ERDC/CERL TR-09-6

US Army Corps
of Engineers®
Engineer Research and
Development Center

Legacy Resource Management Program

Guidelines for Identifying and Evaluating Historic Military Landscapes

Suzanne Keith Loechl, Susan I. Enscore,
Megan Weaver Tooker, and Samuel A. Batzli

February 2009

Construction Engineering
Research Laboratory

Legacy Resource Management Program
Project 05-197

ERDC/CERL TR-09-6
February 2009

Guidelines for Identifying and Evaluating Historic Military Landscapes

Suzanne Keith Loechl, Susan I. Enscore, and Megan Weaver Tooker

Construction Engineering Research Laboratory
U.S. Army Engineer Research and Development Center
2902 Newmark Drive
Champaign, IL 61822

Samuel A. Batzli

Space Science and Engineering Center
University of Wisconsin - Madison
1225 W. Dayton Street
Madison, WI 53706

Final Report.

Prepared for Legacy Resource Management Program
Arlington, VA 22202

Under Work Unit 103774

Abstract: The U.S. Congress created the National Historic Preservation Act (NHPA) to provide guidelines and requirements aimed at preserving tangible elements of our past primarily through the creation of the National Register of Historic Places (NRHP). Federal agencies are required to inventory and evaluate their cultural resources, defined as any prehistoric or historic district, site, building, structure, or object. Over the last several years, historic landscapes have been recognized as significant cultural resources on Department of Defense (DoD) military installations. As a result, concern with efficient management of these landscapes found a place in the military consciousness. To achieve efficient management, enabling guidelines became necessary. This document provides information on identifying, inventorying, and evaluating historic military landscapes to the standards established by the NRHP.

Table of Contents

List of Figures and Tables

Figures

Tables

Preface

This study was conducted for the Department of Defense (DoD) Legacy Resource Management Program under Military Interdepartmental Purchase Request (MIPR) W31RY051521019 "National Register Bulletin for Historic Military Installation Districts." The technical monitor was Hillori L. Schenker of the DoD Legacy Resource Management Program Office in Arlington, VA.

The work was performed by the Land and Heritage Conservation Branch (CN-C) of the Installations Division (CN), U.S. Army Engineer Research and Development Center – Construction Engineering Research Laboratory (ERDC-CERL). At the time of publication, Dr. Christopher M. White was Chief, CEERD-CN-C; Dr. John T. Bandy was Chief, CEERD-CB; and Dr. William D. Severinghaus was the Technical Director for Military Ranges and Lands. The Deputy Director of ERDC-CERL was Dr. Kirankumar Topudurti and the Director was Dr. Ilker Adiguzel.

COL Gary E. Johnston was the Commander and Executive Director of ERDC, and Dr. James R. Houston was the Director.

Acknowledgements

The authors are indebted to many individuals who provided assistance and support over the years this work has been in progress. Foremost, we would like to thank Hillori L. Schenker and Brian Lione of the DoD Legacy Resource Management Program Office for their funding, unflagging enthusiasm and unerring guidance. Linda McClelland of the National Register of Historic Places, National Park Service, provided multiple reviews and insightful comments that resulted in a much more useful document, as did her fellow National Register employee Dan Vivian. Robert Z. Melnick, University of Oregon and Deborah Cannan, of R. Christopher Goodwin and Associates, both contributed to earlier versions of this document, and we appreciate their interest and output. Lastly, we are grateful for the conscientious editing of Jean Noellsch, ERDC-CERL.

Unit Conversion Factors

Multiply	By	To Obtain
acres	4,046.873	square meters
hectares	1.0 E+04	square meters
miles (U.S. statute)	1,609.347	meters
square miles	2.589998 E+06	square meters

1 Introduction

1.1 Background

Through the years, the U.S. Congress has enacted laws to preserve our national cultural heritage. The first major federal preservation legislation was the Antiquities Act of 1906. This Act was instrumental in securing protection for archaeological sites on federal property. The benefits derived from this Act, and from subsequent legislation, precipitated an expanded and broader need for the preservation of historical cultural resources. With this growing awareness, the U.S. Congress codified the National Historic Preservation Act of 1966 (NHPA) on 15 October 1966, creating the most sweeping cultural resources legislation to date.

The U.S. Congress created the NHPA to provide guidelines and requirements aimed at preserving tangible elements of our past, primarily through the creation of the National Register of Historic Places (NRHP, or National Register). Two sections within this piece of legislation (Sections 110 and 106) require federal agencies to address their cultural resources. (Cultural resources are defined as any prehistoric or historic district, site, building, structure, or object.) Section 110 requires federal agencies to inventory and evaluate their cultural resources. Section 106 requires federal agencies to determine the effect of federal undertakings on those properties deemed eligible, or potentially eligible, for the NRHP.

The 18 September 2008 Department of Defense (DoD) Instruction 4715.16, *Cultural Resources Management*, identified landscapes as an important cultural resource to be evaluated and managed. However, there has been no existing DoD-wide guidance for assessing these properties. The National Park Service has published National Register Bulletins, which address historic landscapes, but none are specifically focused on military landscapes as a unique landscape type.

In 1994, the Legacy Resource Management Program funded the development of guidelines for documenting and evaluating historic military landscapes. Although originally intended as a National Register Bulletin to assist all services, the guidelines were formalized as an Army technical guidance document: *Guidelines for Documenting and Evaluating Historic Military Landscapes: An Integrated Landscape Approach*. These guide-

lines became the basis for the subsequent Department of the Army Pamphlet: *Cultural Resources Management* (DA PAM 210-4). After being applied at numerous Army installations, the guidelines have recently become an integral part of the Integrated Cultural Resource Management Plans (ICRMP) required by DoD Instruction 4715.16.

1.2 Objectives

This document has three objectives: (1) to provide guidance for recording the historical development and planning of military landscapes, (2) to document a systematic method for effectively evaluating the landscapes, and (3) to assist in preparing nominations for the NRHP.

To qualify for the NRHP, the property must: (1) meet at least one of the National Register Criteria for Evaluation, (2) be significantly associated with an important historical context, and (3) retain sufficient integrity to convey its significance.

This document is designed primarily for use by Cultural Resource Managers on active DoD installations, preservation professionals contracted by the Armed Services, and state and federal agencies that have historic military landscapes under their stewardship.

1.3 Approach

In 2003, ERDC-CERL personnel were asked to review, edit and revise the draft report of *Guidelines for Documenting and Evaluating Historic Military Landscapes: An Integrated Landscape Approach* (Draft 1996), based on current technology and National Register publication content requirements. Additionally, the DoD Instructions and service regulations put in place within recent years that placed historic landscapes in a more prominent light have resulted in increased reliance on these guidelines. As a result, both Legacy personnel and the authors revisited the document and discovered some information to be outdated. In 2005, the DoD Legacy Cultural Resources Program funded the CERL authors' efforts to update the *Guidelines* document.

As a result, information in this document was revised and expanded. Due to the primarily visual nature of historic military landscapes, the document also was illustrated with relevant images. These revisions elaborated on the systematic approach discussed in the draft and focused on the func-

tional organization of military installations, addressing the role of the ICRMPs in evaluating historic military landscape districts, improving the overall document organization, and including more examples. The original intent to also publish this document as an NRHP bulletin (in order to reach a wider audience), was not possible due to a revision in the NRHP publication policy.

2 Introducing Historic Military Landscapes

Military installations are a distinct property. There are over 5,400 U.S. Department of Defense installations.[1] These installations vary tremendously in size, form, and purpose, but all reflect the central role the armed services have played in American history (Figure 1, Figure 2, and Figure 3).

A military installation is a property owned and operated by the DoD that facilitates military training and operations and often supports military personnel and their families. Many military installations are associated with important persons, events, and themes.

This document explains what is distinctive about military installations, how they reflect both military and national history and traditions, and how they can be identified and evaluated for listing in the National Register.

Figure 1. Photograph from Chapel dome looking southeast at Bancroft Hall, Dahlgren Hall, Ward Hall, and the Superintendent's House in foreground, U.S. Naval Academy, Annapolis, MD, circa 1980. (HABS/HAER)

[1] *Base Structure Report, Fiscal Year 2008 Baseline,* (Washington, DC: Office of the Deputy Undersecretary of Defense, (Installations and Environment), 2008), 2.

Figure 2. Enlisted soldiers' barracks along Montgomery Street at the Presidio of San Francisco, CA taken in 1975. These Colonial Revival style barracks were built during the 1890's to accommodate an influx of troops as many frontier forts were closed. (HABS/HAER and NPS)

Figure 3. An aerial view of Missile Row at Cape Canaveral Air Force Station taken November 13, 1964. The launch complexes supported a combination of missile testing and human spaceflight during the 1960s. (NASA image 64PC-0082)

The guidance in this document employs a cultural landscape approach, by emphasizing the importance of studying a property from multiple perspectives and understanding its development over time, before making judgments about the eligibility of component resources. The approach can be understood as a process of evaluation that takes as its starting point a broad view of an installation's history, and then focuses on individual resources or groups of related resources. Thus, military installations are best understood from an analytical perspective – grounded in a strong understanding of their evolution over time, knowledge of how they figured in the course of national history, and an understanding of the layers of culture that existed on the property before military use began.

A military landscape is a landscape that has evolved in response to the needs of national security and defense. It is one of several landscape types that reflect the military history of the nation including battlefields, cemeteries, memorial or commemoration sites, and previously-owned Department of Defense sites. This bulletin sets forth a process for evaluating and documenting NRHP-eligible military landscapes on active installations, herein called "historic military landscapes." This process is consistent with cultural resource management practices set forth in DoD regulations (as outlined in Section 2.1, below).

As a unique property type, military installations are not specifically covered under existing NRHP bulletins. Imbedded in these military landscapes are remnants of centuries of national history, as well as military culture reflecting such values as uniformity, hierarchy, and patriotism. These landscapes are continually evolving with changes in military mission, training, and advancements in battle systems and weapons technology.

Military installations may contain a wide range of property types, ranging, for example, from a historic design in a residential area to a Cold War missile silo. This continual juxtaposition of heritage and technology, plus the multiplicity of property types, makes the study of military installations difficult and necessitates a layered cultural landscape approach.

2.1 Defining Military Landscapes

The military landscape thus constitutes a distinctive form of a cultural landscape, and the method of evaluation set forth here relies on this perspective. The concept of cultural landscapes has been used (directly or in-

directly) since the early 1980s by the National Park Service (NPS) to evaluate, interpret, and manage historic properties under their control. The NPS defines a cultural landscape as a "geographic area, including both cultural and natural resources, associated with a historical event, activity or person, or exhibiting other cultural or aesthetic values."[2] Cultural landscapes have long been discussed and interpreted both in scholarly research and in professional practice.

The NRHP recommends the use of the multiple property approach for organizing information about groups of resources and historic districts related by common themes and historical contexts. This grouping of resources with common physical characteristics and historical associations is extremely useful for the military since the Department of Defense tended to have massive, nationwide building programs (e.g. during WWI and WWII) which used standardized plans. This approach is consistent with the methods for developing historic contexts and identifying property types set as set forth in the S*ecretary of the Interior's Standards for Archeology and Historic Preservation*.[3]

This guidance should be applied to active Department of Defense installations, including the following types:

- garrisons
- forts
- air bases
- ports and shipyards
- training facilities
- industrial plants
- depots
- research facilities
- proving grounds, or
- any other collection of facilities used in day-to-day operations

National Register Bulletins discuss battlefields, cemeteries, and airfields. The guidance here should be used together with those bulletins, if such

---

[2] Charles A. Birnbaum, ed., *The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes* (Washington, DC: U.S. Department of the Interior, National Park Service, 1996), 4.

[3] See the S*ecretary of the Interior's Standards for Archaeology and Historic Preservation, http://www.nps.gov/history/local-law/arch_stnds_0.htm, (1983).*

property types are part of the installation. In addition, historic resources on an installation that predate the military presence, and are significant for non-military associations, are a critical part of an installation's history and therefore, must also be included in the documentation and preservation process. These resources may include historical archaeological sites or extant buildings and structures (e.g., farmsteads, mills, or towns).

Instructions for using the multiple property approach can be found in the bulletin, *How to Complete the Multiple Property Documentation Form*. A list of National Register Bulletins is provided in the Recommended Reading section of this document (see pages 143-45).

2.2 The Mandate for Cultural Resource Management

The preservation of historic military landscapes provides the public with a tangible link to important themes and events in our nation's past. Maintaining significant military properties demonstrates pride in our heritage and gratitude to our veterans, and provides future generations with evidence of our ongoing commitment to national defense.

This document is intended to serve two primary functions: (1) to provide guidance for evaluating historic landscapes and individual resources within military installations under the National Register criteria, and (2) to provide help in determining the eligibility and boundaries of a historic military landscape for NRHP nomination.

This bulletin is designed for use by cultural resource managers (CRMs) at active military installations, preservation professionals contracted by the military services, State Historic Preservation Officers and their staffs, Federal Historic Preservation Officers (FPOs), Tribal Preservation Officers (TPOs), and caretakers of inactive installations. It should be used in conjunction with other published guidance, especially the National Register Bulletins: *How to Apply the National Register Criteria for Evaluation, How to Complete the National Register Registration Form, How to Complete the National Register Multiple Property Documentation Form, and Defining Boundaries for National Register Properties*.

