely eroded and vegetation covers a

good portion of the surface. Inappropriate repairs should also be removed from the pavement as well. The sidewalk on the interior of the south side fortified wall is uneven and in disrepair.

The columns located at the gate to the forecourt are in poor condition. Their wood framework and gate have been removed leaving exposed areas where the frame would have been tied into the masonry columns. There is significant deterioration at the top of each column where the frame or hinged door was mounted. Both columns have inappropriate repairs that need to be removed and their lime plaster surface reapplied. The columns located at the entrance to the bridge along the paseo have significant damage at the gate mounts on the columns. The current gate is in disrepair and should be replaced with a more historically correct gate.

A significant problem with preservation of Fort San Geronimo as a historical site is the difficulty to restrict public access. Although the gate for the bridge is secured and there is a security guard at the entrance to the paseo, the low wall on the bridge's north side does not keep unauthorized people from access to the Fort, as observed during the assessment. The slightly higher wall to the bridge's south side was also scaled several times during this assessment.



Photo 1: Inappropriate paint and repairs has caused larger sections of plaster to fail.



Photo 2: Applications of Portland cement advancing the deterioration of the exterior walls of the house on the forecourt.



Photo 3: Brick roofing has weathered and deteriorated significantly on all brick roofs.



Photo 4: All walls and floor surfaces have inappropriate repairs or their surfaces have been completely eroded to substrate.



Photo 5: Significant cracking on underside of bridge.



Photo 6: Cracking/erosion of bridge support structure.



Photo 7: East side erosion and cracking on southeast corner from top.



Photo 8: Remove vegetation from Fort, remove inappropriate repairs and resurface uneven floors.



Photo 9: Remove debris from cisterns.



Photo 10: Replace deteriorated electrical components.



Photo 11: Replace/Reset sagging beams in forecourt house.



Photo 12: Remove vegetation and inappropriate repairs and resurface bridge.

Life Cycle and Costs

- Component Renewal (CR) – Actions that are not immediately required. Determining a timeline for the occurrence of these structural façade failures is difficult. These corrections were frequently projected over several years based on observation and discussion with subject matter experts at SAJU. The CR costs associated with the Fort are primarily removing inappropriate repairs and repair of the walls and surfaces (including less significant spalling and scaling) along with the reapplication of the appropriate surface covering. The total CR cost over twenty years is $3,481,703.
- Deferred Maintenance (DM) – Corrective Actions that were not accomplished in the past and are now required or are needed to accommodate public visits. . The major immediate need of Fort San Geronimo is the repair of the foundation. Aside from the foundation repair, the cracking and spalling on the southeast and southwest corners are items that need immediate remediation. The

electrical system and devices throughout the Fort should be replaced. Both cisterns need to be cleared of debris so that the structure may drain the way it was designed to. Wood doors, frames, and window bars need to be replaced due to their removed or damaged condition. The exterior of the house in the forecourt has sustained significant damage from weathering and inappropriate repairs and should be addressed soon. The beams for the roof of the house are sagging and should be remedied. The abandoned plumbing fixtures in the house should be removed. The most significant spalling and cracking prevalent throughout the Fort and bridge should be addressed within the first three years of rehabilitation. The heavy vegetation on the gun deck and forecourt should be removed to facilitate other immediate remediation tasks. The total DM cost over twenty years is $1,196,647.

- Recurring Maintenance needs (RM) – Actions that recur based on a frequency such as removal of vegetative growth, painting, or staining wood components. Vegetation removal on a recurring basis is needed yearly to prevent plant life intrusion on the walls. The total RM cost over twenty years is $109,297.

Fort San Geronimo Total Deficiency Costs (2012-2031)										
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
CR Cost		$18,739		$662,296	$283,397	$140,377	$170,291	$181,085	$106,356	$378,346
DM Cost	$523,856	$419,308	$253,484							
RM Cost		$2,501	$5,933	$5,933	$5,933	$5,933	$5,933	$5,933	$5,933	$5,933
TOTAL COSTS	**$523,856**	**$440,547**	**$259,417**	**$668,229**	**$289,330**	**$146,310**	**$176,224**	**$187,018**	**$112,289**	**$384,279**
	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
CR Cost	$234,946	$184,955	$181,933	$186,311	$210,742	$206,919	$121,266	$121,266	$92,478	
DM Cost										
RM Cost	$5,933	$5,933	$5,933	$5,933	$5,933	$5,933	$5,933	$5,933	$5,933	$5,933
TOTAL COSTS	**$240,880**	**$190,888**	**$187,866**	**$192,244**	**$216,675**	**$212,852**	**$127,199**	**$127,199**	**$98,411**	**$5,933**

Accessibility Assessment

Fort San Geronimo's lower level will be accessible after repair. In order to avoid damage to historic finishes, non-permanent ramps could be constructed at the thresholds to the lower level rooms and house similar to those in San Cristobal and El Morro. Neither of the two restrooms located in the house on the forecourt are large enough to accommodate accessibility compliance. A possible solution to providing accessible restrooms would be to build a restroom to the south of the bridge entrance along the walkway where piping leading from the shore to the Fort already exists.

January 2016

2016 Addendum to: Cost Estimates for Fort San Geronimo – Excerpt from AME's Comprehensive Condition Assessment (2012)

Prepared by LT Kelly Hoeksema, PE
NPS Southeast Regional Office

January 2016

Satellite Images: No additional information.

Overall Description:

Fort Geronimo is subject to earthquakes, coastal storm surge, flash floods, tsunamis, and hurricanes. The Fort is located within the coastal flood zone with velocity hazard (wave action) of the 100 year flood zone determined by FEMA. The Fort is also directly subject to impacts by sea level rise. Sea level rise will cause an increased rate of degradation of the exterior walls.

The Fort is accessible by vehicle via Paseo Caribe. Paseo Caribe is a public access road that runs along the shore and behind the Caribe Hilton Hotel. Vehicle entrance to the road is blocked off by four highway traffic cones. The Paseo terminates at five parking spaces for the Fort, the entrance gate to the Fort, and the rear entrance delivery gate to the Caribe Hilton.

Physical Condition and Deficiencies:

Since the 2012 condition assessment, numerous other structural and architectural failures developed. The newly developed deficiencies and failures are summarized in the table starting on the following page.

Area	2012 Condition Assessment (CAC) by AME	2016 CAC update
Overall assessment	The present condition of the Fort is poor.	The Fort is in very poor condition.
Foundation and walls	The foundation is a particular concern. Failures of the walls at the foundation are notable on the east wall, southeast and southwest corners. At all three locations wall material is significantly eroded and loose material moves in and around the voids that have been created by continued wave action. All of the exterior walls are eroded and require removal of inappropriate repairs in addition to repointing and refinishing. All of the embrasures have deteriorated to exposed substrate and the metal railing is badly deteriorated.	The previously noted concerns with the foundation and wall failures have significantly worsened since the Condition Assessment (CAC) by AME on 2012. Little of the last wall treatment remains. This has resulted in severe erosion of the exterior walls, especially around the Fort's base (Photo 37). The Fort also has extensive cracking. There is a pervasive crack along the exterior east wall. This crack starts at the foundation and continues up through to the top escarpment (Photo 38). There is also a crack in Room 1. It starts in the wall at floor level, then transverses up the wall, across the ceiling, and down to the floor on the other side of the room. The crack in Room 1 corresponds with the exterior east wall crack. This implies the southeast corner of the Fort is settling apart from the remainder of the structure.

January 2016

Area	2012 Condition Assessment (CAC) by AME	2016 CAC update
Sentry boxes	The sentry box on the north side of the gun deck has significant cracking and spalling throughout. The sentry box located in the forecourt at the gate is also in very poor condition. Inappropriate repairs are evident throughout its exterior and the plaster covering it is deteriorated. There is also significant deterioration on the east and south edges of the roof where electrical devices had been installed. The west corner of the roof has a large hole through the brick.	A section of bricks on the sentry box's roof is missing (Photo 35). Bricks and mortar from the sentry box walls are also missing (Photo 36). The cement that has not broken off the walls yet is covered with black mold.
Pavements	All of the pavements in the Fort are in poor condition.	Same conditions observed.
Gun deck	The gun deck shows significant vegetative growth across the entire area. A walkway was installed at over the original pavement and is severely deteriorated.	Same conditions observed.

Area	2012 Condition Assessment (CAC) by AME	2016 CAC update
Room 3 and 4	The brick roof over Rooms 3 and 4 show significant weathering throughout the exterior surface with many bricks losing thickness with continued exposure and rain. The beams on the underside of this roof appear to be in good condition, however, some of the mortar and brick is resting on the beams. The roof of House 1 has many deteriorated bricks in addition to vegetative growth on the south side. The supporting beams for this roof are noticeably deflected and some of the mortar and brick on the underside of the roof have failed.	The weathering of bricks is now severe. There is active deterioration of the roof beams due to rainwater infiltration (Photo 9). Moderate water damage and mold growth exist on the beams in Room 3. Beams in Room 4 and the Portico have sustained severe water damage. Significant fungal growth is evident on the beams and the underside of the roof within the spaces (Photo 10). Additionally, the roof bricks over the Portico are rapidly decomposing, shedding brick dust onto the floor (Photo 11-12).
Exterior Walls	No mention.	Other concerns include missing bricks from multiple doorways, arches, and wall surfaces (Photo 13-15). The mortar for the bricks is fully deteriorated in various locations (Photo 16). The pillars supporting the portico roof are missing mortar up to a depth of four inches (Photo 17-18). Other exterior walls have void spaces at least six inches deep (Photo 19).

January 2016

Area	2012 Condition Assessment (CAC) by AME	2016 CAC update
Forecourt house (#1) and latrine	The exterior of both the forecourt house and the latrine are in very poor condition. Throughout much of their exteriors, the plaster covering is completely deteriorated. Inappropriate repairs with Portland cement and other mixtures have caused the brick and sandstone substrate to deteriorate rapidly. At one time the house on the forecourt was used as an office or gift shop. Two restrooms were added. The fixtures and associated hardware are completely deteriorated. The window and door frames have deteriorated beyond repair and require complete replacement.	The existing restrooms are neither ADA accessible nor functional. They also compromise the historical integrity of House 1. The water, sewer, and electric lines into the Fort are surface mounted on the south side of the bridge (Photo 34). The wall the utilities are fixed to is not considered stable. The exterior walls received a surface treatment after the 2012 CAC. This surface treatment used the wrong materials. Due to the incorrect material use, the surface treatment is already peeling off the walls.
Cisterns	As stated in the description, no visible access to Cistern 1 was located and it can be assumed that the drains leading to and from it have been blocked by rubble and debris since there is no visible leaking in or around its exterior. The drains at the gate from Cistern 2 appear to be blocked and the cistern is full of debris. The drains along both sides of the gate have deteriorated and require restoration along with the pavement. The gate and its framing leading from the bridge to the Fort itself have been removed leaving the interior of the columns exposed to weather.	New cistern deficiencies include weakening cistern walls. The weakened, possibly failing, walls have created issues above the cistern in the forecourt. Those issues include a hole in the walking surface, the planter is several inches askew, and there is a crack on the south wall of Ramp 2, adjacent to the planter (Photo 20-22).

Area	2012 Condition Assessment (CAC) by AME	2016 CAC update
Interior walls	The interior walls of every room have been painted. When the paint begins to peel, the plaster and substrate will fail as well. Many of the rooms have significant fungal growth caused by inappropriate repairs and paint. All of the rooms have wood window frames and doors that are in varying states of deterioration and should be replaced.	During the inspection, the paint was observed to be peeling extensively in all rooms (Photo 23-24). The peeling paint is contributing to the loss of brick and mortar in the walls. Additionally, the significant fungal growths on the walls, noted in the 2012 CAC, have expanded (Photo 25).
Electrical	Aged lighting and electrical components are positioned through both levels of the Fort with the main electrical panel located on the east interior wall of the forecourt house. Moisture damage has occurred to all of these components requiring complete replacement and a new electrical service should be installed using existing routes.	Same conditions observed.

January 2016

Area	2012 Condition Assessment (CAC) by AME	2016 CAC update
Bridge	The bridge to reach the Fort is in poor condition. The pavement for the bridge is completely eroded and vegetation covers a good portion of the surface. Inappropriate repairs should also be removed from the pavement as well. The sidewalk on the interior of the south side fortified wall is uneven and in disrepair.	The bridge deck now contains a void open to the deck surface. The void is 13 feet across by 9 feet wide and 3.6 feet deep. The void developed in the span of two years by erosion of bridge fill through voids in side wall of the bridge (Photos 1-4). This has resulted in the loss of 16 cubic yards of sand pack. The bridge is open only to pedestrian traffic until the void is repaired. Similar voids are expected in the other bridge sections since their sidewalls are being similarly eroded by wave action. Brick pavers are stacked underneath the north wall at the beach level where other stones have washed away. This interim measure is not durable or structurally significant. It also does not prevent additional loss of material.
Foundations of the bridge	The foundations of the bridge are significantly eroded. The aprons under the bridge have been scoured and show significant signs of erosion. The brick underside of the bridge shows cracking along the arches in several places. The fortified wall on the south side of the bridge has significant vegetative growth and all bridge walls are covered with inappropriate repairs requiring removal.	Cracks in the arches (Photos 5 and 6) supporting the bridge are have worsened. The major crack running across the top of the arch is now 1/2 inch wide. Moisture, efflorescence, and fungal growth around the crack are readily apparent. The center pier between the arches is cracked from its base to top and bulging out (Photo 7). The bridge was constructed with two main components. The two halves of the bridge have settled at different rates. This created a 3 inch difference in their elevation (Photo 8).