There are three reasons for evaluating the significance of military properties under the National Register criteria: (1) federal law requires it, (2) sizable portions of the valuable historical and cultural properties of our country lie within, or are part of, the 30 million acres of Department of Defense

land, and (3) protecting our cultural resources is a matter of national pride and patriotism.[4]

Foremost among the federal legislation requiring assessment of cultural resources on military installations is the National Historic Preservation Act of 1966 (NHPA), as amended. The NHPA requires federal agencies to identify, evaluate, and preserve historic properties within their jurisdiction.

This document will assist with evaluating historic properties to ensure compliance with two sections of the NHPA. Section 106 of the NHPA requires federal agencies to take into account the effects of their undertakings on historic properties and to afford the Advisory Council on Historic Preservation an opportunity to comment regarding these effects[5]. Historic properties are those properties listed in, or eligible for listing in, the National Register of Historic Places. Section 110 of the NHPA requires installations and commands to develop and implement plans for the identification, management, and nomination of cultural resources.

Stewardship of identified historic properties by the Department of Defense provides a mechanism for the documentation and preservation of a significant aspect of our national cultural heritage. The Department of Defense is charged with ensuring our current and future national security and with protecting our freedom and the American way of life. The United States military is an integral part of our country's history and has always been an important part of our national identity. Military installations actively protect and document the physical reminders and tangible evidence of our past to bolster national pride and patriotism. In essence, preservation is the protection of tangible elements of the past that instruct us and remind us of our heritage.

Active military installations are primarily responsible for accomplishing the missions they are assigned. A military mission is the objective or task, together with the purpose, which clearly indicates the action to be taken. Missions such as training maneuvers or weapons testing can conflict with preservation and other environmental compliance requirements.

---

[4] *Base Structure Report,* 2.

[5] Regulations of the Advisory Council on Historic Preservation governing the Section 106 review process are contained in 36 CFR Part 800: "Protection of Historic Properties."

In addition, determining the eligibility of cultural resources for the National Register can be time-consuming, expensive, and possibly contentious when the military missions and training needs conflict with preservation. To avoid these conflicts, alternatives to the established Section 106 review process can be used to expedite the compliance process. Such a special "programmatic agreement" involves consultation on an entire agency program, rather than an individual project. A programmatic agreement will prescribe a review process suited to the program. It is useful when an agency's program will result in numerous reviews dealing with repetitive properties and undertakings.

For example, in 1986 the Department of Defense entered into an agreement with the Advisory Council on Historic Preservation and the National Conference of State Historic Preservation Officers to document World War II-era "temporary" buildings mandated by Congress for demolition. A specific example would be Camp Edwards, Massachusetts, where 1,179 temporary buildings were constructed between September 1940 and January 1941. The massive number of these buildings and their potential historical significance made the standard compliance regulations unduly burdensome (Figure 4). The agreement permitted a broader, nationwide study of historical significance, limited the extent of investigations for individual buildings, and resulted in a well-documented historical record of an important chapter in American history.

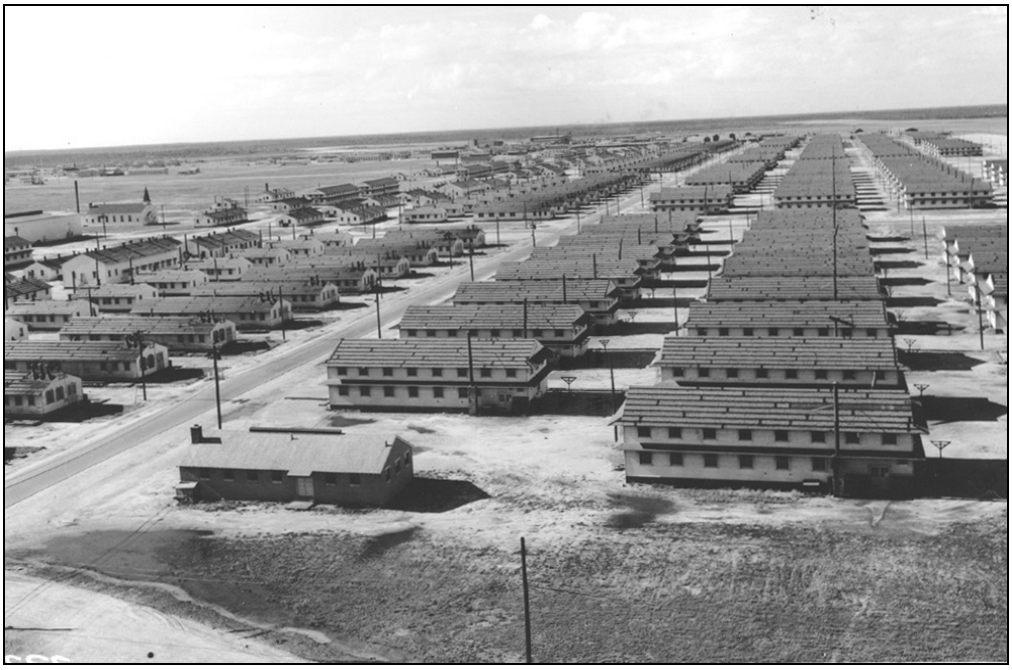

Figure 4. In this photograph, rows and rows of WWII temporary buildings are visible along South Inner Road at Camp Edwards, MA. (MAARNG, MMR circa 1941)

As with most environmental compliance issues, the key to reaching cultural resource compliance successfully and efficiently is to minimize crisis situations through planning. In 2008, the DoD completed a new directive (DoDI 4715.16), requiring each military installation to complete an Integrated Cultural Resources Management Plan (ICRMP). The purpose of an ICRMP is to outline the short- and long-term goals of the Cultural Resources Management Program and to set forth the processes by which the CRM personnel can meet these goals.

An ICRMP provides planning level surveys, future management requirements, and reporting requirements for monitoring the success of the program. It will assist the managers of a military installation in developing comprehensive evaluations of the significance and integrity of the installation's cultural resources. It will also help managers meet their responsibilities under Section 110 and 106 of the NHPA, by providing sound recommendations for documenting and evaluating historic military installations. Proactive cultural resource managers will more effectively assist in planning for the future, while preserving the historical character of the installation. Ideally, successful cultural resources stewardship can be seamlessly integrated with facilities management so that determinations of eligibility, cultural resources projects, and mitigation are all part of an installation's master plan and the installation's ongoing decision-making process.

3 Understanding Historic Military Landscapes

3.1 Military installation characteristics

Military installations are discrete areas with clear boundaries that are under jurisdiction of a branch the U.S. military. Such installations usually contain buildings, equipment/weapons storage, open space, roads, utilities, and subsidiary features. Each installation will differ somewhat from the others, based on use and site characteristics. Functional considerations may be manifested in myriad ways through the built environment, land-use patterns, and systems of spatial order.

An installation is as much about change as it is about permanence. As a result individual installations often exhibit a variety of time periods. The military mission drives the shaping and reshaping of the landscape of military installations. When military missions have changed throughout history, so has the physical development and appearance of installations charged with the execution of those missions. These changes are manifested in several different ways. They can involve any combination of razing, building, rebuilding, acquiring, reclaiming, shaping, reusing, abandoning, or expanding. Military installations often evolve through periods of rapid change in response to crises. They frequently appear as chaotic mixes of land-use areas and unrelated architectural styles. However, patterns are often visible that are the vestiges of an installation's former missions.

In the United States, a significant amount of land is under the jurisdiction of the Department of Defense. Beginning with frontier posts and coastal fortifications of the early Republic, and continuing beyond the missile silos of the Cold War, the federal government established military installations according to the country's needs and goals. Today the Department of Defense manages 30 million acres—an area the size of the state of Kentucky—that contain a wide range of unique and valuable cultural and historical resources.

3.1.1 Ties to national history

America's military history is integrally related to the nation's history, including its cultural and technological achievements. For example, technological innovations such as the airplane ultimately spawned an entirely new branch of the armed services. The military development of the airplane, in turn, contributed to the development of the commercial airline industry.

In addition, architectural styles and town planning principles popular in mainstream American culture influenced architectural styles and site plans on military installations. March Field at March AFB in Riverside, California, is a fine example of a military base laid out according to city planning principles of the 1920s (Figure 5).[6]

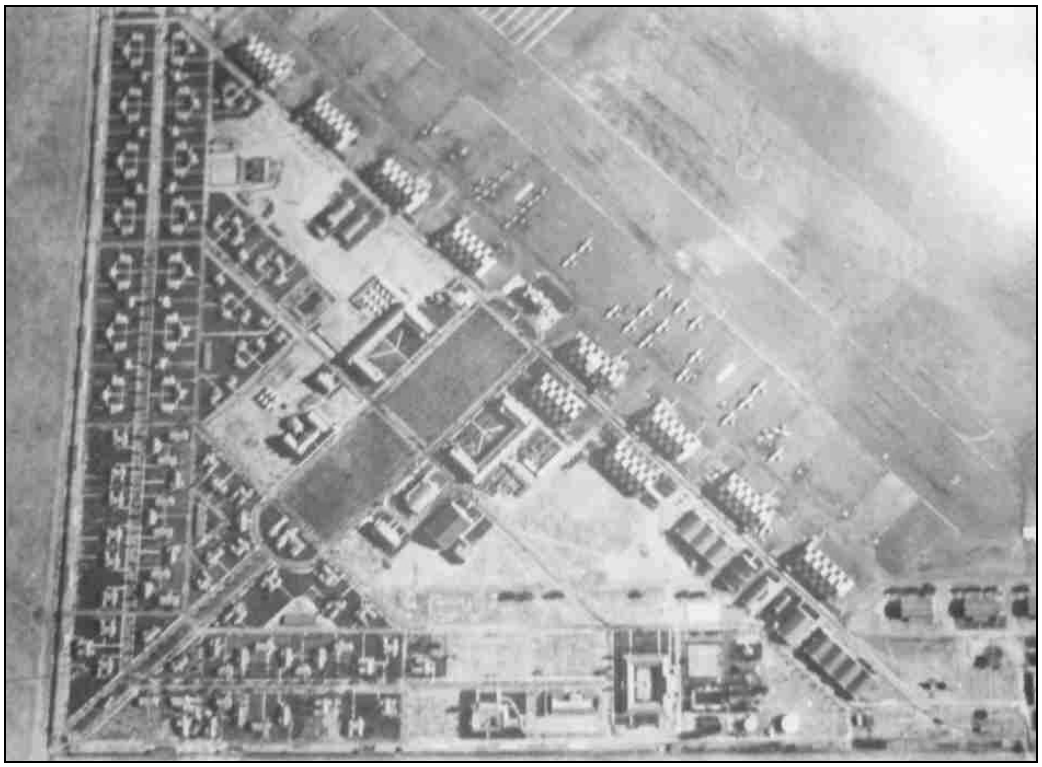

Figure 5. March Field is an example of incorporating city planning principles in the layout of military bases. March Field, a key training and bombardment facility on the West Coast between 1928 and 1943, was laid out and constructed by the Quartermaster Corps, the Army Air Corps, and architect Myron Hunt. (NR, NPS – n.d.)

[6] *March Field Historic District Registration Form*, Section 8, 30.

Conversely, military developments in prefabricated housing during and after World War II influenced the design and construction of civilian housing. For example, between 1949 and 1964 nearly 250,000 units of Capehart and Wherry housing had been built on and around military installations in response to the postwar housing shortage (Figure 6).[7] This program influenced the development of prefabricated housing and rapid growth of suburban neighborhoods across the country.

Figure 6. A 1960 photograph of a newly-built Capehart neighborhood for non-commissioned officers at Fort Leonard Wood, MO. (NARA image 577771, Box 359)

3.1.2 Military values and traditions

From a broad perspective, cultural traditions will influence any built environment. Members of the military share a unique culture with their own system of symbols, beliefs, and practices within a common ideological framework.

Since the founding of the United States through armed revolution, military culture has been a part of the American composition, waxing and waning in prominence as the country experienced consecutive periods of peacetime and war. The cultural values associated with the military, such as hierarchy, uniformity, order, utility, discipline, and patriotism, are powerfully symbolized in the military landscape. Military values are also clearly

[7] http://www.achp.gov/army-capehartwherry.html.

expressed in the way the land has been modified and built upon, both in an organizational and an aesthetic sense.

Different parts of an installation may express certain values more strongly than others. For example, a memorial site may express patriotism while a row of officers' quarters may express uniformity, order, and hierarchy.

Another example of such order and hierarchy can be seen at Fort Lewis, near Tacoma, Washington, where the general's quarters are oriented at the top of the parade ground facing east to maximize views of Mount Rainier. In contrast, lower ranking officers' quarters, administration buildings, and barracks flank the sides of the parade ground.

Different installations may emphasize particular values over others such as the explicit discipline of a military academy or the obvious utility of a missile base.

Military culture is also expressed in the social interactions among its members. A strict system of hierarchy by rank results not only in larger quarters for officers, but also in the level of formality used by one soldier in addressing another, such as the use of the salute. The exclusive nature of the military (as separate from civilian) can be visually expressed through a uniform style of clothing, verbally through the use of military-specific acronyms or jargon, and physically through the gates and fences separating military installations from their surrounding communities.

Due largely to its exclusive nature, the U.S. military functions independently of the daily lives of most American citizens. This separation, born of necessity, gives military installations an appearance and sense of place both distinctive and unique in the context of the larger American landscape. These characteristics also make them easily recognizable.

3.2 Historic military landscapes

Military installations may contain many hundreds of properties potentially eligible to the National Register as contributing resources to a historic military landscape.