Area	2012 Condition Assessment (CAC) by AME	2016 CAC update
Gate columns	The columns located at the gate to the forecourt are in poor condition. Their wood framework and gate have been removed leaving exposed areas where the frame would have been tied into the masonry columns. There is significant deterioration at the top of each column where the frame or hinged door was mounted. Both columns have inappropriate repairs that need to be removed and their lime plaster surface reapplied. The columns located at the entrance to the bridge along the paseo have significant damage at the gate mounts on the columns. The current gate is in disrepair and should be replaced with a more historically correct gate.	Same conditions observed.
Security	A significant problem with preservation of Fort San Geronimo as a historical site is the difficulty to restrict public access. Although the gate for the bridge is secured and there is a security guard at the entrance to the paseo, the low wall on the bridge's north side does not keep unauthorized people from access to the Fort, as observed during the assessment. The slightly higher wall to the bridge's south side was also scaled several times during this assessment.	The Institute of Puerto Rican Culture no longer employs a security guard to monitor the Fort. The site remains vulnerable to public access. While there is an iron gate at the landside of the bridge, the parapet wall it is secured to is only 3.5 feet high. This parapet wall is easily climbed over. A man climbing onto the wall, into the Fort was observed during the inspection (Photos 30).

January 2016

Area	2012 Condition Assessment (CAC) by AME	2016 CAC update
Window and door frames	[AME noted throughout assessment that wood doors, frames, and window bars need needed to be replaced due to their removed or damaged condition.]	Some other notes on the condition of Fort Geronimo include heavily degraded nature of all window and door frames, and their associated hardware (Photo 31). Multiple door hinges are rusted through. Several doors are being held up by pieces of lumber (Photo 32). The metal bars in the windows are rusted through. Some are missing entirely (Photo 33).
House 2 (Guardhouse, where bridge terminates at Fort)	No mention.	House 2 is in very poor condition. Two sides of the house bear on the Fort and the bridge. The other two sides bear on a single column in the water. The base of the column is eroded substantially. It has lost an estimated 4 inches in both length and width down to bare sandstone (Photo 26). The exterior walls are at 40% brick exposure (Photo 27). A large crack is present on both the west and south walls of House 2, where it is supported by the bridge (Photo 28-29).

Life Cycle and Costs:

Since the completion of the CAC by AME, costs associated with deferred maintenance and component renewal have been further deferred and compounding. The revised cost estimate provided with this addendum not only accounts for this rolling forward of already recognized costs, but identifies newly developed deficiencies. Cost escalation due to inflation between the date of the estimate and projected construction years is not included. The expectation is that the deferred maintenance costs will continue to escalate exponentially in the years to come.

The costs for repairs to the structure were calculated collectively as deferred maintenance. The items that were 'less significant' in the 2012 report that were estimated as 'Component

Renewal' tasks have increased in severity over the past four years. By the time construction could begin, these items will be within the category of Deferred Maintenance.

The estimated cost of Deferred Maintenance is $17,128,000.

Other Notes Related to the Condition Improvements:

Fort Geronimo does not provide for any fire detection. At a minimum, heat detectors should to be installed in each of the seven rooms and House 1.

The original CAC's recommendation to install a restroom to the south of the bridge entrance, on the mainland, is not feasible. It is against NPS policy to construct restrooms within the 100-year flood plain as determined by FEMA, which this location is in.

Before executing construction and rehab projects, the National Park Service is charged with considering all pertinent Executive Orders and Director's Orders. Two of those are mentioned below, with items within their requirements that could impact NPS' ability to carry out repairs to the Fort.

- Executive Order 13653: Preparing the United States for the Impacts of Climate Change
  - Increases expectation for more heavy down pours, ocean acidification, and sea level rise.
  - Sec. 2-iii charges the federal government to 'identify opportunities to support and encourage smarter, more climate-resilient investments.'
- The National Park Service addresses climate change in the 'Addressing Climate Change and Natural Hazards, Level 3 Handbook.' The National Parks are to consider this handbook prior to making capital investments in their facilities, to include rehab of historic structures.
  - Construction considerations from the Handbook include, "Historic structures located in areas susceptible to natural hazards must be evaluated to determine their future disposition, weighing their historic significance and potential use against identified and evaluated risks."
  - Projects are required to complete a "Natural Hazard Checklist" which evaluates the potential impact of natural hazards for the project from a list of fifteen natural hazards. The Fort is impacted by five of the fifteen hazards listed.
  - 'STOP 3' within the handbook specifically addresses project work for impacts of coastal storm surge with climate change effects. Based on the guidelines within STOP 3, the low side of the bridge would be inundated in a coastal storm surge and climate change event. One of the questions in this STOP asks "what

measures are included in the design that minimizes the investment for locations subject to risk."

In order to perform the physical repairs to the Fort, various studies and permits will be required. The expectation is for an environmental assessment; structural assessment of interior and exterior walls; ground penetrating radar of walking surfaces; permitting through Army Corps of Engineers, Coastal Zone Management, and NOAA; as well as archaeological assessments, sampling, reports, and construction monitoring.

PHOTOGRAPHS OF DEFICIENCIES BEGIN ON FOLLOWING PAGE

PHOTOGRAPHS OF DEFICIENCIES

Photo 1: Barricade around void in bridge deck.



Photo 2: Top view of bridge deck void.



Photo 3: Depth of bridge deck void.



Photo 4: View of void undercutting deck.



Photo 5: Top crack in bridge arch.

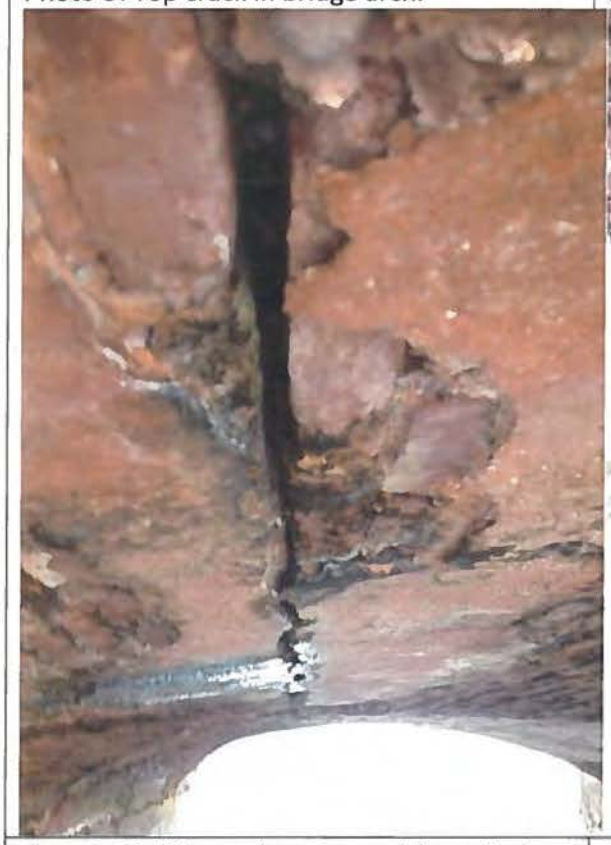


Photo 6: Efflorescence associated with crack.



Photo 7: Bulging arch support with vertical crack.



Photo 8: Differential settlement between bridges.



Photo 9: Water damage on Portico beams and fungal growth.



Photo 10: Room 4, water damage to beams and fungal growth.



Photo 11: Portico roof bricks, eroded.

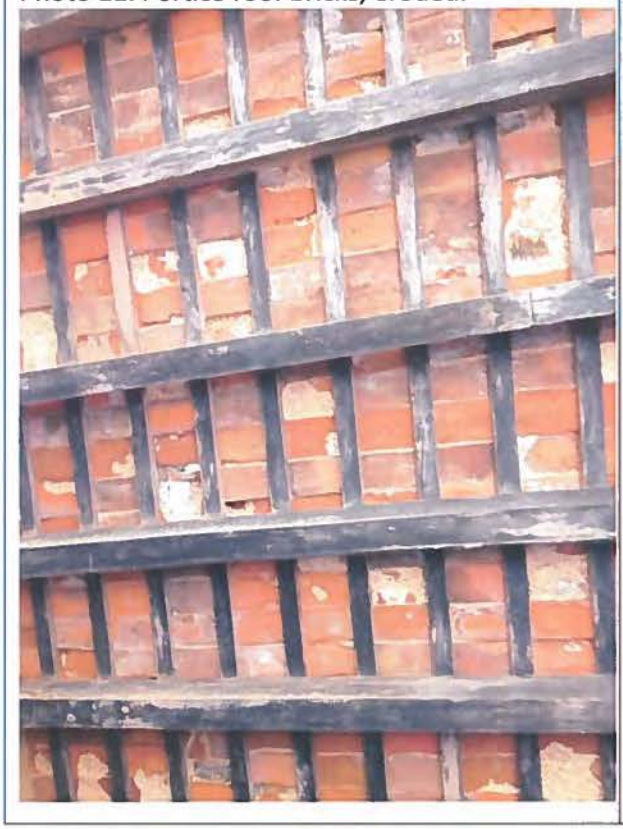


Photo 12: Brick dust on floor of Portico.



Photo 13: Missing bricks form Portico arch.



Photo 14: Missing course of bricks around doorway.



Photo 15: Example of cavities in exterior wall and missing bricks/stone.



Photo 16: Close up of typical cement and mortar erosion.



Photo 17: Mortar missing, four inches deep.

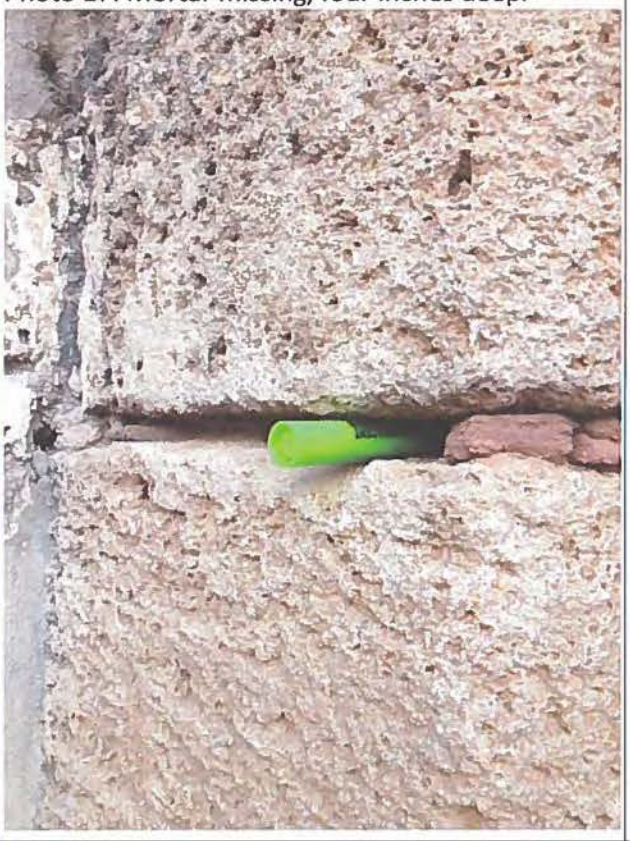


Photo 18: Portico columns with eroded mortar.

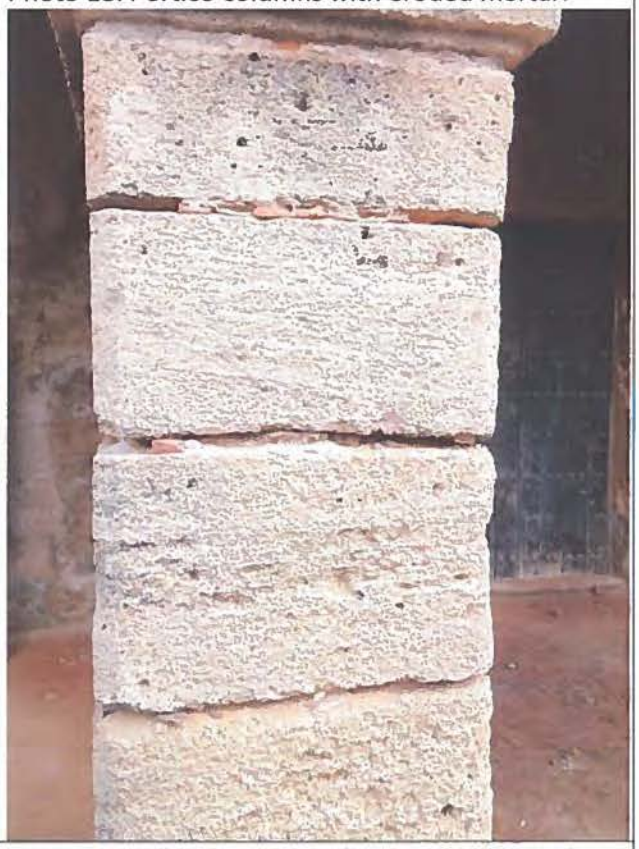


Photo 19: Voids six inches deep into wall.

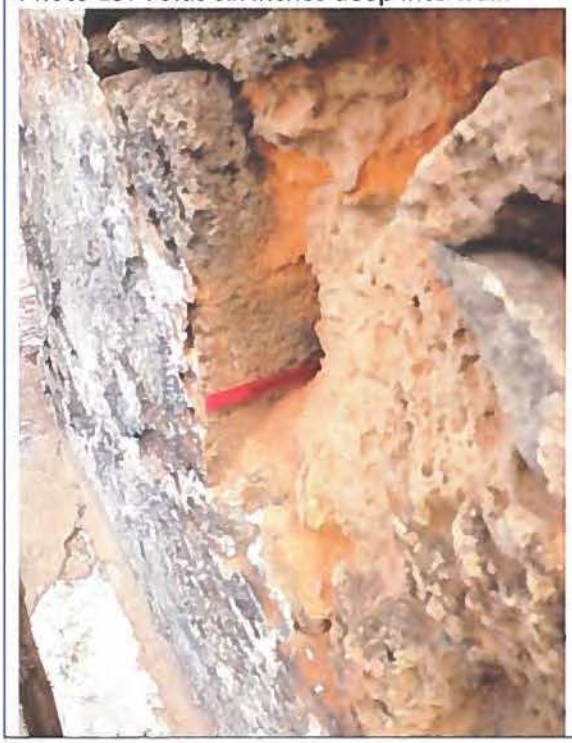


Photo 20: Hole developing above cistern #1 in the forecourt (shown also ramp retaining wall and planter).



Photo 21: Planter out of plumb, from settling beneath.



Photo 22: Close-up of hole above cistern #1



Photo 23: Paint and other coatings peeling off walls and ceiling in Room 1.



Photo 24: Ceiling coating delaminating in Room 7, pulling off parts of brick with it.

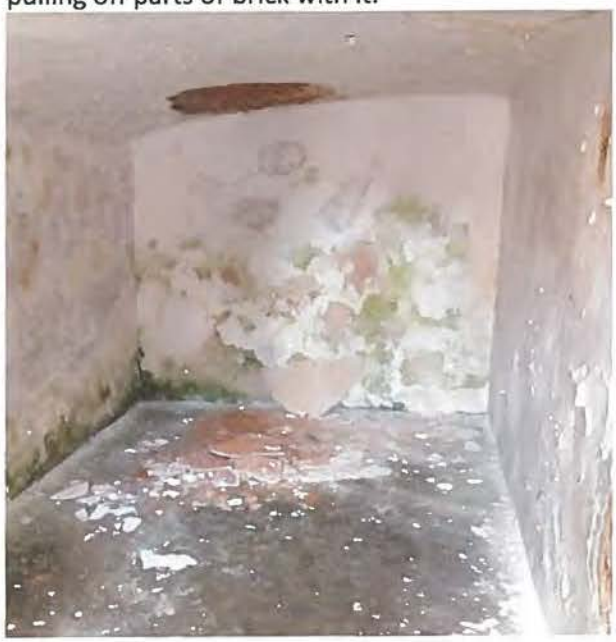


Photo 25: Black mold on exterior wall.



Photo 26: Erosion at base of House 2's support.



Photo 27: Exposed brick on the exterior of House 2.



Photo 28: Crack related to bearing on bridge deck.

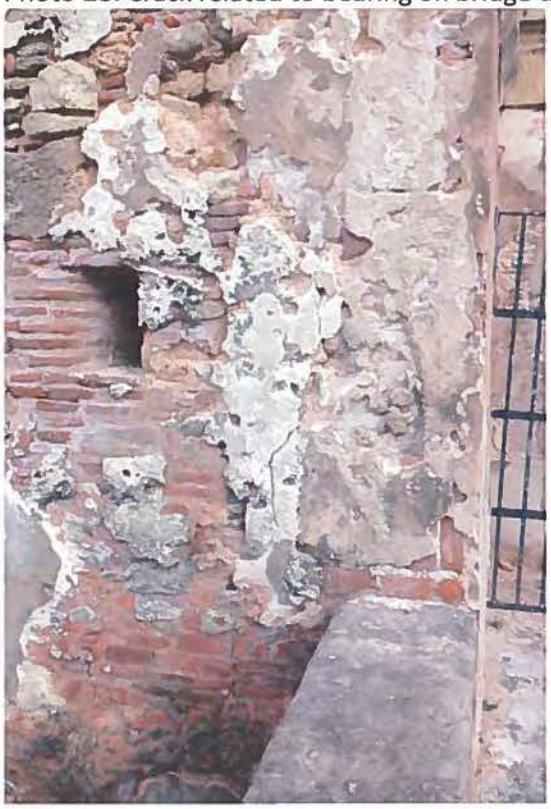


Photo 29: Crack parallel to bridge deck.



Photo 30: View of short parapet wall at Fort entrance.



Photo 31: Extensive termite damage to window frame.



Photo 32: Door held in place by plywood due to broken hinges.



Photo 33: Rusted metal bars in window openings.

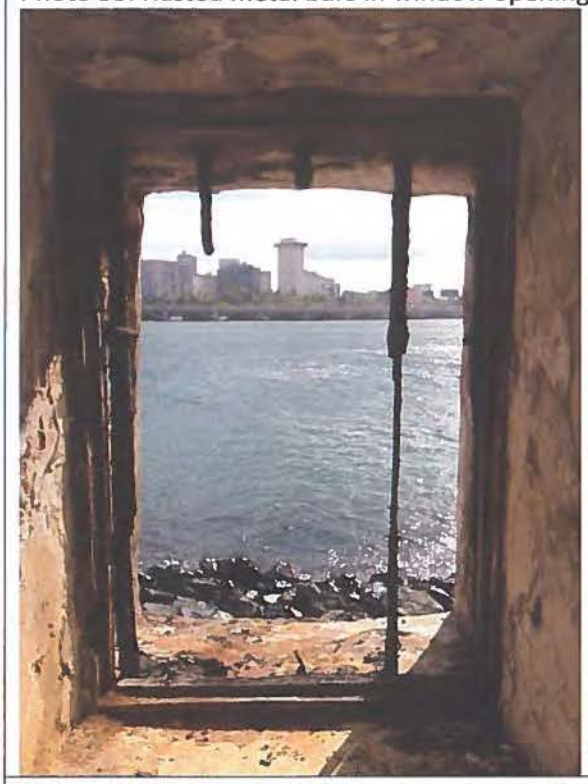


Photo 34: Utilities mounted to the south side of the bridge.



Photo 35: Missing blocks from sentry box roof.



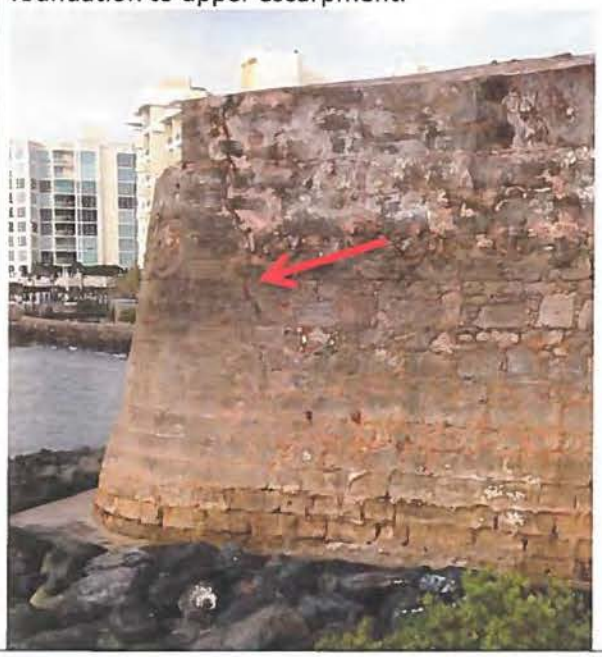
Photo 36: General condition of sentry box walls.



Photo 37: Typical erosion of sandstone courses along the base of the Fort.



Photo 38: Crack on east exterior wall from foundation to upper escarpment.



Cost Estimate: Fort San Geronimo
January 2016

Table 1: Line Items

Major Task	RS Means Number	Description	Calculated Quantity	Estimating Quantity	Unit	Total Incl O&P	Extended Total
			Sub-Total				
quality control	014523.50-3300	masonry testing, absorption, per 5 brick, ASTM C67	5	6	ea	$50.00	$300.00
	014523.50-3350	Masonry testing, chemical resistance, per 2 brick	12	13	ea	$55.00	$715.00
	014523.50-3302	Masonry testing, compressive strength, per 5 brick	5	6	ea	$75.00	$450.00
	014523.50-3470	modulus of rupture, per 5 brick	5	6	ea	$95.00	$570.00
	014523.50-3550	mortar, compressive strength, set of 3	10	12	ea	$25.00	$300.00
temporary utilities	015113.80-0360	lighting, incl. service lamps, wiring and outlets, max	4295	4939.25	CSF flr	$1.01	$4,988.64
PPE	015409.50-0030	respirator mask only, half face, silicone	50	55	ea	$38.50	$2,117.50
	015409.50-0160	Self-contained breathing apparatus (confined space work)	10	20	ea	$3,225.00	$64,500.00
	015409.50-0200	encapsulating suits, limited use, level A	20	22	ea	$ 305.00	$6,710.00
crane (lifting cannons)	015419.50-0100	12 ton truck mounted hydraulic crane	8	10	day	$1,525.00	$15,250.00
scaffolding	015423.70-0090	steel tube scaffolding, no plank, bldg.. exterior, wall face, 1 to 5 stories	170	200	CSF	$205.00	$41,000.00
	015423.70-0090	plank 2x10x16'	1062.5	1100	ea	$56.00	$61,600.00
	015423.80-4000	nylon full body harness	20	22	ea	$236.00	$5,192.00
	015423.80-4100	rope for safety line	22	25	ea	$77.00	$1,925.00
	015426.50-0030	swing staging, 2' byb 24' hand operated, rent per month	3	3.5	month	$ 445.00	$1,557.50
	015426.50-2200	move swing staging	18	20	move	$1,450.00	$29,000.00
	015436.50-1150	equip. mobilization, up to 70 HP, on flatbed trailer	10	12	ea	$ 176.00	$2,112.00
	017413.20-0052	clean up of floor area, continuous, per day, during construction	25500	28050	MSF	$67.00	$1,879,350.00
	019308.50-1580	pressure cleaner, hot water, max	2	2.2	ea	$6,375.00	$14,025.00

	024210.30-0100	deconstruction material handling, clean and stack brick on pallet	3695.5	4434.5	ea	$0.72	$3,192.87
mold mitigation	28516.50-0100	pre-cleaning, HEPA vacuum and wipe, flat surfaces	3719	4276.85	SF	0.41	$1,753.51
	028516.50-0400	waste decontamination chamber	3719	4276.85	SF	6.35	$27,158.00
concrete in place (utility trench)	033053.40-4750	thickened slab edge, on grade, 24" by 24" reinforced	25	30	LF	$43.50	$1,305.00
crack repair	036423.10-0110	epoxy injection, 1/4" wide, 12" deep	200	240	LF	$56.00	$13,440.00
replacement bricks (walls and bridge)	042113.13-2400	standard select common, soldier course	19235	25005.5	SF	$17.55	$438,846.53
ceiling/roof bricks	042113.18-0130	oversized bricks, load bearing	2427	3033.75	sf	$18.00	$54,607.50
bridge support bricks	042710.30-1350	brick walls, multi-whythe masonry, 16 inches deep	1620	1944	sf	$51.50	$100,116.00
metal bars in windows	055827.90-0025	window guards, steel bars 1/2" by 1/2". Spread 5" o.c.	25.8	30.96	sf	$24.50	$758.52
shoring in cisterns and bridge arches	064439.20-4200	wood columns, rough sawn cedar, 6"x6"	1058.67	1376.27	VLF	$34.00	$46,793.07
	060523.50-0200	wood screws, #8, 2" long steel	4	5	C	$5.60	$28.00
	060523.60-0110	timber connectors, plates, steel, with bolts, T	1058.67	1376.27	ea	$54.00	$74,318.40
	060523.60-0900	drilling bolt holes in timber, 1" diam.	12696	15235.2	inch	$1.56	$23,766.91
	060523.60-1160	framing anchor, 18 gauge	2116	2539.2	ea	$5.55	$14,092.56
	061110.02-2660	blocking, 2"x8"	1	1.2	mbf	$2,475.00	$2,970.00
	061110.04-0011	wood bracing, 1x6", studs 16" O.C.	710	852.1	CLF	$435.00	$370,650.89
replace house #1 shutters	064919.10-1600	pine, louvered, 1'6 " by 4'7"	4	4.5	pr	$228.00	$1,026.00
water proofing roofs	071616.20-0050	cementitious water proofing	1212	1454.4	CSF	$480.00	$698,112.00
replace roof beams, #4, portico, #3	060505.10-2985	selective demo, beams 4x12	857	1028.4	lf	$4.84	$4,977.46
	060505.10-4230	selective demo, joists 2x6	1477	1772.4	lf	$0.90	$1,595.16
	061110.10-1220	beam and girder framing 4x12	857	1028.4	LF	$10.55	$10,849.62