The National Register recognizes five different property types: building, structure, object, site, or district:[8]

- Building: A building, such as a house, barn, church, hotel, or similar construction, is created principally to shelter any form of human activity.
- Structure: The term "structure" is used to distinguish from buildings with functional constructions, usually made for purposes other than creating human shelter.
- Object: The term "object" is used to distinguish from buildings and structures with constructions that are primarily artistic in nature, or are relatively small in scale and simply constructed.
- Site: A site is the location of a significant event, a prehistoric or historic occupation or activity, or a building or structure – whether standing, ruined, or vanished – where the location itself possesses historical, cultural, or archaeological value regardless of the value of any existing structure.
- District: A district possesses a significant concentration, linkage, or continuity of sites, buildings, structures, or objects that are united historically or aesthetically by plan or physical development.

3.2.1 Defining "historic military landscape"

For the purposes of this document, the authors define a historic military landscape as: A geographic sub-area within an installation's boundary with resources unified by historical association, collectively representing the most notable mission-related characteristics and themes of American military installation evolution and use.

This definition refers to those areas that are related to the military history of the installation and does not pertain to non-military related sites or buildings, such as structures or cemeteries that predate the installation. In addition, the size of the landscape can vary depending on the spatial distribution of significant resources.

An understanding of the relationship between the changing mission of an installation and its landscape is the key to identifying the historical signifi-

[8] National Register of Historic Places, *National Register Bulletin: How to Apply the National Register Criteria for Evaluation*, (Washington, D.C.: U.S. Department of the Interior, National Park Service, 1991), 4-5.

cance of a potential historic military landscape. The area of the installation containing historically significant properties, including building and landscape features, is the historic military landscape. In most cases, evidence of changing missions, military life, and technological advances may all be apparent on a military installation. Historical patterns on the land often indicate resources that retain sufficient integrity to adequately convey their significance, and may be eligible for the National Register as a historic military landscape.

Throughout their history, many installations have changed dramatically. At some installations, periods of historical development are obvious. As the spatial needs of an installation grew, the government would purchase adjacent land and add a new section in a process analogous to tiling a floor.

For example, Fort Sam Houston reflects four major periods of significance between its establishment in 1876 and the pre-World War II landscape of the 1930s. The geographic setting of the fort consisted of large areas of open land, which allowed room for each development period to occur separately, thus revealing history juxtaposed. Today, the four clearly visible periods of development comprise the entire installation, each reflecting a period of significance (Figure 7).

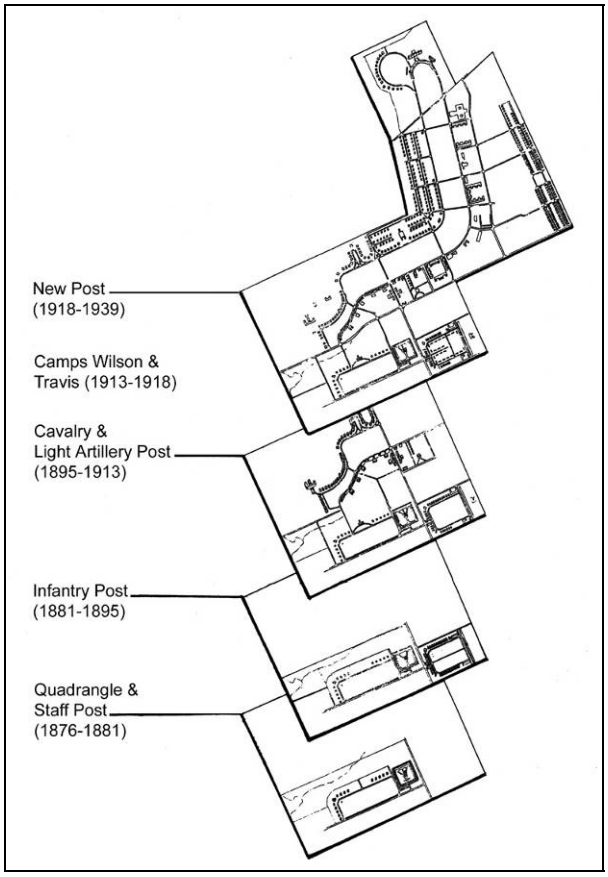

Figure 7. Diagram depicting the four expanding periods of development for Fort Sam Houston (ERDC-CERL).

In other cases, an installation's development may have involved razing and rebuilding, in a process analogous to layering rather than tiling. This is reflected in many naval installations, such as the Washington Navy Yard in the District of Columbia. This installation is faced with restrictions on horizontal expansion as a result of its location within an urban area (Figure 8).

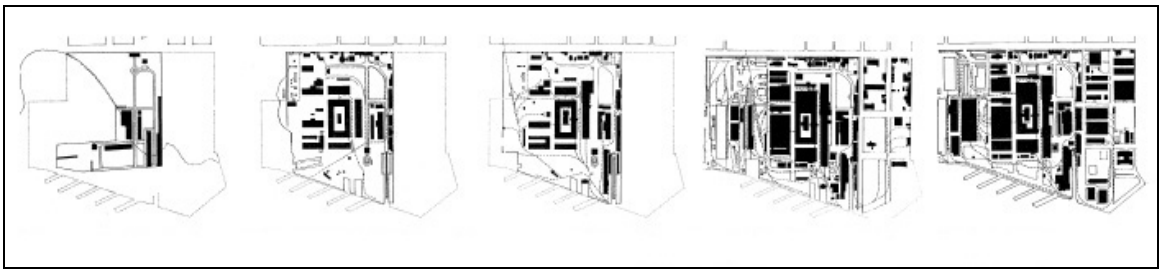

Figure 8. Evolution of Washington Navy Yard from 1814 to 1945 illustrating the reuse of existing structures through land use and mission changes. (WNY ICRMP)

Others, such as the Naval Shipyard at Mare Island, California, faced natural constraints on expansion, due to the fact that it is located on an island. In these cases, the solution involved replacing or adapting historical structures and land use areas to accommodate mission needs.

By contrast, although their size and layout may have varied, parade grounds almost always had a consistent relationship with the surrounding buildings. More often than not, buildings surrounding the parade grounds were oriented with the front elevation facing inward towards this important central space. Frontier forts most commonly consisted of square or rectangular parade grounds. When permanent buildings were constructed during the Army's fort consolidation period of the late 19th century, the parade grounds were sometimes laid out with semi-circular shapes, while still maintaining the building-to-parade ground relationship.

3.2.2 Factors in military landscapes

A historic military landscape is usually distinctive in its appearance and incorporates several of the following factors:

- *Military mission*, expressed as a fundamental design principle influencing landscape and building development.
- *Siting and layout*, directly related to the evolution of the military mission and, in many cases, influenced by the local, natural environment.
- *Military cultural values and traditions*, expressed in the landscape as a ranking hierarchy in building placement and landscape treatment, uniform architectural styles, utilitarian land use, etc.
- *High level of similarity*, basic components and designs are repeated within an installation and are often common among many installations.
- *Restricted access*, controlled entrance and exit points.
- *Clearly defined borders*, created through fencing, walls, guard posts, sentry houses, signs, and other features.

As with other historic properties, historic military landscapes exist at different scales. They may be small, consisting of a limited group of historic structures and their related open spaces for example, or in rare cases, may comprise a large portion of the installation. The Naval Hospital Boston Historic District is comprised of only five buildings, while the Trinity Site National Historic Landmark at White Sands Missile Range, New Mexico is 51,500 acres (Figure 9).

Military installations may also contain historic properties not contained within a historic district, but consisting solely of a site, structure, building, or object.

Figure 9. Boston Naval Hospital Historic District is located along the Mystic River in Chelsea, MA. The district is comprised of five buildings, the original hospital built in 1836, shown in photograph, the "new hospital built in 1915, the commanding officers quarters, and two ordnance buildings. It was the oldest, continually operated Naval hospital when it closed in 1974. (NR, NPS)

4 Historic Military Landscapes in Context

To identify a historically significant military landscape, it is important to understand where the installation fits within the national military historical context. Detailed historical research is required, including studying archival material, conducting site visits and interviews, and evaluating other information sources.

This document advocates a method of evaluation that starts at a larger scale, then narrows in on areas of potential historical significance. The information about the larger scale, such as the history of an installation and its geographical context as a whole, will provide supportive background information for evaluating properties at a smaller scale. Even if only a single structure is found to have historical significance and integrity, the results of the broader landscape evaluation will inform an understanding of that structure's significance.

The systematic documentation of military installation characteristics (by cataloguing, photographing, and mapping throughout the research), results in the identification of those portions of the military landscape that have historical significance. These landscape components are then examined to see how well they represent the national military historical context, as expressed through the National Register property types of buildings, structures, sites, objects, and districts.

This section outlines procedures for conducting the required research activities, and provides a table that summarizes the evolution of military installations within a national military historical context.

4.1 Historical context and levels of significance

By definition, identification of a historically significant property can be achieved only through evaluation of the property's role within the larger historical context. "A historic (sic) context is an important theme, pattern, or trend in the historical development of a locality, State, or the nation at a particular time in history or prehistory."[9] The historical significance of

[9] National Register of Historic Places, *National Register Bulletin: Guidelines for Evaluating and Documenting Rural Historic Landscapes*, (U.S. Department of the Interior, National Park Service, n.d.), 7.

military landscapes must be evaluated in the context of the broader national and military histories associated with their development.

The National Register identifies three levels of historical significance: national, state, and local. Potentially eligible historic properties are evaluated in a national context when they represent an aspect of U.S. history as a whole. The military missions that helped shape and reshape military installations are often significant within a national historical context. Fort Riley, Kansas, for example, was established as a frontier post to protect traders and settlers along the Santa Fe and Oregon Trails (Figure 10). National historical contexts may also relate to properties that are significant locally or statewide, as well as those of national significance.

Although most installations were established as a result of military effort at a national level, some made a significant impact on states and local communities, which is why all three levels of significance (national, state, and local) should be considered. For example, Fort Sheridan, Illinois, in part gained its significance on a state and regional level by protecting industrial areas along Lake Michigan. Some installations eradicated local communities when the military acquired the land or expanded, while others gave rise to whole new towns. The military influence extends beyond the boundaries of the installation and conversely, surrounding communities often influence installations.

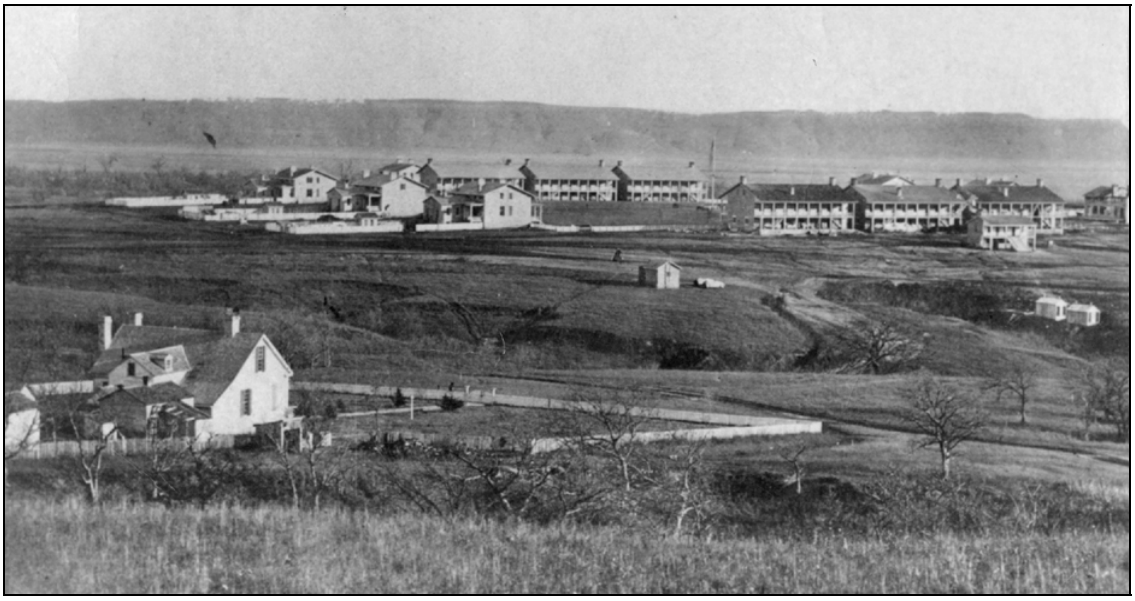

Figure 10. Earliest known photograph of Fort Riley, taken in 1866. The view is looking southeast to the Main Post where limestone buildings line the Cavalry Parade Field in a typical frontier fort layout. (Fort Riley)

In addition, some properties are so obviously important to the heritage of the United States that they are given a designation higher than listing in the National Register at the national level of significance. These properties become National Historic Landmarks (NHL), which are "nationally significant historic places designated by the Secretary of the Interior because they possess exceptional value or quality in illustrating or interpreting the heritage of the United States."[10]

However, not all military installations significant at the national level are NHL-eligible, because they may not possess enough significance or integrity to meet the more stringent NHL criteria. An example of an installation that meets the NHL criteria is Cape Canaveral, which contains seven launch complexes and a mission control building designated as NHLs because of their exceptionally significant association with the United States' Space Program (Figure 11).

Figure 11. Liftoff of Gemini-Titan 4 from Launch Complex 19, Cape Kennedy on June 3, 1965. The historic flight included the first spacewalk by an American astronaut, Ed White. (NASA Image 65PC-0052)

[10] http://www.cr.nps.gov/nhl/

Since the military is such an important aspect of American history, one might assume that anything related to the military is significant. However, such an assumption is far too general; it is necessary to evaluate a military property within the relevant national military context.