	061110.10-1000	beam and girder framing single, 2x6	1477	1772.4	LF	$1.97	$3,491.63
servicing doors/some replacement	081413.10-3050	wood door, mahogany, 3'6"x8'	9	10	ea	$2,175.00	$21,750.00
replace bridge deck bricks	096313.10-0710	paver, adobe brick, 6"x12", 1/2" joint	3000	3600	sf	$24.00	$86,400.00
fire protection	104413.53-1200	portable extinguisher cabinet, stainless steel door and frame	4	5	ea	$355.00	$1,775.00
	104416.13-2100	portable fire extinguisher, ABC, 20 lb	4	5	ea	$87.50	$437.50
demo water tank	110505.10-4540	water heater, residential, 80 gal	1	2	ea	$250.00	$500.00
interp. Items on display	123559.10-4100	table exhibit cases, 3'x3'x4'	4	5	ea	$2,400.00	$12,000.00
trash cans	129323.10-0510	trash receptacles, 32 gallon	2	3	ea	$ 570.00	$1,710.00
fire hydrant	211116.50-4000	hydrant, double, flush, polished brass	1	1	ea	$ 745.00	$745.00
demo water pump	220505.10-2184	demo pumps, 1hp to 5 hp.	1	1	ea	$ 194.00	$194.00
electric	260505.50-5000	electrical demo, ballast, flur.	4	5	ea	$25.00	$125.00
	260519.20-2200	armored cable, 5kV, copper, with PVC jacket	1000	1200	LF	$60.00	$72,000.00
	260519.30-0300	cable splicing	40	48	ea	$ 455.00	$21,840.00
	260526.80-0270	grounding, armored wire	10	12	CLF	$ 490.00	$5,880.00
	260533.30-0200	Electrical non-metallic tubing	1000	1200	LF	$ 5.90	$7,080.00
	260533.50-0700	outlet boxes, masonry, 1 gang, 2.5" deep	20	24	ea	$34.00	$816.00
	262416.10-5100	400 amp breaker, rain proof, 42 circuits	1	1.2	ea	$5,150.00	$6,180.00
	262816.20-0500	safety switch	1	1.2	ea	$2,650.00	$3,180.00
	265313.10-0240	exit lighting features, LED with battery unit	10	12	ea	$265.00	$3,180.00
replace missing sand in bridge structure	312323.15-1100	hand spread bank run or dead sand	831.6	997.92	ton	$31.50	$31,434.48
	312323.20-0454	hauling, 30 min wait, 8 mile cycle, 30 mph avg.	560	672	LCY	$10.95	$7,358.40
	312323.23-8100	rammer tamper, 6" to 11", 4" lifts	560	672	ECY	$7.50	$5,040.00
rip rap, erosion protection of fort base	313713.10-0200	rip rap, for slope protection, 18" min thickness, not grouted	881	1058	SY	$97.00	$102,604.44

vegetation removal	320130.10-6810	shrub maintenance, weed, spray out	15	18	MSF	$13.60	$244.80
	311110.10-7040	tree removal, 8" diam.	3	4	ea	$ 470.00	$1,880.00
	311110.10-3040	chipping stumps, 18" deep, 18" diam.	3	4	ea	$46.50	$186.00
brick paving (bridge deck after concrete removal)	321416.10-0300	brick paving, grouted	1680	2016	sf	$14.60	$29,433.60
						Subtotal Base Cost	**$6,409,201.47**

Table 2: Construction Add-Ons

Description	Estimating Quantity	Unit	Total Includes O&P	Extended Total	
for alteration work, over $500k, add to new construction fee	$6,409,201.47	job	25%	$ 1,602,300.37	
Construction Management fees, to $10mil	$6,409,201.47	job	4%	$ 256,368.06	
engineering fees, electrical, maximum	$6,409,201.47	job	10.10%	$ 647,329.35	
engineering fees, structural maximum	$6,409,201.47	job	2.50%	$ 160,230.04	
contingency allowances, preliminary, working drawing stage	$6,409,201.47	job	15%	$ 961,380.22	
factors allowance, cut and patch to match existing	$6,409,201.47	job	9%	$ 576,828.13	
factors allowance, dust protection	$6,409,201.47	job	2%	$ 128,184.03	
factors allowance, equipment usage curtailment	$6,409,201.47	job	10%	$ 640,920.15	

factors allowance, material handling and storage limitation	$6,409,201.47	job	3%	$ 192,276.04	
factors allowance, protection of existing work	$6,409,201.47	job	7%	$ 448,644.10	
factors allowance, temporary shoring and bracing, max	$6,409,201.47	job	12%	$ 769,104.18	
job condition, economic conditions, favorable, deduct	$6,409,201.47	job	-2%	$ (128,184.03)	
hoisting conditions, unfavorable	$6,409,201.47	job	5%	$ 320,460.07	
state' sales tax	$6,409,201.47	job	7%	$ 448,644.10	
field personnel, superintendent, average	104	wk	$ 2,850.00	$ 296,400.00	
insurance, maximum	$6,409,201.47	job	0.64%	$41,018.89	
worker's comp, and employer's liability, avg by trade	$6,409,201.47	% labor	16.88%	$ 1,081,873.21	
extra work by sub-contractors, add (G.C. mark-up)	$6,409,201.47	job	10%	$ 640,920.15	
overhead	$6,409,201.47	job	20%	$ 1,281,840.29	
performance bond, maximum	$6,409,201.47	job	2.50%	$ 160,230.04	
permits, max	$6,409,201.47	job	2%	$ 128,184.03	
cleaning up, after job completion, maximum	$6,409,201.47	job	1%	$64,092.01	
historic preservation & archaeological compliance	$6,409,201.47	job	20%	$ 1,281,840.29	
				$ 10,719,043.42	**Cumulative Add-on Costs**
				$ 6,409,201.47	**Base Cost**
				$ 17,128,244.89	**Total Estimated Cost**

APPENDIX D: HISTORIC AMERICAN BUILDING SURVEY DOCUMENTATION OF FORT SAN GERÓNIMO

Fort San Geronimo
San Juan, Puerto Rico

HABS-PR-49

HABS
PR
7-SAJU,
8-

PHOTOGRAPHS
WRITTEN HISTORICAL AND DESCRIPTIVE DATA
SAN JUAN, PUERTO RICO

Historic American Buildings Survey
National Park Service
San Juan National Historic Site

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7-SAJU
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HABS-49
Page No. 1

THE FORT OF SAN GERONIMO
San Juan, Puerto Rico

Owner: The Municipality of San Juan

Date of Erection: The present structure is built on the location of an earlier fort and may incorporate parts of it. The exact building date of the present structure is not known. Its completion date is given as 1788 and 1771 by Adolfo de Hostos and Edward A. Hoyt, respectively. In 1799 it was reconstructed without alterations, according to Adolfo de Hostos. In the report dated 31 December, 1801 on the construction and repairs of the fortification by Tomas Sedeño, demolition and reconstruction work was performed on San Gerónimo.

Builder: According to Adolfo de Hostos it was built under the direction of the Military Engineer Ignacio Mascaro de Homar, who may also have been the architect. The construction proper was performed by the Spanish Corps of Engineers.

Present Condition: Present state of preservation is poor. The foundations of the bridge leading to San Geronimo are badly eroded and undercut, and the aprons under the bridge have disintegrated. Along the sea side of the fort there are minor breaks with consequent erotion.

Structural failures of the fortification walls exist in three areas: in the East wall, and at the Southeast and Southwest corner of San Geronimo respectively. In all three places continuous cracks extend from base to top of wall, varying in width from 1/16" to 3". The cracks appear old and are filled with loose material lodged there by seepage.

All walls are badly eroded and are in need of repointing and refinishing. In the sentry box on the North side, in the houses Nos. 1 and 2 and in the South side of the bridge they are in a ruinous state.

THE FORT OF SAN GERONIMO
San Juan, Puerto Rico

military blunder because the key to the defense of San Juan rested in the impregnability of the land approaches.

Between 1591 and 1595 many temporary positions were constructed,[5] and one of them was at El Boqueron. During Drake's attack it and San Antonio bridge were defended with 4 pieces of ordnance and 150 men,[6] out of the total of 15 pieces of artillery and 400 men[7] who were stationed at the eastern batteries of the island of San Juan, protecting the land approaches to the city.

During Cumberland's attack there were two fortified points at the eastern end of San Juan. The point at El Boqueron is called a "bastion" by Cumberland and "a small fort" by Layfield.[8] The other fortified point was located at San Antonio bridge. The "fort" or "bastion" is referred to by Layfield as "Fuerte Rojo"[9] and "Mata Diablo."[10] "Fuerte Rojo" suggests a structure built of red brick[11] or a wooden one painted red.[12] The name "Mata Diablo" may have been given the fort because the Spaniards thought Sir John

THE FORT OF SAN GERONIMO
San Juan, Puerto Rico

Hawkins had been killed by the fire of its guns at the time of Drake's attack.[13] During the attack El Boqueron was so severely damaged that the landing parties of the invaders anchored their boats in its vicinity without any difficulty. It was defended unsuccessfully by 50 musketeers.[14]

During the governorship of Don Gabriel de Rojas (1608-1614) the defenses of San Juan were strenghtened considerably, including the eastern fortifications. Rojas constructed a new fort at El Boqueron or reconstructed the one that had been partially destroyed during the 1598 attack.[15]

In 1625, during the Dutch attack, Governor Juan de Haro considered the defense of the Boqueron Point of utmost importance as he feared a repetition of Cumberland's assault. He gave orders to transfer 2 pieces of artillery from El Morro to reinforce the "post" of El Boqueron.[16] These were supplemented with trenches where a large number of soldiers were stationed. The "post" is not mentioned in the Dutch and Spanish accounts of the attack in relation to military activities.[17]

THE FORT OF SAN GERONIMO
San Juan, Puerto Rico

But the Dutch account is accompanied by a map in which El Boqueron "post" is shown.[18]

We have not been able to find information on El Boqueron from 1625 to 1731. This is a period of transition in the history of the fortifications of San Juan.[19]

In a report dated 1731 and issued by the Spanish military engineers of San Juan, the name of San Geronimo Fort is used for the first time in relation to a structure built at El Boqueron Point. It only states that the roof of the living quarters needed repairs.[20]

The maps and plans available from 1747 to 1776,[21] due to their small size, do not contain much information on San Geronimo Fort. It is shown as a small square bordered by irregular walls. In two maps from 1785[22] it is still a square but has a small bastion in each corner.

Around 1788 the military engineer Don Ignasio Mascaro y Homar, did some work on San Geronimo, possibly repairing the damages caused by the earthquake of 1787.[23]

There is evidence that in 1792[24] the Spanish military engineers worked on San Geronimo again in preparation of a British attack which finally came in 1797. During the invasion San Geronimo functioned importantly in the

THE FORT OF SAN GERONIMO
San Juan, Puerto Rico

checking the attempts of Sir Ralph Abercromby to land his invading forces.[25]

On July 15, 1921, Lieutenant Commander Virgil Baker, U. S. N., Retired, his heirs and assigns, was granted a 999 years lease under special authority of Congress, of a tract of land known as San Geronimo Naval Reservation which included San Geronimo Fort. This action originated a series of law suits culminating in the Insular government issuing a declaration of taking for the fort itself in 1949 and assuming possession. The partial price payment accepted by Commander Baker was $35,000. The case is still pending hearing in the federal court.

In the seond half of the 19th century a wooden house was built on the upper level of the fort, as quarters for the commanding officers of San Geronimo. It was destroyed in the San Ciriaco Hurricane, 1899, three years after the Spanish American war, at which time the fort was transferred to the U. S. Navy Department. The house was replaced by a second wood structure which in its time was torn down in 1949.