Once the general historical theme, pattern, or trend is determined, a potential landscape or district must be evaluated within its more specific context. This is accomplished by looking at what role both the installation as a whole and the potential contributing resources played in those themes, patterns, or trends over time. Often, a specific property type is just one example of many similar properties found nationwide, since many installations have similar missions and thus, contain buildings and structures built from standardized plans. If so, the specific property must also be evaluated with those other installations in mind.

4.2 Developing the context of a historic military landscape

The creation of a historical context provides a way to determine the potential significance of specific people, historical trends, and architectural and/or landscape designs that played a role in the development and use of a military installation.

A familiarity with the basic trends in military design and planning, combined with an understanding of issues of geographical location, can help clarify why the historic parts of an installation are arranged the way they are and look the way they do. Each installation should develop its own detailed context based on its individual history and its role in the larger national picture. If such a context has not already been written, the *National Historic Context for Department of Defense Installations, 1790-1940* can serve as a starting point.[11]

Identifying a historic military landscape requires developing a context to explain the property's significance. The National Register has established guidelines in two bulletins: *How to Apply the National Register Criteria for Evaluation* and *How to Complete the National Register Registration Form*. The guidelines in these bulletins call for consideration of a property's *chronological periods*, *geographical limits*, and *themes (patterns*

[11] R. Christopher Goodwin and Associates, *National Historic Context For Department of Defense Installations, 1790-1940* (Baltimore, MD: U.S. Army Corps of Engineers, 1995). This publication is available from the Army Environmental Center web site http://aec.army.mil/usaec/cultural/nhc_01.doc.

and trends) that provide a perspective from which to evaluate a property. The relationships among these three basic issues will constitute a property's historical context. For military properties, the issue of *military mission* as a *theme* must be addressed and emphasized.

The following discussions and corresponding questions provide information for researchers to consider, when developing historical contexts for military installations and their historical properties. These questions are intended to facilitate the direction of initial research directions and do not constitute a complete list of relevant issues. Researchers are encouraged to draft a list of questions suitable for the properties under study.

4.2.1 Military mission

The *military mission* is the particular tasks and methods of accomplishing those tasks assigned to organizational units on an installation. The most distinguishing characteristic of a military installation is the manifestation of its military mission on the land.

Because the historical significance of a military landscape usually relates to a theme or themes, based on aspects of the installation's missions, researchers should first determine past and present missions associated with the installation.

The mission always determines the primary function of the installation and usually, its location as well. Frontier forts were established during the period of westward expansion to provide protection for new inhabitants and migrants on the settler trails. By the mid-twentieth century, the growth of missile research and testing led to the development of launch facilities on both coasts. The need for higher education in military subject matter resulted in the establishment of service academies (Figure 12).

Figure 12. The Chapel and Court of Honor are focal points of the Cadet Area at the Air Force Academy, CO. The Cadet Area is a NHL for its role in military education and as a remarkable example of the modern movement of architecture. (NR, NPS – n.d.)

The following questions will help to determine how the mission influenced the development of the military installation:

- What were the past missions of the installation?
- What are the current missions?
- In what ways do the missions have national, state, and/or local significance?
- What physical evidence links the installation to these past and present missions? (e.g., buildings, roads, parade grounds, airfields, vegetation, important views)

4.2.2 Chronological periods

A chronological period is a discrete unit of time (usually years) during which the historic military landscape attained its historical significance.

Many significant periods in American history are defined by the military events that occurred at the global, national, and local levels, such as World Wars I and II, the Civil War, Indian battles, and border disputes. In such

instances, the relationships of military installations and their properties to chronological periods often can be fairly straightforward.

Military installations are also related to chronological periods that are not defined purely by military actions. Fort Leavenworth, Kansas, for instance, was established in 1827 as a base of operations for westward expansion. It later became the main quartermaster depot and cavalry station for new frontier posts constructed by the Army along the Oregon, Santa Fe, and California Trails (Figure 13).

In addition, many installations have significant associations with the reforms and technological developments of a particular era. Some examples are:

- During the Progressive Era (1880s-1920s), Navy shipyards converted from the construction of wooden sailing vessels to steam-powered steel ships.
- During the inter-war years (1920s-1940), military installations were associated with historical events such as the application of community planning ideas and New Deal construction projects.
- During the Great Depression, Congress appropriated $300 million under the Emergency Relief and Construction Act of 1932 for Public Works Projects. In order to create new jobs, Pope Field (Pope AFB) in North Carolina received a portion of these funds to build a cantonment consisting of officers' family housing, barracks, and two administration buildings (Figure 14).

A given installation may be associated with a range of chronological periods in a variety of ways. Answers to the following questions will help to determine the possible associations:

- What events were taking place on a global scale during the establishment of the installation?
- To what national historical time periods was the establishment and development of the installation related?
- In what ways was the installation related to subsequent historical events and time periods?

Figure 13. Fort Leavenworth was established in 1827 to protect travel on the Santa Fe Trail. Remains of the Oregon and Santa Fe trail are extant and listed on the National Register. (NR, NPS – n.d.)

Figure 14. New barracks were built at Pope Air Force Base in the 1930s using Public Works Projects funds. (NR, NPS – n.d.)

4.2.3 Geographic limits

Geographic limits are the boundaries delineating the topographical elements of a property, landscape, or district that reflects the installation's historical significance. In determining historical significance, it is necessary to investigate reasons behind the siting of an installation. Little is written specifically about these historical decisions, but there is often a logical relationship between an installation's site and its military mission.

For example, the decision to site multiple fortifications at West Point, New York, during the Revolutionary War was one of the more significant geographically-inspired locations for a military activity. The site was chosen primarily because of the natural advantages of the landscape, including the vantage point from the flat, open "point" jutting out from the west side of the river (Figure 15). Because of this, the Hudson River becomes very narrow, causing strong currents and unstable water, which made it easier to trap enemy boats.

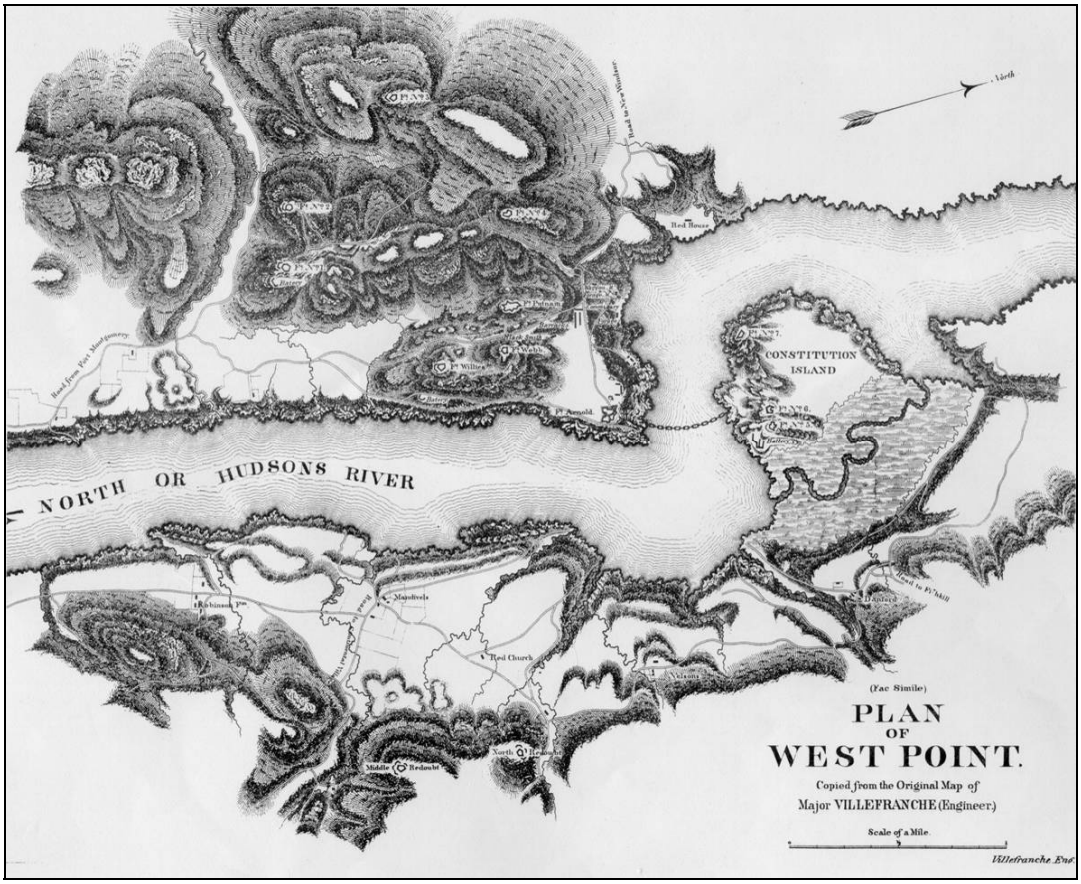

Figure 15. In this copy of Major Villefranche's Revolutionary War-era map, West Point's strategic location along the Hudson River and the chain across the river to trap enemy ships are visible. (USMA – 1780)

Understanding the relationship between the site requirements and the geographic location helps explain the appearance, arrangement, and location of an installation, and provides important clues about the installation's establishment and development.

Different missions can have different site requirements. Some missions, such as weapons testing and combat training, have specific site requirements usually involving large expanses of land and specific types of terrain, but the site of an installation may have been selected from a broad range of options.

More specific military missions, such as coastal protection and frontier protection, have more restrictive location requirements. For example, the Army constructed batteries (fortifications for a group of guns) around harbor entrances and frontier forts at the confluences of important rivers. Nineteenth-century armament production facilities had very narrowly proscribed site requirements. Shot towers often used an elevated location such as a river bluff to provide the necessary vertical drop to form lead shot.

More recently, rocket and missile launching and test facilities required sites with safe lines of trajectory, usually over the ocean. Vandenberg Air Force Base (AFB), for example, uses its location on a California peninsula for southern projection of missiles over the Pacific (Figure 16).

Figure 16. The Thor-Agena launch vehicle with a Space Electric Rocket Test-2 prior to launch on February 4, 1970. Space Launch Complex 10, at Vandenberg Air Force Base, CA, is a NHL for its role in space flight. (NASA, MSFC-9139576)

Natural topography has been an important determining factor in the lay-out of installations. The design of Fort McClellan, Alabama, established in 1898 in the middle of the Choccolocco foothills, took advantage of land-forms that provided an ideal barrier against which to fire shells. In 1805, at the end of their expedition, Lewis and Clark arrived at Cape Disappointment at the mouth of the Columbia River on what later became Fort Canby, Washington (Figure 17). Constructed in 1856, the Cape Disappointment lighthouse became an early navigational landmark.

Figure 17. Cape Disappointment, located at the mouth of the Columbia River, is home to the oldest lighthouse on the West Coast, Cape Disappointment State Park, and an active Coast Guard Station, circa 1975. (NR, NPS – n.d.)

Often a site provides a variety of advantages. The Army established Rock Island Arsenal on an island in the Mississippi River in the mid-1850s to take advantage of the site's access to water power, proximity to rail and water transport, and defensibility. During World War I, the Army Air Corps established what is now Bolling Field on the flood plain near the confluence of the Potomac and Anacostia Rivers. This site was chosen because it was level ground and could support a good runway for air defense of Washington, D.C.

Of course, in some cases, political pressure by Congressional Representatives and Senators and senior military and government officials influenced the choice of one location over another. Then, after an installation was es-

tablished, the environment at times provided advantages that affected the mission of the installation. For example, because of its dry climate, Fort Sam Houston was recognized as an appropriate setting for treating tuberculosis. As a result, the installation became, and has remained, an important Army medical center.

The following questions will help to determine how and why the installation was located where it was, and why it developed as it did:

- How did the physical geography (e.g., mountains, plains, bays, extreme climate) influence the site selection? What other geographic factors (e.g., proximity to an urban area, wilderness, or existing transportation routes and features) may have influenced the choice of site? Is there a connection between the initial mission and the installation's geographic setting?
- How did physical geography influence the design and planning of the installation, both initially and through subsequent alterations and additions?
- What was the geographic area like prior to the establishment of the installation? How did it change during the installation's development (e.g., fill areas, excavation, population increases, relationship to nearby town)? What precipitated these changes?

4.2.4 Themes and standardized areas of significance

A theme is a condensing of a broad pattern in history to a central idea that can be expressed succinctly. The NRHP has established standardized themes called *areas of significance* (see list starting on page 114). Many other themes could be considered as subsets of these standardized ones.

Themes are used principally in the historic eligibility evaluation process, but also are useful for developing an installation's historical context. "Military" is an established significance area that will encompass many themes related to historic military landscapes.

However, there can also be areas of significance outside of "military" that are pertinent to an individual installation such as transportation, medicine, education and community planning.

For example, many installations have a historical association with *transportation*. The Naval Air Warfare Center Aircraft Division at Lakehurst,

New Jersey, covering 11.5 square miles, became the largest naval air facility east of the Mississippi during the 1920s and 1930s and is where the first dirigible, the *Shenandoah*, was constructed (Figure 18). On May 6, 1937, the German airship *Hindenburg's* attempt to dock at Lakehurst during its maiden flight ended with one of the most famous air disasters in American history. Also, many private companies and the National Aeronautics and Space Administration (NASA) currently use Edwards AFB as a testing site for aerospace aircraft and associated technology.