THE FORT OF SAN GERONIMO
San Juan, Puerto Rico

BIBLIOGRAPHICAL NOTES

1. This is our best available evidence.

2. A Military Board that met in 1587 to study the problem of the fortifications of San Juan.

3. Archivo General de Indias - Patronato 18, no. 13, R.O.2. This report of Menéndez was used by the military engineer Antonelli in the execution of the plan of fortification of 1591.

4. Boletín Histórico de Puerto Rico, Founder-Director, Cayetano Coll y Toste (Cantero Fernández and Co. Press, San Juan, Puerto Rico, 1914-1927), 14 vols. IV, 321.

5. Hoyt, Edward A., A History of the Harbor Defenses of San Juan under Spain, 1509-1898, etc. (San Juan, Puerto Rico, 1943), 42.

6. During Drake's attack it was a wooden structure, that connected San Juan with the mainland of Puerto Rico.

7. The two other batteries, besides those of El Boquerón and the bridge were: Cabrón Cove, located between the Escambrón Point and El Boquerón; Morrillo Cove, near the eastern end of San Juan. See Fray Iñigo Abbad y Lasierra, Historia Geográfica, Civil y Natural de la Isla de San Juan de Puerto Rico (new edition by Acosta), 162-164, as cited by Hoyt, op. cit; 44-45. The bridge position was at the site of the future San Antonio Fort.

8. Boletín Histórico de Puerto Rico, op. cit; V, 42, 44. See also the plan of Cumberland's attack reproduced in Rafael W. Ramírez de Arellano, La Capital a través de los Siglos, 1950.

9. Red Fort.

10. Devil Killer

11. Hoyt, op. cit; 52, note 56

12. Adolfo de Hostos, Ciudad Murada (Editorial Lex, La Habana, 1948), 179.

13. Hoyt, op. cit; 52, note 56, citing Iñigo Abbad y Lasierra, op. cit; 163-164.

14. Boletín Histórico de Puerto Rico, op. cit; V, 47, 48.

THE FORT OF SAN GERONIMO
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15. Archivo General de Indias -- Santo Domingo 155-1.

16. Boletín Histórico de Puerto Rico, op. cit; IV, 230.

17. For the Spanish account see Ibid. Both, the Spanish and the Dutch accounts are reproduced in Fernando Géigel Sabat, Balduino Enrico (Barcelona, 1934).

18. The map is reproduced in Géigel Sabat, op. cit; 100

19. See the author's preliminary report, La Plaza de Puerto Rico, 1765-1777 (National Park Service, San Juan, Puerto Rico, 1952), 19.

20. Archivo General de Indias -- Santo Domingo 2499.

21. "Mapa de la Plaza de San Juan de Puerto Rico y sus contornos, etc.," Francisco Valdelomar, 1747; "Plano de la Plaza de San Juan de Puerto Rico," Tomas O'Daly, 1772; "Mapa de la Plaza de San Juan de Puerto Rico, etc.," Tomas O'Daly, 1776.

22. "Plano de Puerto Rico," Don Tomás López, 1785; "Copia del nuevo Plano de Puerto Rico," Don Joseph Montero Spinosa, 1785.

23. Salvador Brau, Historia de Puerto Rico (D. Appleton and Co., New York, 1914), 197.

24. Relación de Fortificación (Copia inedita, propiedad de Rafael W. Ramírez).

25. Boletín Histórico de Puerto Rico, op. cit; XIII-XIV, 202-236.

* * * *

NOTE: The Brief History and the Bibliography were prepared by the Historian (Park), San Juan NHS. All other written data was prepared by the Architect, San Juan NHS.

Ricardo T. Reyes (Historian)

Frederik C. Gjessing (Architect)

Dick Sutton, (1954)
Approved

THE FORT OF SAN GERONIMO
San Juan, Puerto Rico

The beams supporting the roofs over house No. 1, the floor and the roof of house No. 2, the portico and the roof over rooms nos. 3 and 4 have been attacked by rot and termites where they are anchored in the walls, necessitating brackets and auxiliary supports. Over the portico and rooms nos. 3 and 4 the beams have given away in four areas causing breaks in the brick roof. The floor in House No. 2 has disintegrated in the same manner.

All pavements are in poor condition. On the gun deck it is practically gone. On the ramps and in the forecourt the original pavement of hard mortar with a brick aggregate is still in existence, but has many holes and cement patches.

The drains have been blocked at two points on the upper level where modern gun tracks have been installed and all along the North wall. On the lower level the drains have disintegrated at the gate and where it enters cistern No. 2. In rooms nos. 4 and 5 the outlets are blocked.

It can be assumed that cistern No. 1 is not functioning since no flow of water has been observed from it during the period of the survey. Cistern No. 2 is partly filled with rubble and, as mentioned above, the drains leading to the cisterns are damaged.

The following departures from the original structure are known. Two embrasures on the north side of gun deck have been walled up at an unknown date. The date is also unknown of the modifications to two of the gun positions on the upper level. Edward A. Hoyt assumes them to have been put in during the Spanish period. The first building to contain the commanding officers quarters is known to have been destroyed in 1898 during the hurricane of San Ciriaco. A later structure built on its site was torn down in 1948. A number of plumbing lines installed between 1921 and

THE FORT OF SAN GERONIMO
San Juan, Puerto Rico

1948 can be traced in the forecourt. None of the lines are connected, nor are they in a working condition. A small boat pier was built some time after 1921.

Number of Stories: There are two main levels. The upper one, the gun deck, is connected by two ramps with the forecourt. All ramps and vaults with exception of room No. 7 and cistern No. 2 are on the level of the forecourt. These are $1\frac{1}{2}$' and 6' lower than the forecourt.

Materials of Construction: The fort is built on a sandstone bedrock. The lower and outer walls are constructed from the same sandstone cut in blocks approximately 16" x 18" x 32" and laid in courses. The heavier walls and shell walls with a rubble fill core. Breast walls and interior walls are generally rubble masonry in a lime mortar, probably set up in forms. Brick was used throughout for lining, copings vaults and arches, and in one instance for an interior wall. Roofs are brick on asubo beams on linen concrete on barrel vaulting. Three sizes of brick were observed: 1" x $5\frac{1}{4}$" x $10\frac{1}{2}$", 2" x $5\frac{1}{4}$" x $10\frac{1}{2}$" and $1\frac{1}{2}$" x 6" x 12". Pavements and walking surfaces are a hard linen mortar with a burnt clay and brick fragment aggregate. All walls were originally covered with a lime stucco. Traces of lime wash can be observed on the structures facing the forecourt.

* * * *

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THE FORT OF SAN GERONIMO
San Juan, Puerto Rico

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THE FORT OF SAN GERONIMO
San Juan, Puerto Rico

8. Hostos, Adolfo de, Ciudad Murada. Editorial Lex, La Habana, 1948, 70, 71, 72, 179, 196, 197. (It contains good general information about the Fort.)

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THE FORT OF SAN GERONIMO
San Juan, Puerto Rico

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Prepared by:

Ricardo T. Reyes
Historian (Park)
3/7/53

Other Existing Records (Cont.)

* * * *

A LISTING OF PICTORICAL MATERIAL AT PRESENT AVAILABLE ON SAN GERONIMO

(The list is extracted from all maps, charts, etc. in the possession of or available to the National Park Service at San Juan NHS)

1600 (Approx.) Plano del Ataque de Cumberland del original en la narración de Lady Ann en 1600 (El Fuerte Matadiablo)

THE FORT OF SAN GERONIMO
San Juan, Puerto Rico

1747 Mapa de la Plaza de San Juan de Puerto Rico y sus contornos, etc.

Francisco Fernández Valdelomar (Fuerte de San Gerónimo)

1765 Plano de la Plaza de San Juan de Puerto Rico, Don Manuel Miguel de León (Fuerte de San Gerónimo)

1772 Plano de la Plaza de San Juan de Puerto Rico, Tomas O'Daly. (Casa Fuerte de San Gerónimo)

1776 Mapa de la Plaza de San Juan de Puerto Rico, su Bahia sondeada, Playa, etc. Abril 27, 1776, Tomas O'Daly

1784 Plano del Puerto de la Ysla de Puerto Rico delineado por D. José María Sánchez, bajo la corrección de D. Pedro Rivelles.

1785 Plano de Puerto Rico
Dale Luz - Don Tomás López, Madrid
(Castillo de San Geronimo)

1785 Copia del Nuevo Plano de Puerto Rico, Nov. 1785, diseñado y registrado del orden de Don Joseph Montero Spinosa, Comandante del nombrado S. Felipe.

1795 Plano de Puerto Rico - Drawn by Don Manuel Burgos for the Royal Spanish Navy, Oct. 1795. (Measurements taken in Puerto Rico in 1782)

1795 La Ciudad en 1797 - Campeche (San Juan during the attack of Abercromby)?

1851 Isla de Puerto Rico. Insert San Juan by Teniente Coronel, Capt. of Ingenieros Francisco Coello and Don Pascual Madoz, Madrid, 1851. (Fuerte de San Geronimo)

1871 Plano de la Zona Extramuros de la Ysla donde se halla asentada. Evaristo de Churruca.

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1881	Plano de la Plaza de San Juan de Puerto Rico. Levantado por el Cuerpo de Ingenieros Militares para el estudio de las nuevas defensas de la misma.
1887	Plano de la Plaza de San Juan de Puerto Rico. Levantado por el Cuerpo de Ingenieros Militares - copia del original.
1873	Plano de la Ciudad de San Juan de Puerto Rico. El Ingeniero Jefe, marzo 15, 1873.
1900	Album of Puerto Rico by López Cepero
1948	Government of Puerto Rico, Department of Education Photographic collection.

* * * *

Additional Data:

MISCELLANEOUS OBSERVATIONS

Following observations were made while surveying San Geronimo:

The Fort is equipped with two kitchens, one in room No. 2 and one in room No. 6. The latter still has its chimney. In room No. 2 there are signs of a large hood over the bench cooking shelf.

The fort has two cisterns. No. 1 contained the drinking water. It is fed from the roofs over rooms Nos. 3 and 4 and the portico, and it was emptied through a well in the forecourt.

Cistern No. 2 contained water for washing and bathing purposes. Its bottom is approximately 1' above the main low water level, and it is fed from the forecourt and the ramps.

House No. 2 served as the latrine. The sewage was washed away at high tides.

THE FORT OF SAN GERONIMO
San Juan, Puerto Rio

Additional Data (Cont.)

BRIEF HISTORY

San Geronimo Fort is located at the easternmost point of the islet of San Juan extending about 250 feet into the inlet called El Boqueron, which connects the Atlantic Ocean and San Juan Bay through San Antonio Channel. The mission of San Geronimo was to protect this second entrance to the San Juan harbor and repel invasion from the island of Puerto Rico.

The fortification of El Boqueron Point is mentioned for the first time[1] by Governor Diego Menendez de Valdes (1582-1593) in his report to the Junta de Puerto Rico in 1587.[2] According to the report Menendez fortified the Poqueron Point with a platform and a trench big enough to emplace 6 artillery pieces.[3] In 1591 Captain Pedro de Salazar, who was commissioned to carry out a plan of fortification designed by the military engineer Juan Bautista Antonelli razed all works, redoubts and trenches built by Governor Valdes on the eastern part of the islet of San Juan.[4] As proved later by Drake's and Cumberland's attacks, 1595 and 1598 respectively, the action of Salazar was a








PR 49
PHOTO G



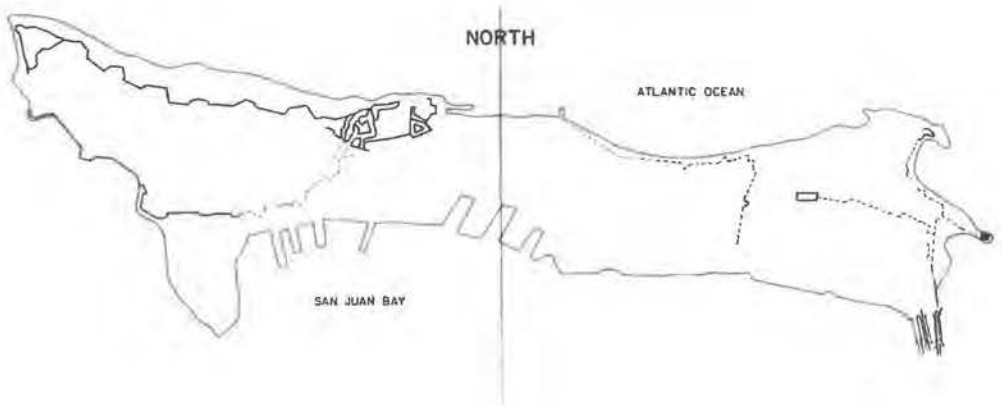






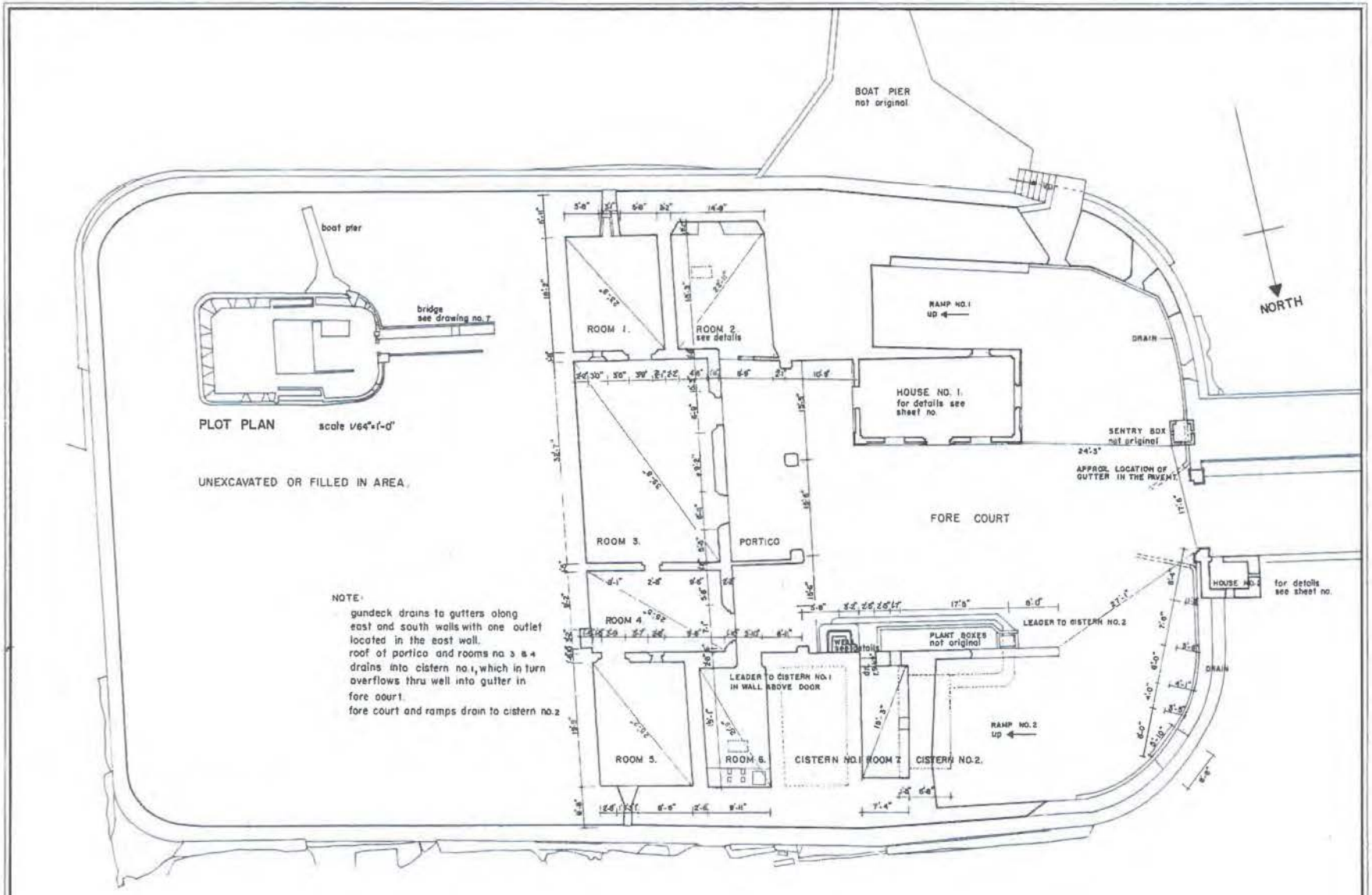
SAN GERONIMO

SAN JUAN, PUERTO RICO



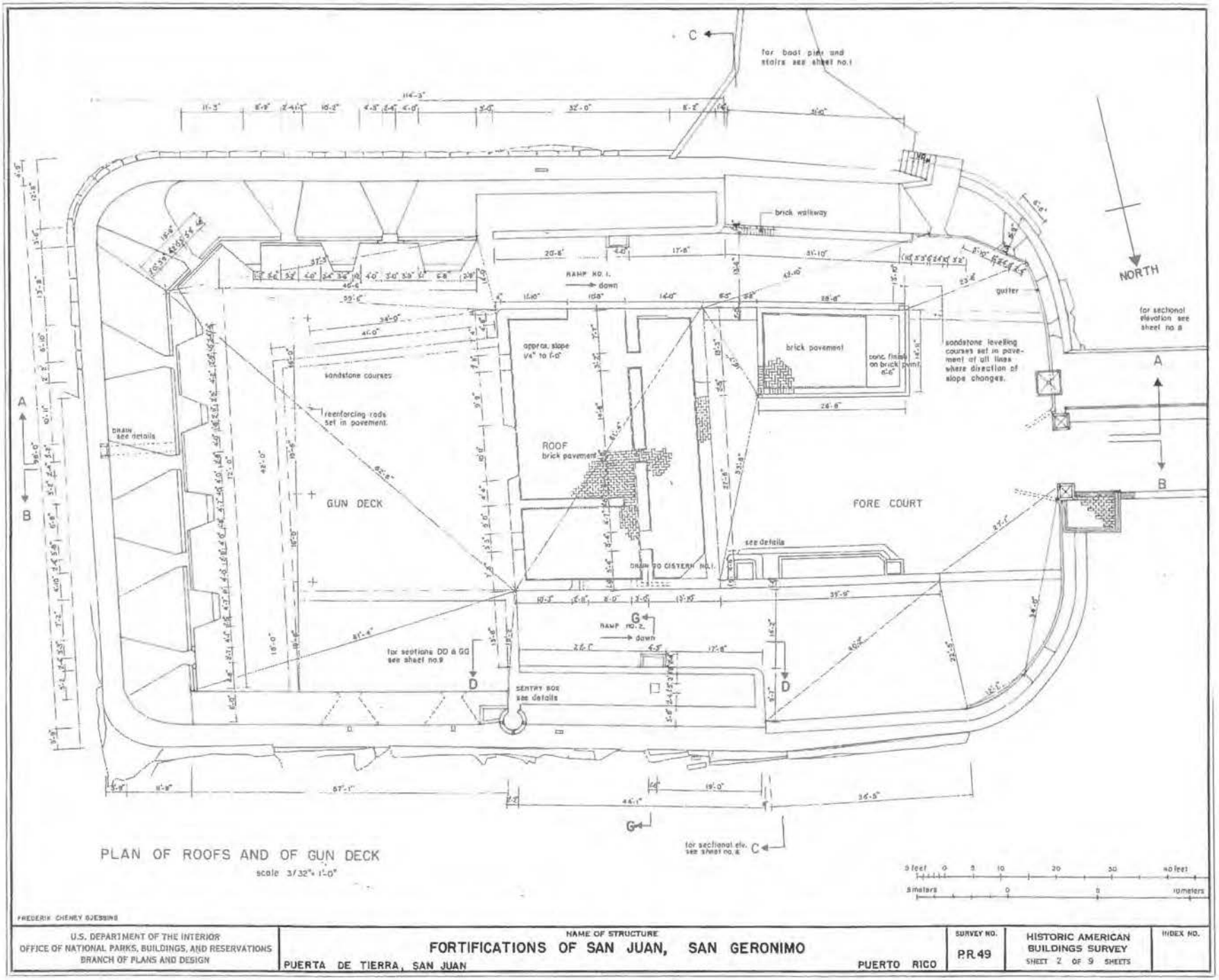
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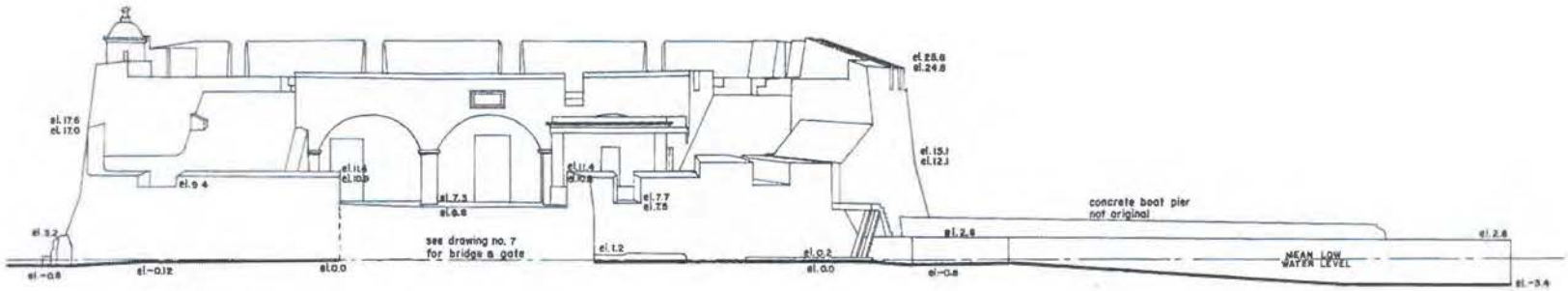
HISTORIC AMERICAN BUILDINGS SURVEY U. S. DEPARTMENT OF THE INTERIOR NATIONAL PARK SERVICE BRANCH OF PLANS AND DESIGN	MEASURED: DECEMBER 1952 DRAWN: MARCH & AUGUST 1958 MEASUREMENTS CHECKED: C. W. LESSIG	DRAWINGS APPROVED: , DISTRICT OFFICER. DRAWINGS APPROVED: Dick Sutton , CHIEF ARCHITECT. ACCEPTED FOR LIBRARY OF CONGRESS:	DISTRICT OF PUERTO RICO FIELD PARTY FREDERIK CHENEY BJESSING-SAN JUAN LUIS H. PEREZ CINTRON-PUERTO NUEVO	SURVEY NO. P.R.49 9 SHEETS	INDEX NO. P.P. 1.50 2



FREDERIK CHENEY GJESSING

U.S. DEPARTMENT OF THE INTERIOR OFFICE OF NATIONAL PARKS, BUILDINGS, AND RESERVATIONS BRANCH OF PLANS AND DESIGN	NAME OF STRUCTURE FORTIFICATIONS OF SAN JUAN, SAN GERONIMO PUERTA DE TIERRA. SAN JUAN. PUERTO RICO	SURVEY NO. P.R.49	HISTORIC AMERICAN BUILDINGS SURVEY SHEET 1 OF 9 SHEETS	INDEX NO.


for boat pier and stairs see sheet no.1
brick walkway
NORTH
for sectional elevation see sheet no.8
RAMP NO.1.
down
gutter
approx. slope 1/4" to 1'-0"
brick pavement
conc. finish on brick pavmt.
sandstone levelling courses set in pavement at all lines where direction of slope changes.
sandstone courses
reenforcing rods set in pavement
DRAIN see details
ROOF brick pavement
GUN DECK
FORE COURT
see details
DRAIN TO CISTERN NO.1.
RAMP NO.2.
down
for sections DD & GG see sheet no.9
SENTRY BOX see details
for sectional elev. see sheet no.8
PLAN OF ROOFS AND OF GUN DECK
scale 3/32"= 1'-0"
FREDERIK CHENEY GJESSING
U.S. DEPARTMENT OF THE INTERIOR
OFFICE OF NATIONAL PARKS, BUILDINGS, AND RESERVATIONS
BRANCH OF PLANS AND DESIGN
NAME OF STRUCTURE
FORTIFICATIONS OF SAN JUAN, SAN GERONIMO
PUERTA DE TIERRA, SAN JUAN
PUERTO RICO
SURVEY NO.
P.R.49
HISTORIC AMERICAN BUILDINGS SURVEY
SHEET 2 OF 9 SHEETS
INDEX NO.



WEST ELEVATION

NOTE:

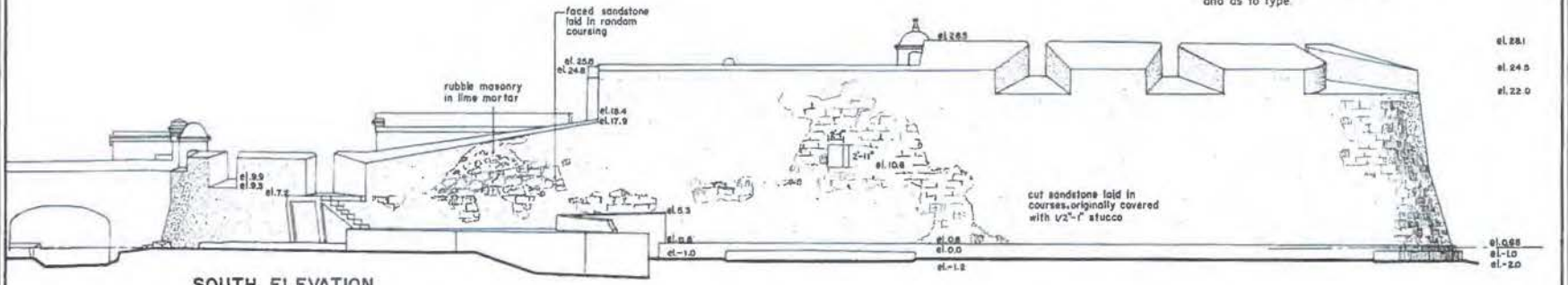
all drawings in scale 3/32"=1'-0".

elevations in feet above mean low water.