Other examples include Walter Reed Army Medical Center in Washington, D.C., and Fort Sam Houston, which are associated with the *health/medicine* area of significance. The United States Military Academy, the U.S. Naval Academy, the U.S. Air Force Academy, and Marine Corps Base Quantico are the premiere military installations associated with the *education* area of significance.

Figure 18. Hanger No. 1, at Lakehurst Naval Air Station, was built in 1921 to assemble, house and test the first helium-filled dirigibles. (NR, NPS)

Other installations are associated with the themes of *community planning and architecture*.

Military development nationwide generally occurred during distinct planning periods in military history. Examples of these periods include early frontier posts, 1790-1875; consolidation and modernization, 1875-1917; and World War I temporary and permanent construction, 1917-1918.

Installation planning sometimes followed nonmilitary design styles such as regional architecture, community planning, and landscape architecture, 1918-1940.

During the consolidation of forts in the late 19th century many installations were closed. Those that were chosen to become "consolidation forts" (including Fort Riley, Fort Leavenworth, Fort Sam Houston, and Fort Bliss) saw the military's investment in high-quality permanent construction.

Often the installations hired both military and civilian architects to design buildings reflective of current trends (Figure 19). Other installations adapted popular styles of the day including the U.S. Naval Academy, which integrated examples of Beaux-Arts classicism displayed during the World's Columbian Exposition of 1893.

The following questions will be useful in developing themes:

- What themes are associated with this military installation's history?
- With what formal National Register areas of significance (see page 114) are these themes related?
- How are these themes visible on the ground?

Figure 19. Aerial oblique photograph of the New Post area at Fort Sam Houston, taken in 1940. The officer housing areas, along the left side of MacArthur Field, were laid out using popular city planning principals. (Fort Sam Houston)

4.3 Identifying historical contexts

Connections between historic events or trends and the landscape are not always obvious. Each military installation has its own unique history and each installation has its own unique landscape. However, general themes in American military history have resulted in general changes in the landscape of military installations; these trends can serve as a guide in conducting historic landscape research.

It is sometimes difficult for researchers to identify historic events and the landscapes of military installations. The following Table of Context (Table 1) provides a general framework for recognizing the different stages of development of military installations throughout United States history. The table chronologically outlines national military historical contexts by service, demonstrating by example the relationship among historical themes, military missions, installation types, and landscape appearances. The information presented is general, but not comprehensive; it should be used only as a starting point for investigation.

The table can be used in a variety of ways. For example, if researchers have identified the period of historical significance for an installation, the table can be read from left to right to help determine how the landscape may reflect the period of significance. If researchers recognize distinctive characteristics of the installation, the table can be read from right to left to help determine what kinds of factors caused the installation to be shaped in that way. The table can be used to point out basic relationships among factors and to stimulate the kinds of questions that will lead to an understanding of the more specific relationships of a particular installation. The table may also be useful for identifying and sorting the layers of landscape change that tend to accumulate over time.

Table 1. Table of Context.

Era	Service	Trends in Military History	General Missions	Typical Installation Types	Examples	Typical Construction, Design, and Location Characteristics
The American Revolution and Confederation, 1775-1790s	Army	Continental Army Established 1775	Establishment of Independence Defense Against Foreign Attack Harbor Protection	Garrisons Forts	West Point, NY (Garrison) Fort Ticonderoga, NY	Garrisons and Forts consisted mostly of earthworks and palisades with some masonry fortifications originally built by the British, French, Spanish or Patriots.
	Navy	Continental Navy Established 1775	Establishment of Independence Defense Against Foreign Attack	Ports & Docks	No formal Navy installations	Use of commercial ports.
The Early Republic and the Antebellum Era, 1790s-1860s	Army	Limited peacetime funding War of 1812 Early Indian Wars Mexican-American War	Defense Against Foreign Attack Frontier Protection Coastal Defense Ordnance R&D, Storage Education	Frontier Forts Garrisons Coastal Defense Fortifications Arsenals and Armories Education and Training Installations	Fort Detroit, MI Fort Riley, KS Fort McHenry, MD Springfield Armory, MA West Point, NY (Academy)	Frontier posts consisted of temporary structures constructed by soldiers under the command of the Quartermaster Department. Largely self-sufficient, the Army sited them to guard transportation routes or to contain Indian tribes, constructed of local materials. The Army Corps of Engineers constructed coastal fortifications of masonry.
	Navy and Marine Corps	Limited peacetime funding War of 1812	Defense Against Foreign Attack Protecting Commerce Medical Support Logistical Support	Navy Yards and Stations Educational Facilities Hospitals Logistical Facilities	New York Navy Yard, NY Naval Academy at Annapolis, MD Norfolk Navy Hospital, VA The Naval Observatory, DC	Navy installations consisted of permanent industrial structures constructed of masonry, arranged by function, utilitarian design. Few administrative and residential structures, frame or masonry construction reflecting period architectural styles such as Federal, Classical Revival, and eclectic variants.
The Civil War and National Expansion, 1860s-1890s	Army	Technological modernization Increased specialization Late Indian Wars Development of railroad system Closing of the frontier begins Consolidation of posts begins	Frontier protection & enforcement Coastal defense Education Medical support Logistical support: Ordnance R&D, storage Ordnance testing Supply Communications	Frontier Posts Batteries Hospitals Schools and Training Facilities Logistical Facilities: Arsenals and Armories Proving Grounds Quartermaster Depots Signal Corps Facilities	Fort Sill, OK Battery Spencer, San Francisco Harbor, CA Parkersburg Hospital, WV Fort Monroe Artillery School, VA Rock Island Arsenal, IL Sandy Hook Proving Ground, NJ Jeffersonville Depot, IN Fort Myer, VA	Starting in the late 1870s, the Army constructed new, larger, permanent installations using a higher level of planning, construction, and design. Both military and civilian architects and planners designed buildings and plans reflective of national trends. Simplified versions of Italianate, Romanesque Revival, and Queen Anne styles dominate the architecture. Plans included improved water, sewage, and heating systems, and in some cases, residential areas with curvilinear street patterns reflected new suburban design. Early attempts at standardization applied mostly to frontier posts.

Era	Service	Trends in Military History	General Missions	Typical Installation Types	Examples	Typical Construction, Design, and Location Characteristics
	Navy and Marine Corps	Technological modernization begins Use of steam power	Defense against foreign attack Protecting commerce Shore Training Education Logistical support: Maintenance and repair Supply Ordnance testing, storage	Navy Yards and Stations Schools Logistical and industrial facilities: Coaling Stations Proving Grounds Magazines	Washington Navy Yard, DC Naval War College, RI Key West, FL Indian Head Proving Ground, MD	Shore facilities served as industrial yards, workshops, and depots of supply. Permanently moored receiving ships often served as quarters and offices. Initially the Navy added logistical facilities to existing installations, but eventually a few specialty facilities developed. Buildings and facilities such as "rope walks" primarily supported the needs of wooden sailing vessels.
The Progressive Era, 1880s-1920s & War Overseas	Army	Consolidation & Reorganization Technological Innovation Wartime Mobilization Development of Aviation End of the Indian Wars Closing of the Frontier Spanish-American War Development of automobiles World War I	Defending American interests abroad Coastal Defense Aerial Reconnaissance Education & Training Logistical support: Ordnance R&D, storage Ordnance Testing Supply	Garrisons, Wartime cantonments Batteries Aviation Fields Schools and Training Facilities Logistical and industrial facilities: Arsenals and Armories Proving Grounds Quartermaster Depots	Fort Omaha, NE, Chickamauga Park, GA Fort Mason, CA Kelly Field, TX Fort Leavenworth, KS Edgewood Arsenal, MC Aberdeen Proving Ground, MD Wingate, NM	In the 1890s, the Quartermaster Department expanded its effort to standardize plans for all types of buildings. These plans contributed to the uniform appearance of many installations across the country. Basic installation layout escaped standardization and tended to be influenced by local geographical considerations. In general, parade fields served as center points with buildings organized around their perimeter. In the 1900s, the Army adopted Colonial Revival design motifs for its northern and eastern installations, and Spanish Colonial and Mission styles for its southern and western facilities. The Beaux Arts style influenced few Army installations, West Point and Fort McNair, DC as the best examples. During the mobilization for World War I, the Army devised standardized building plans termed Series 600.

Era	Service	Trends in Military History	General Missions	Typical Installation Types	Examples	Typical Construction, Design, and Location Characteristics
	Navy	Reform & Modernization Transition from Wooden to Steel Navy Integration of New Technologies Overseas Wars	Defending American interests abroad Protecting commerce Ship construction & maintenance Ordnance development Fleet support Communications	Shipyards Bases Ordnance research facilities Specialized Training Schools Logistical and industrial facilities: Coal and fuel oil depots Magazines Proving Grounds Communications facilities	Charleston Navy Yard, SC Norfolk Navy Base, VA Washington Navy Yard, DC Great Lakes Naval Training Station, IL Alaska, Hawaii, Narragansett Bay, RI Mare Island Ammunition Storage Facility, CA Indian Head Proving Ground, MD Arlington Radio Station, VA	At Navy Yards, technological changes prompt adaptation of existing structures for increased specialization; new industrial structures constructed of steel-frame with brick walls and fireproof floors and doors, designed by both private and government architects and engineers with shift towards popular high-style architectural themes such as Beaux-Arts, Neo-Classical, Italian Renaissance Revival, and Colonial Revival; general similarities in building design among installations but local variations predominant. In mobilizing for World War I, the Navy developed the B-1 H-type temporary building, usually used as barracks, and began using a semi-cylindrical prefabricated structure called a "Nissen Bow Hut" (today known as a Quonset Hut).
	Marine Corps	Transition from Navy subsidiary to separate fighting force	Defending American interests abroad Defending advance bases Ships complements Navy Base Protection	Depots Training Facilities Schools	Philadelphia Depot, PA Winthrop Rifle Range, MD Parris Island, NC	The Marines tended to organize their reservations at shipyards by arranging their barracks to face a parade ground. They located officer housing nearby. Civilian architects frequently designed the structures of masonry, reflecting period style trends.
The Inter-war Years, 1920s-1940	Army	Limited funding, slow growth Administrative reforms Installation design improvements New Deal construction Training “civilian components”	Coastal defense Air defense Improve post conditions Special services training	Garrisons Batteries Schools & Training Facilities Logistical Facilities	Fort Knox, KY Battery Chamberlin, San Francisco, CA Fort Benning, GA Picatinny Arsenal, NJ	Professional designers, both civilian and military, redesigned many installations in an effort to improve appearance and efficiency of Army bases. Installations increased in size as training areas expanded. Design styles instituted as part of the improvements to base planning included: Georgian and Colonial Revival in the northern and eastern forts; Spanish Mission in the south and west.

Era	Service	Trends in Military History	General Missions	Typical Installation Types	Examples	Typical Construction, Design, and Location Characteristics
	Army Air Corps	Limited Funding Air Corps Act of 1926 Movement towards a separate air force Development of first long-range bombers	National defense Tactical support of Army Training	Air fields Airship fields Training facilities Logistical facilities	Langley Field, VA Scott Field, IL Brooks Field, TX Engine & Repair Depot (Maxwell AFB, AL)	Air field construction develops from temporary buildings with sod or gravel runways to permanent buildings and hard surface runways (in part to accommodate larger planes). In an effort to reorganize comprehensive national defense, a military board defines seven districts for air field location.
	Navy	Growing threat of Japan Shift of forces from Atlantic to Pacific	Protection against foreign attack Training Research & design Logistical support	Navy Yards Research & Design Facilities Air Fields Airship Fields Submarine Bases Logistical Facilities: Coaling / Fuel Oil Stations Supply Depots Communications Stations	Pearl Harbor, HI Anacostia Naval Air Station, DC Pensacola, FL Lakehurst Naval Air Station, NJ Portsmouth Yard, NH Key West, FL San Diego, CA Chollas Heights, CA	Because of increasing threat of potential war with Japan, the Navy built installations on the west coast and in Hawaii with Pearl Harbor becoming headquarters of the Pacific Fleet. Wireless communications increased in importance and the Navy established numerous radio stations. As with the Army, the navy sought to improve the design and function of its facilities. During this period, shore facilities began to provide services to enlisted personnel and their families.
	Marine Corps	Development of “Fleet Marine Force”	Amphibious support of naval campaigns Foreign occupation Ships complements Guarding Navy Bases Training	Recruit Training Facilities Officer Schools Multi-purpose Installations Combining: Airfields Supply Depots Training	Parris Island, SC Quantico, VA San Diego, CA	The Marines began to function more independently and constructed facilities to support their own missions. As with the other services, the Marines incorporated Spanish Colonial design in the construction of the base at San Diego.