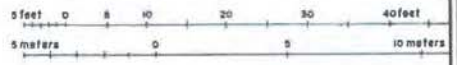
west & east elevations are projections on planes parallel to the east wall.

south & north elevations are projections on planes perpendicular to the east wall.

masonry where indicated is faithfully reproduced as to number of courses and as to type.

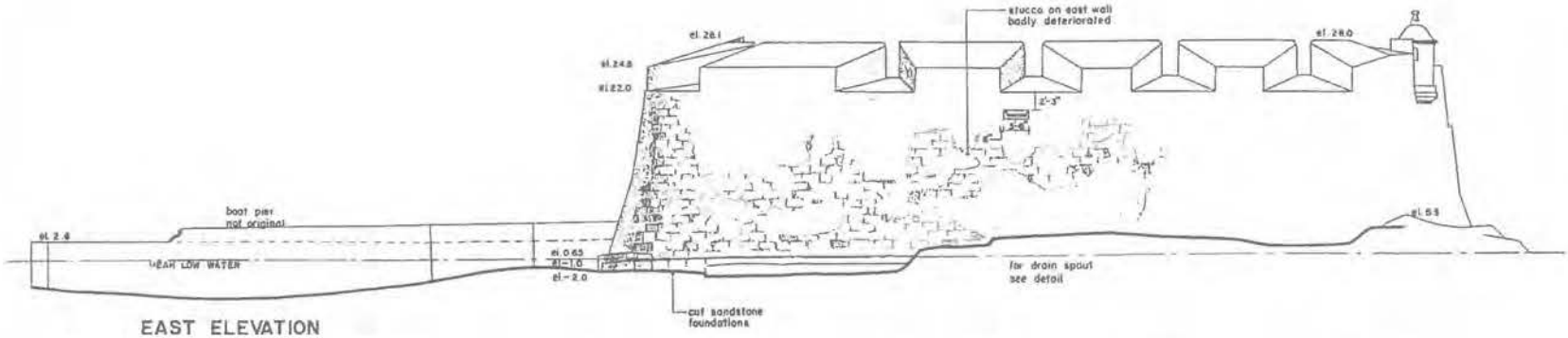


SOUTH ELEVATION



LUIS H. PEREZ CINTRON

U.S. DEPARTMENT OF THE INTERIOR OFFICE OF NATIONAL PARKS, BUILDINGS, AND RESERVATIONS BRANCH OF PLANS AND DESIGN	NAME OF STRUCTURE FORTIFICATIONS OF SAN JUAN, SAN GERONIMO PUERTA DE TIERRA, SAN JUAN, PUERTO RICO	SURVEY NO. P.R.49	HISTORIC AMERICAN BUILDINGS SURVEY SHEET 3 OF 9 SHEETS	INDEX NO.

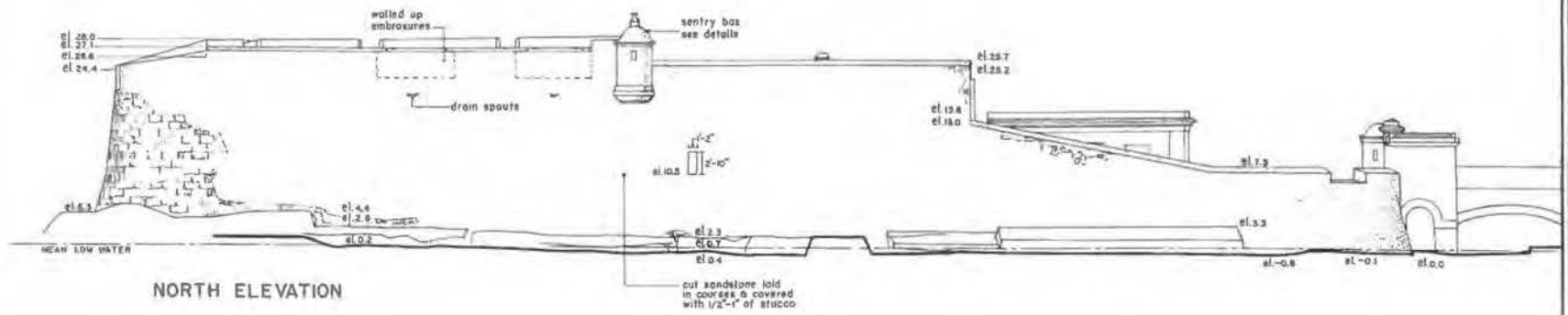


EAST ELEVATION

NOTE:
all drawings in scale 3/32"=1'-0"

elevations shown are in feet above mean low water.

masonry where indicated is faithfully reproduced as to number of courses & as to type.

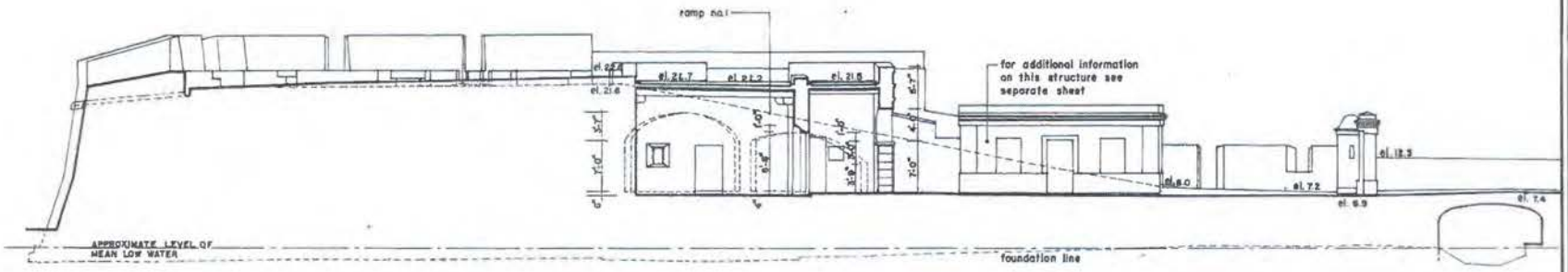


NORTH ELEVATION

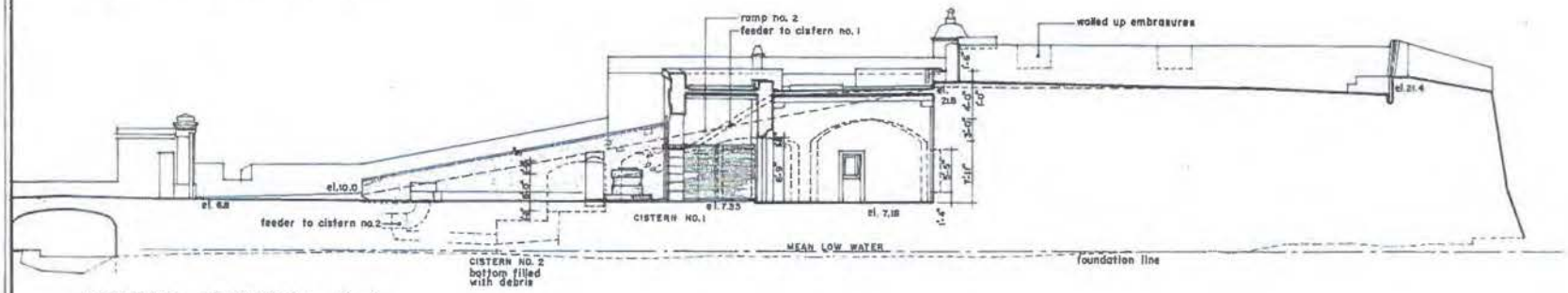
0 feet 0 5 10 20 30 40 feet
5 meters 0 5 10 meters

FREDERIK CHEKEY GJESSING

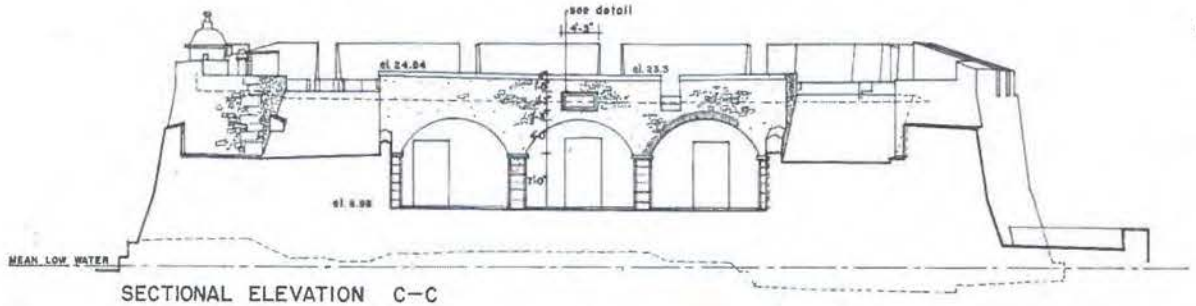
U.S. DEPARTMENT OF THE INTERIOR OFFICE OF NATIONAL PARKS, BUILDINGS, AND RESERVATIONS BRANCH OF PLANS AND DESIGN	NAME OF STRUCTURE FORTIFICATIONS OF SAN JUAN, SAN GERONIMO PUERTA DE TIERRA, SAN JUAN, PUERTO RICO	SURVEY NO. PR.49	HISTORIC AMERICAN BUILDINGS SURVEY SHEET 4 OF 9 SHEETS	INDEX NO.



SECTIONAL ELEVATION A-A



SECTIONAL ELEVATION B-B



SECTIONAL ELEVATION C-C

NOTE:
all drawings in scale 3/32"=1'-0"

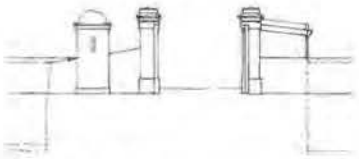
masonry where indicated is faithfully reproduced in these drawings.

elevations in feet above mean low water.

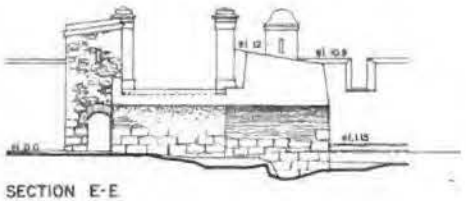
5 0 5 10 20 30 40 feet
5 meters 0 5 10meters

FREDERIK CHENEY GJESSING

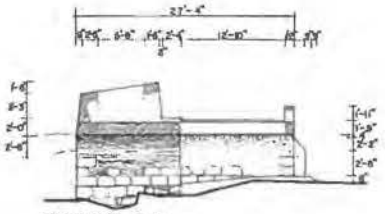
U.S. DEPARTMENT OF THE INTERIOR OFFICE OF NATIONAL PARKS, BUILDINGS, AND RESERVATIONS BRANCH OF PLANS AND DESIGN	NAME OF STRUCTURE FORTIFICATIONS OF SAN JUAN, SAN GERONIMO PUERTA DE TIERRA, SAN JUAN PUERTO RICO	SURVEY NO. P.R.49	HISTORIC AMERICAN BUILDINGS SURVEY SHEET 5 OF 9 SHEETS	INDEX NO.