Era	Service	Trends in Military History	General Missions	Typical Installation Types	Examples	Typical Construction, Design, and Location Characteristics
World War II Mobilization, 1940-1945	Army	World War II mobilization Development of nuclear weapons Rapid technological advancement	Mobilization Training Logistical support Ordnance and weapons production	Garrison Educational Training Medical Research Proving Grounds Logistical Facilities: Administrative Communications Industrial Supply and Repair	Fort Rucker, AL Carlisle Barracks, PA Fort Miles, CA Walter Reed Army Medical Center, DC Redstone Arsenal, AL Camp Eglin (AFB), FL Governors Island, NY Fort Meade, MD Lima Army Tank Center, OH Red River Army Depot, TX	Mobilization required the construction of temporary buildings. The Army improved on the designs of the buildings of the WORLD WAR I mobilization by using concrete piers and footings, framing with 2x4s and painting exterior walls. Both 700 and 800 series barracks added showers, latrines, central heating, and improved ventilation. Civilian and military planners designed more centralized cantonment layouts that facilitated the training patterns of larger brigade sized units. Each regimental grouping included barracks for two or three battalions, battalion offices, officers' barracks, company offices and supply rooms, a dispensary, two day rooms, a field house, a post exchange, a guard house, several mess halls, a store house, and a regimental headquarters building. Some 25 new training facilities resulted from the mobilization with improvements made to 25 others.
	Army Air Corps	Development of strategic air power Rapid technological advancement	Mobilization Training Maintenance and repair Aircraft development and production	Garrison Training Research Proving Grounds Logistical Facilities: Industrial Supply and Repair	Williams Air Field, AZ Maxwell Air Field, AL Wright-Patterson, OH Eglin AFB, FL Tinker AFB, OK Norton AFB, CA	The Army had series 700 and 800 buildings erected for Army Air Corps cantonments. However, the arrangement of administrative and logistical buildings centered around the system of runways rather than parade fields as in the Army.

Era	Service	Trends in Military History	General Missions	Typical Installation Types	Examples	Typical Construction, Design, and Location Characteristics
	Navy	Increased importance of aircraft carriers Increased importance of submarines	Mobilization Training Logistical support Ordnance and warship production	Navy Base Educational Training Medical Research Proving Grounds Logistical Facilities: Administrative Communications Industrial Supply and Repair	Naval Base Long Beach, CA Naval War College, RI Alameda NAS, CA Chelsea Naval Hospital, MA Goat Island, RI China Lake Naval Ordnance Test Station, CA Naval Station Treasure Island, CA Skaggs Island, CA Charleston, Navy Base, SC Naval Magazine Port Chicago, CA	During mobilization, the Navy made extensive use of a larger version of the World War I Nissen Bow Hut at facilities like the Naval Air Station at Quonset Point, RI. These structures became known as Quonset Huts, and, along with large numbers of improved B-1 H-type barracks, comprised most of the World War II buildings built by the Navy. Because of limitations on the use of steel during the War, architects contracted by the Navy developed high-arching laminated wooden trusses for large drill halls. To strengthen its support of the Pacific Fleet, the Navy focused construction on the West Coast. At the same time, urban congestion in port cities and the need for shore training prompted the Navy to established inland training centers in unlikely places such as Idaho and Kansas.
	Marine Corps	Increased operational independence	Mobilization Training Logistical support	Garrison Training Medical Research Logistical Facilities: Supply and Repair	Cherry Point Marine Corps Air Station, NC El Toro Marine Corps Air Station, CA Camp H. M. Smith, HI Kaneohe Bay Marine Corps Air Station, HI Barstow Marine Corps Logistical Base, CA	As with the Navy, the Marines built Quonset Huts on their new and existing installations. Construction of installations centered on the West Coast and in the Pacific.

Era	Service	Trends in Military History	General Missions	Typical Installation Types	Examples	Typical Construction, Design, and Location Characteristics
The Cold War, 1945-1989	Army	Expanded peace-time budget Development of Nuclear Bombs Korean Conflict Arms Race with Soviet Union Vietnam Conflict Arms Control Treaties Rapid technological advancement Application of new technologies to surveillance and intelligence gathering	Defending American interests abroad Maintaining mobilization and combat readiness	Garrison Educational Training Medical Research Proving Grounds Logistical Facilities: Administrative Communications Industrial Supply	Fort Bragg, NC Fort Leavenworth, KS Fort McClellan, AL Fort Sam Houston, TX Redstone Arsenal, AL White Sands Missile Range, NM Presidio of San Francisco, CA Fort Ritchie, MD Frankfort Arsenal, PA Hawthorne Army Ammunition Plant, NV	Construction during the Cold War involved integrating new missions at existing installations. With the construction of administrative buildings and barracks, the use of cinder block walls replaced the use of wooden frame walls. Architectural styles reflected national trends but were overshadowed by utilitarian and functional qualities. In many cases, the exterior appearance of a building left few clues as to its purpose or function. Residential housing shortages led to the construction of large numbers of Wherry and Capehart units.
	Air Force	Establishment of Air Force Rapid technological advancement Development of space program Development of ballistic missiles Involvement in Korea and Vietnam Application of new technologies to surveillance and intelligence gathering	Defending American interests abroad Containing Soviet threat Maintaining combat readiness from air Monitoring Soviet military activity	Garrison Educational Training Research Proving Grounds Logistical Facilities: Administrative Communications Industrial Supply	Elmendorf AFB, AK USAF Academy, CO Luke AFB, AZ Patrick AFB, FL Vandenberg AFB, CA Bolling AFB, DC Cheyenne Mt, CO Brookley AFB, AL Davis-Monthan AFB, AZ	Following World War II, many Army Air Fields became Air Force Bases. With their new Cold War missions and rapid technological development, the Air Force constructed new installations and refurbished older facilities, lengthening runways and constructing hangers, barracks, and administration buildings. In some cases installations supported a scattering of nearby missile silos. As with the Army, housing shortages resulted in the extensive construction of Wherry and Capehart housing. As computer technology advanced in the 1970s and 1980s, technical support buildings often became generic cinder block sheds whose function could change as frequently their contents.

Era	Service	Trends in Military History	General Missions	Typical Installation Types	Examples	Typical Construction, Design, and Location Characteristics
	Navy	Use of nuclear power for warships and submarines Involvement in Korea and Vietnam Application of new technologies to surveillance and intelligence gathering	Defending American interests abroad Containing Soviet threat Maintaining combat readiness from sea	Navy Base Educational Training Medical Research Proving Grounds Logistical Facilities: Communications Supply Administrative	Charleston Navy Base, SC Naval War College, RI Naval Air Station Pensacola, FL Oakland Naval Hospital, CA Keyport Naval Undersea Warfare Engineering Station, WA Naval Support Activity New Orleans, LA Cutler Naval Communications Unit Naval Weapons Station Yorktown, VA Naval Air Station Quonset Point, RI	The Navy expanded its industrial facilities to accommodate the development of nuclear powered vessels and nuclear weapons. Shore facilities continued to provide expanded support for its enlisted personnel and their families in the form of housing and recreational facilities and the like.
	Marine Corps	Integration of technologies such as the helicopter Involvement in Korea and Vietnam	Defending American interests abroad Defending advance bases Navy Base Protection American embassy and consulate protection Maintaining combat readiness	Garrison Training Research Proving Grounds Logistical Facilities: Administrative Communications Supply	Camp Pendleton, CA Parris Island, SC Mountain Warfare Training Center, CA Marine Corps Air Station Yuma, AZ Camp H. M. Smith, HI Beaufort Marine Corps Air Station, SC Barstow Marine Corps Logistics Base, CA	Maintaining an active force of some 200 thousand throughout the Cold War required the Marines to expand its housing and support facilities at its existing installations. New installations focused on specialized training while existing facilities adapted to new technologies and missions.

4.4 Conducting archival research

Developing a thorough historical context and identifying military landscapes of historical significance requires an approach that integrates archival sources, landscape surveys, and interviews. In many cases, computerized sources such as geographical information systems and the Internet also will prove useful.

The approach is integrated because it requires continual cross-referencing between research materials and landscape surveys. Archival materials may initially suggest which areas of an installation are historically significant, but a site survey may prompt questions regarding character-defining features that will require more archival research to be done. Archival photographs and maps are often useful to have along during site surveys for visualizing landscape change over time.

The following guidelines suggest specific sources of information to aid in the research process.

4.4.1 Archival sources

Archival information relevant to the history of military installations is found in a variety of places and in a variety of formats.

The initial step for researching a military property is to find out what properties (if any) on the installation have been previously documented. The installation itself and the relevant State Historic Preservation Office (SHPO) should be able to provide leads to previous studies. Copies of the existing documentation are usually available from the SHPO, as is information on how to contact the appropriate Federal Preservation Officer (FPO). The FPO may know of existing military contexts or contexts under development, as well as similar studies done at other installations in other states.

Existing studies often provide a useful list of initial sources through their bibliographies. Currently, the DoD has 73 National Historic Landmarks, and over 600 entries on the NRHP, encompassing 19,000 resources located on 200 DoD installations. This includes military and non-military related resources located on military installations. Information contained in existing nominations may provide useful material or avenues of research for new nominations.

The next step involves searching for primary materials at archives, libraries, and other institutions that hold historical materials related to military installations.

Useful information may be found in textual, visual, and verbal formats. Text examples include annual reports, correspondence, construction expenditures, contracts, government appropriations, inspection reports, personal journals, and property lists; visual examples include photographs (including aerial, landscape, and documentary), drawings, plans and maps; verbal data such as oral histories can be an important source of information, and repositories may contain filmed or transcribed copies.

Such verbal, textual and visual information will help researchers identify the persons, events, and decisions responsible for shaping the installation. The visual information also will help researchers understand and recognize the phases of installation development.

A well-conceived strategy for researching a property is critical. Some facilities require appointments and need to know how much time a researcher will need with a specific collection. Any repository of research material should be contacted prior to arrival.

In most cases, archivists can work with researchers over the phone to determine their needs and to assure the best possible use of time at their facility. To save time, arrangements can sometimes be made to have certain materials retrieved in advance and ready for researchers when they arrive.

For security purposes, copies of materials may have to be processed by the repository itself, so the researcher should allow ample time for this extra step. Following is a list of repositories that are likely to prove useful in the investigation of military properties.

4.4.1.1 The National Archives

The National Archives (http://www.archives.gov) is a major source for primary materials relating to all facets of military history. Among other uses, primary materials such as annual reports, installation plans, maps, and aerial photographs are helpful in determining dates and amounts of funds provided by Congressional appropriations for construction programs and in determining the evolution of an installation's plan.

These national records are kept at two locations in the Washington, D.C. area. In general, the National Archives in Washington, D.C. contains pre-WWII Army, Navy, and Marine textual records. The National Archives at College Park, Maryland (also known as Archives II), just outside of Washington, D.C., contains post-WWII textual records (including Air Force) as well as cartographic, architectural graphic, microfilm, still picture, and motion picture resources. The Cartographic and Architectural Branch contains aerial mapping photographs from the 1930s and 1940s that are of particular value.

Resource inventories should be consulted to help determine the applicable record groups. A searchable database of record groups with selected digitized documents, photographs, and images is located on the Internet at http://archives.gov/research/arc/index.html.

Major record groups that should be investigated include:

Army

Adjutant General's Office (RG 94, RG 407)
Headquarters of the Army (RG 108)
Office of the Chief of Engineers (RG 77)
Office of the Secretary of War (RG 107)
Office of the Quartermaster General (RG 92)
War Department General and Special Staffs (RG 165)
Office of the Chief Signal Officer (RG 111)

Air Force

Office of Public Buildings and Grounds (RG 77)
Headquarters, U.S. Air Force (Air Staff) (RG 341)
Office of the Secretary of the Air Force (RG 340)
Army Air Forces (RG 18)
U.S. Air Force Commands, Activities, and Organizations (RG 342)

Navy

General Records of the Department of the Navy (RG 80, RG 428)
Joint Army and Navy Boards and Committees (RG 225)
Naval Records Collection of the Office of Naval Records and Library (RG 45)

Office of the Chief of Naval Operations (RG 38)
Bureau of Yards and Docks (RG 71)
Naval Districts and Shore Establishments (RG 181)

Marines

U.S. Marine Corps, Adjutant and Inspector's Office, General Correspondence (RG 127)
U.S. Marine Corps, Quartermaster, General Correspondence (1927-1939) (RG 127)
U.S. Marine Corps, Still Pictures (RG 127)

There are also sixteen Regional Archives across the country that are open to researchers (http://www.archives.gov/locations). They house records related to their specific region and contain many useful collections for investigating an installation's history. For example, among the Army-related record groups located in these repositories are Army Air Forces, Army Coast Artillery, Army Ordnance, Quartermaster General, Corps of Engineers, Army Commands, Army Surgeon General, Army Staff, and Selective Service, along with enlistment and service records.

The Regional Archives system consists of:

Northeast Region – Waltham, Massachusetts
Northeast Region – Pittsfield, Massachusetts (microfilm only)
Northeast Region – New York City, New York
Mid Atlantic Region – Philadelphia, Pennsylvania
Southeast Region – Atlanta, Georgia
Great Lakes Region – Chicago, Illinois
Central Plains Region – Lenexa, Kansas
Central Plains Region – Kansas City, Missouri
Central Plains Region – Lee's Summit, Missouri
Southwest Region – Fort Worth, Texas
Rocky Mountain Region – Denver, Colorado
Pacific Region – Laguna Niguel, California
Pacific Region – San Francisco (San Bruno), California
Pacific Region – Riverside, California
Pacific Alaska Region – Seattle, Washington
Pacific Alaska Region – Anchorage, Alaska

4.4.1.2 The Library of Congress

The Library of Congress (http://www.loc.gov/index.html) contains both primary and secondary source material. Primary sources housed in the Prints and Photographs Division (http://www.loc.gov/rr/print/catalog.html) include a variety of photographic collections and, as a secondary source, the Historic American Buildings Survey/Historic American Engineering Record/Historic American Landscapes Survey (HABS/HAER/HALS) collection. The HABS/HAER/HALS collection contains textual and visual documentation for selected historic structures of all types, including military structures, and is organized by state (http://www.lcweb2.loc.gov/pp/hhhtml/hhabt.html). The Library of Congress is also useful for its holdings related to the U.S. Congress (http://www.memory.loc.gov/ammem/amlaw/lawhome.html). Information on installation development plans, changing missions, and specifics on construction appropriations can be found in the records of Congress.

The Manuscript Division of the Library of Congress contains personal papers of prominent figures in American history, including military officers, architects, and landscape architects – some of whom were involved with installation development. Some relevant collections might be *Built in America, American Landscape,* and *Century of Lawmaking.*

The Geography and Map Division has a collection of historical maps that can reveal considerable historical information about the plot or plan of installations.

Secondary sources of potential value obtainable through the Main Reading Room include War Department Annual Reports and Quartermaster General Reports, as well as scholarly works on the military, and on military planning and construction.

4.4.1.3 Other federal and military sources

There are several other governmental and military repositories that may be useful, most of which contain both primary and secondary sources. These repositories usually have a staff of historians, archivists, or curators that can provide valuable direction in conducting research at their facilities. An interview with a knowledgeable staff member should be the first step in using these repositories.

National Records Centers (http://www.archives.gov/locations/index.html) are holding facilities for records not yet accessioned to the National Archives, and contain a large number of military textual records. Research access must be coordinated with the agency that produced the records.

The Air Force Historical Research Agency (AFHRA) at Maxwell AFB, Montgomery, Alabama (http://www.afhra.af.mil/) maintains the largest Air Force archive. It is open to the public and has a large collection of unit histories and oral histories. The Air Force also maintains the National Museum of the United States Air Force at Wright-Patterson Air Force Base in Ohio (http://www.nationalmuseum.af.mil/).

The Army Corps of Engineers maintains a research collection in the Office of History at the Kingman Building in Alexandria, Virginia (http://www.hq.usace.army.mil/history/). This repository contains a vast number of records pertaining to Army and Air Force construction, both in paper and microform. Information is available under subjects such as bases, facilities, personal papers of Army Corps officers, installation photographs, architectural drawings, and construction progress reports.

The U.S. Army Center of Military History at Fort Lesley J. McNair in Washington, D.C. (http://www.history.army.mil/) is open to the public and contains files on bases, weapon systems, commands, unit histories, and various other subjects. The U.S. Army Heritage and Education, Carlisle Barracks, Pennsylvania, contains a library and serves as a repository for unit histories (http://www.carlisle.army.mil/ahec/index.htm).

The Naval Historical Center at the Washington Navy Yard (http://www.history.navy.mil/) maintains a history program and a collection of material. The collection can be searched by installation name, and contains information on the Navy and the Marine Corps. The Marine Corps History Division is located on Marine Corps Base Quantico, Virginia and provides researchers with access to a wide range of secondary materials through the Historical Reference Branch (http://www.tecom.usmc.mil/HD/Home_Page.htm). Files are grouped by individual, subject, unit, or location, with the latter containing information on posts and stations.

In addition to repositories that contain primary materials, there are military organizations that provide Internet sites containing collections of documents on cultural resource studies for military installations. DENIX

is the Defense Environmental Network and Information Exchange and serves as an information clearinghouse for environment, safety, and occupational health news, information, policy, and guidance. The menu for cultural resources (https://www.denix.osd.mil/portal/page/portal/denix/environment/CR) provides a searchable electronic library of documents potentially useful for creating historical contexts related to military installations service-wide.

The U.S. Army Environmental Center's Internet pages at http://www.aec.army.mil/usaec/cultural/index.html provide information about the Army's environmental program. The cultural resources page provides links to studies on Native American affairs, historic buildings and landscapes, and archaeology related to Army installations.

4.4.1.4 Resources on active installations

A great wealth of site-specific information is available on active installations. Much of the useful information is typically found in several different offices and locations. A thorough research investigation would include the following offices:

Cultural Resources or Environmental Office – A Cultural Resources Manager at an installation will often have a wide variety of information including previous cultural resource inventories, installation design guides, historical reports, and master plans. In 1996, the DoD completed a directive (Instruction 4715.3, *Environmental Conservation Program*) requiring each military installation to complete an Integrated Cultural Resource Management Plan (ICRMP). The recently released (2008) DoDI 4715.16, *Cultural Resources Management*, which supersedes the earlier directive, continues the requirement for an ICRMP. An ICRMP is a five-year plan that is often a component of the installation master plan, and it serves as the commander's decision document for cultural resources management actions and specific compliance procedures. An ICRMP will assist the managers of a military installation in developing comprehensive evaluations of the significance and integrity of the cultural resources of the installation. It will also help managers meet their responsibilities under Section 110 and 106 of the NHPA by providing sound recommendations for documenting and evaluating historic military installations. ICRMPs must contain a summary of known cultural resources information, and a list and brief description of properties listed, or eligible for listing, in the National Register of Historic Places. In addition, ICRMPs

will contain at least a summarized installation history that may provide information or research leads.

Natural Resources Office – A Natural Resources Manager should have any previous natural resource inventories and reports, environmental impact statements, and master plans, which may contain historical data useful in creating historical contexts.

Civil Engineering Office, Public Works Office, Directorate of Public Works – Although the name will vary among the services, this office is responsible for the construction and maintenance of installation facilities. The real property management and master planning components keep a variety of technical research materials, including architectural drawings, site plans, master plans, installation maps, property records, and installation photographs. Property records are valuable because they give specific information on every structure, such as construction date and cost, and subsequent alterations and additions. All of these sources are useful for understanding the evolution of the installation, but are often very specific and detailed.

Base or Command History Office – Individual Army and Air Force Commands often employ historians, and possess written command histories. The Army Missile Command, for example, maintains a history office at Redstone Arsenal, Huntsville, Alabama. Many military installations will have a history office dedicated to the installation as a whole, or to specific units based at the installation. In addition to possessing installation or command histories and historical photograph collections, historians often will be able to provide leads on the location of additional records and the names of individuals to interview for oral histories (see Oral History section below).

Installation Library/Archives – The installation Library and its archives are a good source for both primary and secondary information such as specialized publications (Service, Command, Unit), general military histories, and site-specific manuscripts and correspondences.

Public Affairs Office – Although the installation's Public Affairs Office is primarily concerned with current activities, this office may have base histories, historical photographs, old press releases, and back issues of an installation newspaper. The office is often responsible for the installation's

home page on the Internet. This page provides basic introductory information about the installation, its organizational structure, recent photographs, and sometimes a synopsis of the installation's history as well as links to more detailed information. Frequently, contact information such as phone numbers, e-mail addresses, and mailing addresses are available.

Museum – If there is a museum on the installation, it will likely contain artifacts and photographs associated with that installation. It may also have artifacts from other military sites that can place the installation in a broader context. There may be an associated archives or vertical file collection. As with a base historian, the curator will be able to provide useful information and additional research leads.

4.4.1.5 State and local sources

A military installation usually plays a large role in the history of its local area. In addition to military sources, state and local repositories may be of help in developing a historical context. Libraries, archives, historical societies, courthouses, museums, and preservation agencies in the local area should be investigated.

Of these, the most useful for answering questions about the “influence” and “role” of a military installation within the surrounding community are likely to be (1) local history rooms at public libraries and (2) local historical societies (if they have archival collections of some kind). These types of resources often can provide information through collections of local newspapers, previously written scholarly and popular articles and books, land records, oral histories, and postcard collections. A regional arboretum will often have examples of native vegetation and exotic plant materials that will aid in identification of plants at the installation.

4.4.1.6 Other sources of maps and photographs

In addition to the sources listed above, photographs and maps may be acquired from the U.S. Geological Survey (USGS) and its subsidiaries (http://www.usgs.gov/).The National Mapping Division administers a number of Earth Science Information Centers (ESICs) that are a primary source of aerial photographs and maps. Most materials are contemporary, but some historical materials are also available. Fact sheets, indexes, and user guides of available products can be obtained by calling 1-888-ASK-USGS or on-line at http://www.ask.usgs.gov/. A variety of types of aerial photographs

and maps (both hard copy and digital) are available. In addition to multipurpose USGS quadrangular maps, ESICs make available land use and land cover maps, hydrologic unit maps, ecological inventory maps, and wetland inventory maps.

Because not all parts of the United States are covered by all of these maps, it is important to consult an index. The USGS has compiled lists of maps available for each state. There are other potentially valuable types of geographical information available such as declassified intelligence satellite photographs, side-looking airborne radar images, and digital elevation models. The National Aerial Photography Program (NAPP) produces high-resolution aerial photographs in both black and white and color infrared (http://edc.usgs.gov/products/aerial/napp.html). Infrared film distinguishes plant materials of different types and age and can be used to detect abandoned roads and archaeological sites not visible from the ground. In addition, the NAPP photographs are taken with sufficient overlap to allow three-dimensional rendering. The USGS also produces "orthophoto quads," which are aerial photos scaled and adjusted in USGS quadrangle format.

4.4.2 Geographic information systems

In addition to traditional maps, geographic information systems (GIS) data may be available for analyzing change over time to buildings, character-defining features, land uses, and natural resources. Geographic information systems are computer programs that allow the analysis, manipulation, and visual display of data with spatial coordinates.

Depending on the kinds of data stored in the system, GIS programs can create scaled, thematic maps. The maps can be selectively displayed in layers, like transparent overlays, providing opportunities to compare relationships among different data types at specific locations. Many military installations use GIS to manage information for planning and land management purposes. ICRMP components for known cultural resources information are often represented in part by information layers in a GIS system, such as archaeological sites and buildings determined eligible for the National Register of Historic Places.

4.4.3 Interviews and oral histories

Interviews and oral histories can be valuable sources of historical information on a military installation. Information can be gathered on the original

appearance, evolution, and uses of the properties under investigation. Individuals currently associated with an installation should be approached first for ideas on existing sources and repositories as well as their own personal remembrances. These individuals may include the current and former commanders, officers and enlisted personnel stationed at the installation, the base historian, cultural and natural resource managers, public affairs employees, real property managers, and maintenance managers. Retired personnel also can be a valuable source of information. The researcher should determine whether oral histories exist electronically/digitally or in transcripts. Although interviews may lead to other sources, they should not be a substitute for library or archival research.

These same individuals may be able to provide information unavailable elsewhere, if they had a role in the historical development or activities of an installation. When seeking this type of information, the researcher should be familiar with the literature, records, and site surveys, which can provide a level of information that the researcher can then build upon through the oral histories. The interviewer should have a predetermined set of informed questions and even have "props" (photographs, news clippings, drawings, maps, or plans) to spark the interviewee to recall details.

Because turnover is very high in the military, the most useful information often comes from civilian employees who may have spent an entire career on one installation. Civilian maintenance personnel with a long tenure often have first-hand knowledge of the physical evolution of the installation. There may be employees in the real property, planning, public works, or civil engineering offices with valuable information on construction dates, how properties have been altered over time, why certain decisions were made, how the general appearance of the installation has changed, how various properties were used, events associated with the properties, and associations with significant persons.

There are several guides that can be used to improve techniques for gathering information through oral histories. Two useful volumes are published by the American Association for State and Local History: *Oral History for the Local Historical Society*, and *Transcribing and Editing Oral History*, both by Willa K. Baum; also Stephen E. Everett's *Oral History: Techniques and Procedures*, published by the U.S. Army Center of Military History.

5 Identifying the Character-Defining Features of a Military Landscape

In landscape studies, the term *character-defining feature* means "a prominent or distinctive aspect, quality or characteristic of a cultural landscape that contributes significantly to its physical character."[12] Identifying the character-defining features of a military landscape requires an understanding of the natural and cultural influences that have shaped it.

A cultural landscape is a unique web of character-defining features (both contributing and non-contributing) that reflect both historical and current uses of land. It is important to understand that character-defining features can be both physical features (such as fences, flagpoles and monuments), as well as processes (such as land use, building in response to natural features, and overall design of the military landscape). Together, these features help researchers understand how the built environment was shaped and used over time.

This section describes the processes and physical forms that together comprise the military landscape. The purpose of this section is to help researchers become aware of the interrelationships between pieces of an overall landscape, and to promote awareness and consideration of these pieces as both individual properties and as part of a larger whole. Thorough identification of character-defining features and information resources will facilitate doing fieldwork, developing historical contexts, and evaluating properties.

Military installations can also be understood as a symbolic landscape, reflecting the organizing principles and values of the military in the way the land is utilized. They are distinct in that they evoke a sense of power, secrecy, national pride, and security. Military life is a subculture of American life, but military installations and lifestyles are very foreign to the general public. This is because most installations are bounded on all sides by fences or walls, and the only way to enter most installations is through a gate where guards control access. Many people may not be aware that

[12] Birnbaum, *The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes*, 4.

within the boundaries of the installations there are thriving communities with homes, schools, shops, parks, and offices as well as (in many cases) large expanses of land for testing and training. Military installations are bounded, self-contained entities that possess a distinctive social organization with clearly defined roles, types of interaction, and governing principles.

The following character-defining features are discussed in the paragraphs below: site and layout; land use; expression of military cultural traditions; transportation networks; boundaries; vegetation; clusters, buildings, and structures; small-scale features; and archaeological sites. For each landscape feature, the discussion includes questions to be used as a guide for gathering facts and recording field observations.

Identifying character-defining features is a method of describing the character of the cultural landscape and providing consistency throughout research, inventory, documentation, analysis, evaluation, and treatment.

Keep in mind that the characteristics listed are presented as a guide and should be adapted to individual installations. Also, not all landscapes will have the same physical character, nor will all features or questions apply.