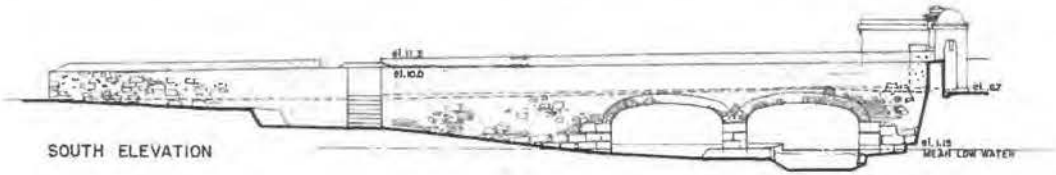
GATE ELEVATION



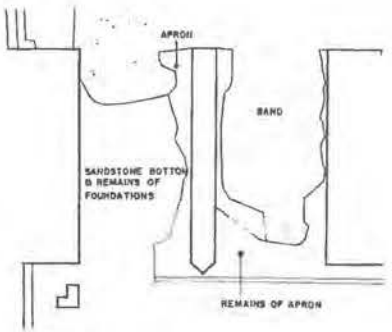
SECTION E-E



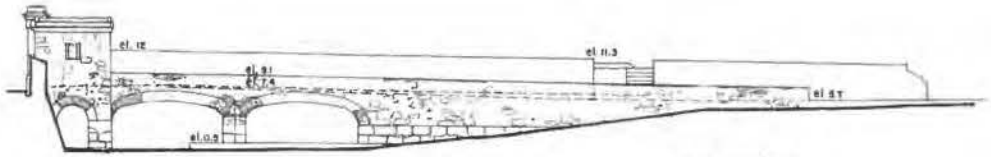
SECTION F-F



SOUTH ELEVATION



FOUNDATION PLAN



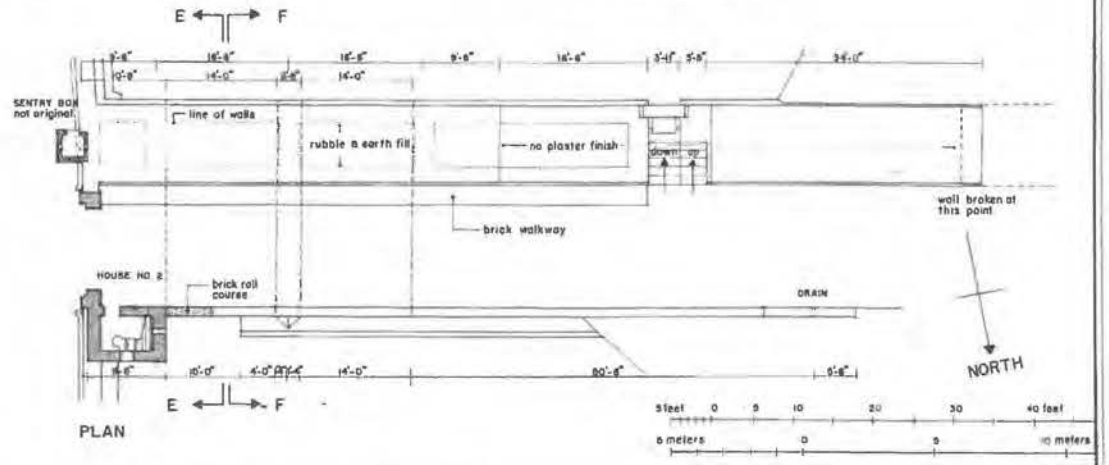
NORTH ELEVATION

NOTE:

all plans, sections and elevations in scale 3/32"=1'-0".

see separate sheets for details of gateway and of house no. 2.

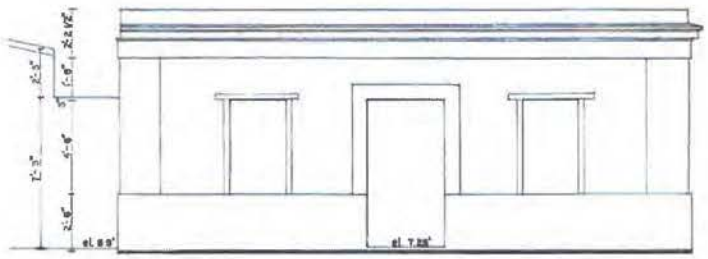
elevations shown are in feet above mean low water.



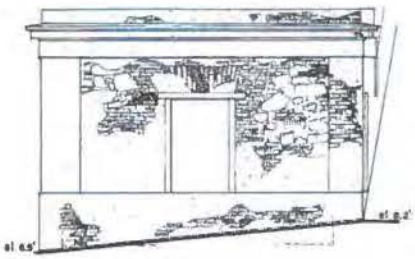
PLAN

FREDERIK CHENEY GJESSING

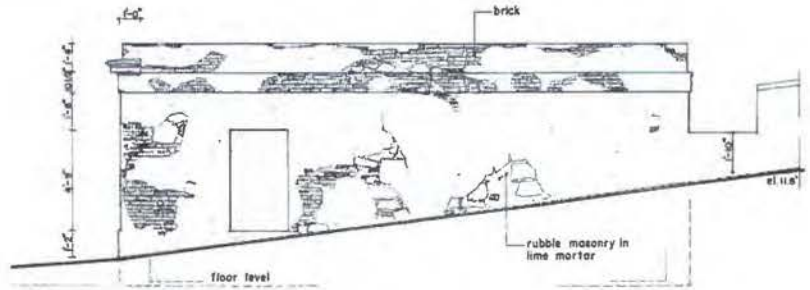
U.S. DEPARTMENT OF THE INTERIOR OFFICE OF NATIONAL PARKS, BUILDINGS, AND RESERVATIONS BRANCH OF PLANS AND DESIGN	NAME OF STRUCTURE FORTIFICATIONS OF SAN JUAN, SAN GERONIMO PUERTA DE TIERRA, SAN JUAN, PUERTO RICO	SURVEY NO. P.R.49	HISTORIC AMERICAN BUILDINGS SURVEY SHEET 6 OF 9 SHEETS	INDEX NO.



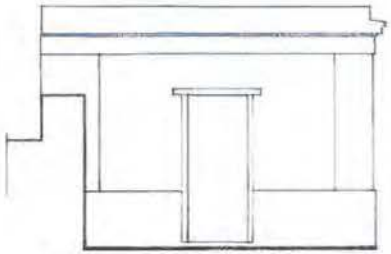
NORTH ELEVATION



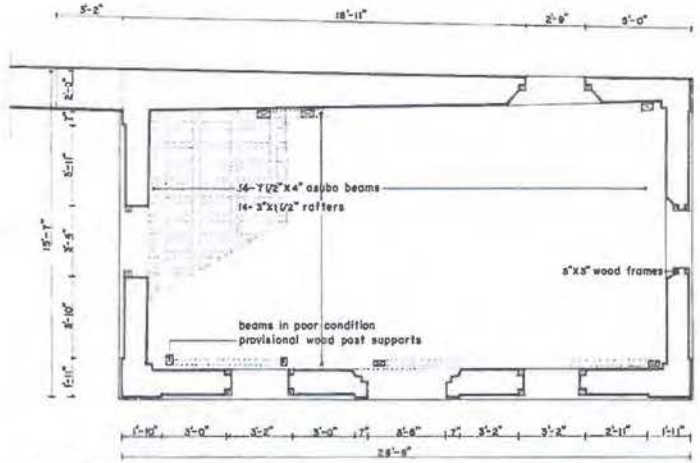
WEST ELEVATION



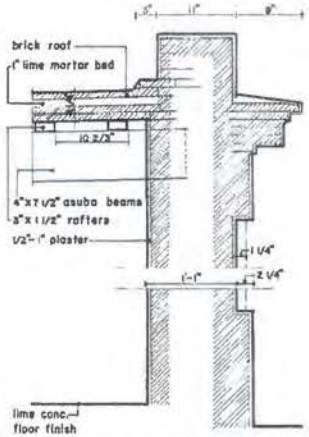
SOUTH ELEVATION



EAST ELEVATION



FLOOR PLAN



TYPICAL WALL SECTION
scale: 1"=1'-0"

NOTE:
plans & elevations in scale 1/4"=1'-0"

masonry where indicated faithfully reproduced as to type, number of courses & condition.

the structure is in a ruinous state.

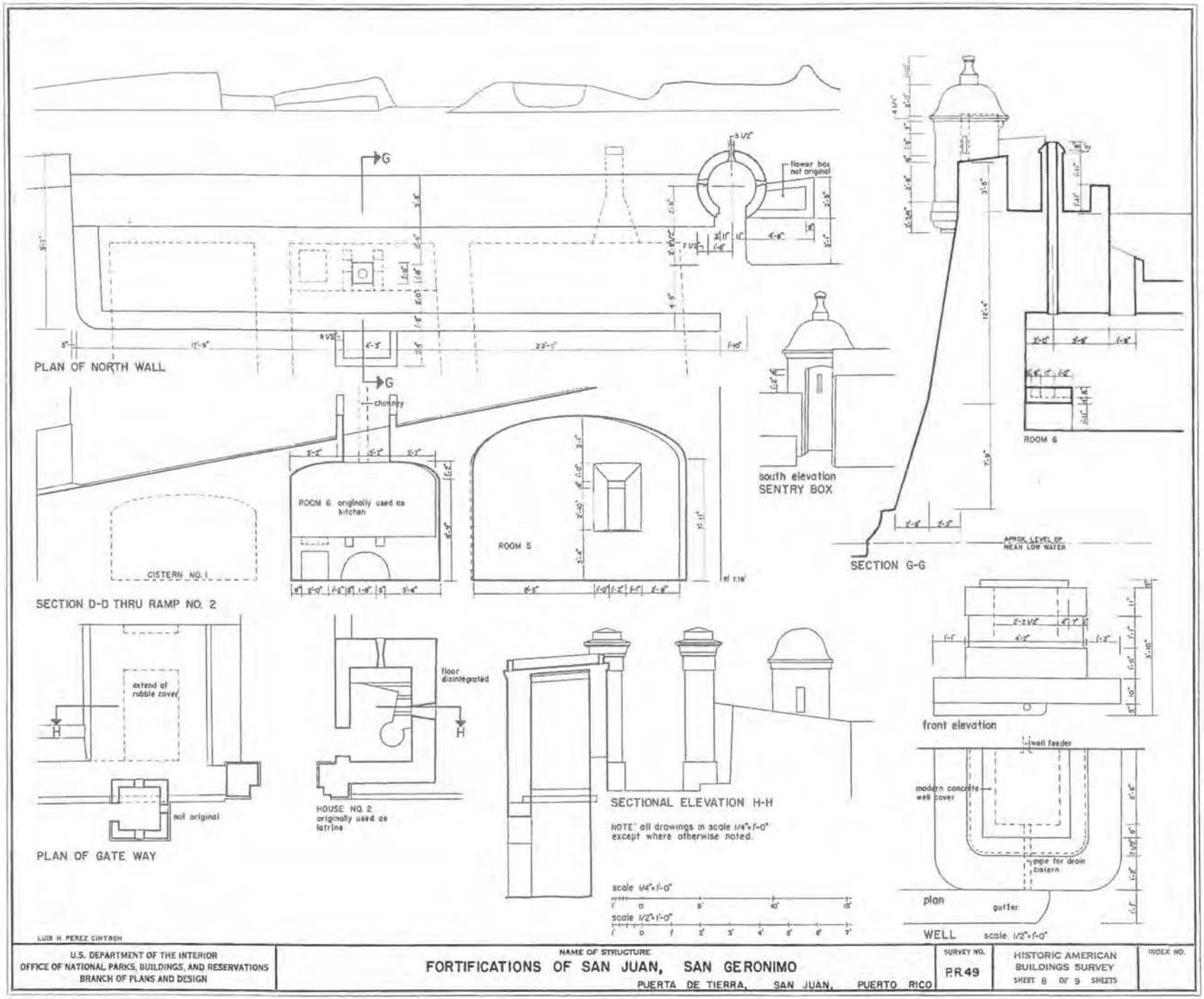
scale 1"=1'-0"
0 1' 2' 3'

scale 1/4"=1'-0"
1' 0 5' 10' 15'

FREDERIK CRENEY GJESSING

HOUSE NO. 1

U.S. DEPARTMENT OF THE INTERIOR OFFICE OF NATIONAL PARKS, BUILDINGS, AND RESERVATIONS BRANCH OF PLANS AND DESIGN	NAME OF STRUCTURE FORTIFICATIONS OF SAN JUAN, SAN GERONIMO PUERTA DE TIERRA, SAN JUAN, PUERTO RICO	SURVEY NO. PR.49	HISTORIC AMERICAN BUILDINGS SURVEY SHEET 7 OF 9 SHEETS	INDEX NO.


PLAN OF NORTH WALL
flower box not original
SECTION D-D THRU RAMP NO. 2
CISTERN NO. 1
ROOM 6 originally used as kitchen
chimney
ROOM 5
south elevation
SENTRY BOX
ROOM 6
SECTION G-G
APPROX. LEVEL OF MEAN LOW WATER
front elevation
PLAN OF GATE WAY
extend of rubble cover
not original
floor disintegrated
HOUSE NO. 2 originally used as latrine
SECTIONAL ELEVATION H-H
NOTE: all drawings in scale 1/4"=1'-0" except where otherwise noted.
scale 1/4"=1'-0"
scale 1/2"=1'-0"
well feeder
modern concrete well cover
pipe for drain cistern
plan
gutter
WELL scale: 1/2"=1'-0"
LUIS H. PEREZ CINTRON
U.S. DEPARTMENT OF THE INTERIOR
OFFICE OF NATIONAL PARKS, BUILDINGS, AND RESERVATIONS
BRANCH OF PLANS AND DESIGN
NAME OF STRUCTURE
FORTIFICATIONS OF SAN JUAN, SAN GERONIMO
PUERTA DE TIERRA, SAN JUAN, PUERTO RICO
SURVEY NO.
P.R.49
HISTORIC AMERICAN BUILDINGS SURVEY
SHEET 8 OF 9 SHEETS
INDEX NO.

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1954c Second Line of Defense, San Juan, Puerto Rico. Historic American Buildings Survey HABS-PR-51.

1954d El Polvorin (Powder House), San Juan, Puerto Rico. Historic American Buildings Survey HABS-46.

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As the nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering sound use of our land and water resources; protecting our fish, wildlife, and biological diversity; preserving the environmental and cultural values of our national parks and historic places; and providing for the enjoyment of life through outdoor recreation. The department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

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