5.1 Site and layout

Generally, the site of any installation was selected primarily based on the location's suitability for the mission and in response to the natural environment. The implementation of a military mission directed how the installation was originally designed and laid out, and how it subsequently evolved. The site plan and installation design reflect the relationships among land use areas, transportation networks, and the natural environment including predominant landforms and natural features.

Major natural features, such as mountains, rivers, lakes, forests, and grasslands have influenced both the location and design of military installations. Climate, similarly, influenced the siting of buildings, construction materials, and the location of clusters of buildings and structures. Traditions in land use, construction methods, and military customs emerged as the military responded to the physiography and ecological systems of the areas in which installations evolved.

Edwards AFB is a perfect example of how natural features in the landscape influenced the establishment and mission of military installations. Edwards is situated in the Antelope Valley region of the Mojave Dessert. The installation encompasses three Pleistocene dry lakes – Rogers, Buckhorn, and Rosamond – and is bounded by the Soledad Mountains, the Sierra Pelona ranges of the San Gabriel Mountains, the Long Buttes, and the Tehachapi Mountains. These lakebeds, dry most of the year, are extremely hard surfaces and serve as natural extensions of Edward's runways (Figure 20). The extremely hard surface of the lakebeds, remote location for secret testing, ideal year-round climate, and lack of vegetation attracted the military to the site in 1933. The former Muroc Army Airfield was first established as a bombing site for the Army Air Corps. When the site was determined ideal for flight, the installation became the leader in aviation research.

Figure 20. Main Base, South Base and the NASA Dryden Flight Research Center, pictured, and North Base of Edwards Air Force Base were laid out using Rogers Lake Bed as a natural extension for their runways. (NASA Dryden 2007)

Another example of natural features influencing the landscape can be seen at Fort Sam Houston. The Staff Post, consisting of officers' quarters, barracks and support buildings, was constructed during the 1880s, and was situated on terrain that slopes gently down from the Quadrangle towards

the Alamo Ditch (Figure 21). The siting of the buildings reflects an awareness of drainage patterns on the site, allowing the septic systems to drain north and west, ending up in the Alamo Ditch.

The orientation of the buildings also took advantage of the prevailing summer breezes, as was often the case when siting buildings in warmer climates. Fifteen years later, the Cavalry and Light Artillery Post was constructed. The layout of those buildings followed the natural ridgeline, which provides a visual reinforcement of the natural topography through the distinctive curves made by the structures.

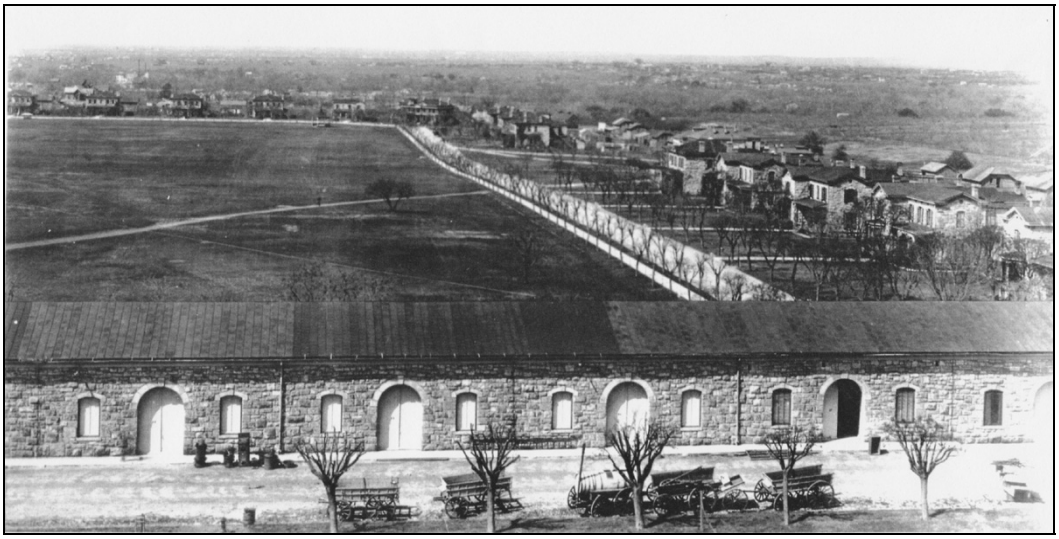

Figure 21. The views across the gently sloping, tree-lined parade field from the Victorian-style, stone officers' quarters is a defining feature of the Staff Post area. (Fort Sam Houston)

Consider these questions when reviewing site and layout:

- How did the natural environment influence the choice of location of the installation?
- Was the installation situated on a natural defensive location such as a promontory, peninsula, or river confluence or on a flat open space to support aircraft activities?
- How did the natural environment influence the design and organization of the installation?
- Was the installation located near natural waterways or a natural harbor?
- Were water features created, re-routed, or otherwise altered to accommodate the mission?
- Were landforms modified?

- Was excavation undertaken?
- When were buildings or structures built or razed?
- How were buildings, flight lines, recreation areas, or other components placed with regard to prevailing, wind, slope, and sun aspect?
- Was officer housing situated on high elevations or in a position to take advantage of scenic views?
- Was the installation reorganized or redesigned?
- How and why has the installation design changed over time?
- How has the installation been modified to accommodate the mission(s)?
- Did ownership of the installation change from one military service to another?

5.2 Land use

The military mission also directs how the military uses the land. Over time, as different missions are implemented, some land uses on an installation may change while some uses may remain the same (e.g., residential areas and air fields). The overriding principle of installation development is to accommodate the mandated mission as expediently as possible. This often leads to a utilitarian landscape in which function is largely emphasized over aesthetics.

However, presenting a powerful and manicured appearance has always been important in the military especially on high profile installations (this is discussed further in the *Expression of Military Traditions* section below). An examination of changing and continuing land uses may reveal how the military has interacted with the natural environment, and provide clues about the kinds of physical features and historic properties that should be present.

In many cases the military's increasing need for training land requires large scale manipulation of the landscape and topography. For example, Fort Sam Houston became the second largest post in the United States following nationwide consolidation of Army posts. Due to the massive increase in troops, the Cavalry and Light Artillery Post was constructed to the north of the existing posts. The new post was design to accommodate a second full regiment of cavalry and a battalion of artillery.

Most landscape changes on a military installation are related to military mission, some directly while others indirectly. Activities that are directly

related to the mission may include flight training, ship building, weapons testing, or defending a border. The associated land uses include airfields and runways; industrial, testing and training sites; parade grounds; and administrative buildings. Land uses indirectly related to the mission may include residential, recreational, support, retail/commercial, and educational.

An example of change can be found in the following example. Over time, the Marine Corps Base Quantico saw its mission change from one as a temporary WWI camp and home to the newly created Advanced Base Force, to one of higher education for Marines. As a result, a more campus-like appearance was designed for the installation, and many permanent buildings constructed after the war were of a classic appearance in the Georgian Colonial Revival style.

In contrast, while the missions at the Washington Navy Yard changed over the years, the physical appearance remained remarkably intact. Shipbuilding was the earliest mission, but when the water became too shallow for larger ships the mission changed to ordnance manufacturing, during which time many of the larger buildings at the yard were constructed. In the late nineteenth century naval technology research was merged with ordnance production and continued until the 1960s, when the mission changed to administration and public interpretation. The same buildings that were constructed for ordnance manufacturing are still being used today (Figure 22).

In an effort to preserve the historical integrity of the place, Washington Navy Yard is now home to some of the most creative adaptive reuse projects in the military. These include buildings that were transformed from gun manufacturing and other earlier uses to offices, parking garages, dining facilities and interpretive buildings (Figure 23).

Consider these questions when reviewing land use:

- How has land use changed over time?
- What land uses have remained consistent over time?
- How have areas been adapted to accommodate different uses?
- Are the old land uses still visible?
- How have land use areas changed to accommodate new technologies?

Figure 22. A 1936 view of the gun shops and industrial buildings along Isaac Hull Avenue, Washington Navy Yard. (NARA, Box 522-a)

Figure 23. A view west down Kennon Street, showing the adaptive re-use of Washington Navy Yard's industrial buildings as administration buildings. (ERDC-CERL, 2002)

5.3 Expression of military cultural traditions

Military cultural traditions are powerfully expressed on installation landscapes, and symbolize the essence of the military as a unique culture. Abstract values such as hierarchy, uniformity, discipline, utility, and patriotism are physically manifested in the installation landscape in both an organizational and an aesthetic sense. Most of these values are expressed in varying degrees, and different parts of an installation may express different values. These cultural values give military installations a unique appearance and feel, and many of them reflect an extraordinary sense of place.

For example, housing areas exhibit both hierarchy and uniformity through their size, style, and location of the quarters. Hierarchy is expressed through the placement of the staff officers' quarters relative to the command structure with the highest ranking officers claiming the most prestigious spot and, as is customary in the military, the largest, most elegant structure would belong to the Commanding General (Figure 24).

At most installations a strong sense of discipline is reflected in the regular maintenance of lawns in public areas. Large warehouses in a storage area reflect uniformity and utility, while monuments and flags reflect patriotism. At Quantico, military culture was integrated into the very design of the buildings, with the master plan developed in the 1920s proposing the use of the Georgian Revival style because it utilized plain materials with little ornamentation (Figure 25). The resulting dignity and proportion expressed through the buildings was "typical of the straightforward service and life of the Marines."[13]

In the 1880s, following the closing of the frontier, the Congress reacted to pressure from the Secretaries of War and the Commanding Generals of the Army by passing legislation calling for the closing of obsolete Army forts, and the consolidation and enlargement of posts located near railroads and larger cities. The effort also involved the expansion and improvement of those posts chosen to remain open. The Army was concerned with their image because many of the posts had substandard housing, sanitation problems, and dilapidated facilities.

---

[13] Glenn Brown, "The Proposed Marine Barracks at Quantico, Va.," The Architectural Record, June 1925:513.

To address the problem, local architects were hired in the vicinity of the consolidation posts and there was a concerted effort to develop high quality, permanent structures using stone, brick and other enduring materials. Those Army posts that benefited from the consolidation included Fort Riley, Fort Leavenworth, Fort Sill, Fort Bliss, and Fort Sam Houston.

Figure 24. Hierarchy is clearly expressed in this 1980s oblique aerial photograph, showing the officers' quarters circling around the headquarters building. This landscape is no longer extant at Fort Hood. (Fort Hood, 4th AD Museum)

Figure 25. The utilitarian nature of the military is evident in the lack of ornamentation on this barracks building at Marine Corps Base Quantico, 1939. (NARA, RG71-CA Box 449)

Between World War I and World War II, hundreds of commissioned and non-commissioned officers' quarters were constructed at Fort Sam Houston, using a Spanish mission style of architecture. Two general styles were used, one for commissioned officers, and the other for non-commissioned officers. Each style was repeated on the grounds, with only minor design variations from house to house. They were regularly spaced along mostly straight roadways, demonstrating an ordered and uniformed landscape much like our homogeneous suburbs today (Figure 26). As mentioned in the introduction, these standardized plans were used throughout the country with regional architectural modifications, such as the use of brick in the East and Northeast, but stucco in the West and Southwest.

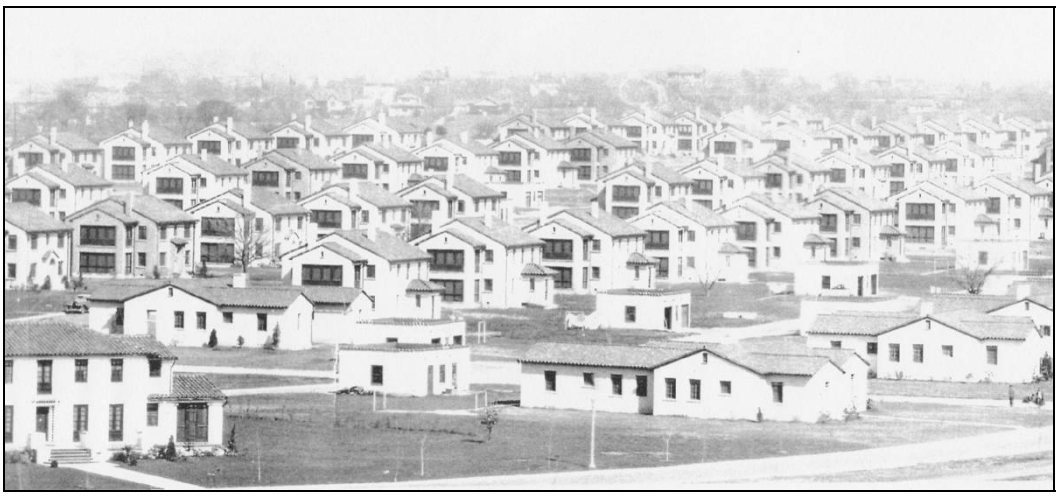

Figure 26. A 1938 photograph depicting the highly uniform landscape of Spanish mission style commissioned and non-commissioned officers' quarters in the New Post area, Fort Sam Houston. (Fort Sam Houston)

At the onset of World War II, the United States military was in the early stages of what would become a construction program on an unprecedented scale. Training camps for the massive influx of soldiers leaped into existence across the country, and contained all types of buildings required to house, administer, train, and support the troops.

The temporary buildings utilized at the camps were of standardized designs, and were constructed of the same materials, regardless of location. The wooden one- and two-story buildings were arranged in row upon row across the installation landscapes, and in repetitive company groupings of barracks, mess hall, chapel, quartermaster, an officer's quarters, and storage buildings (Figure 27). This construction program resulted in vast amounts of acreage that clearly presented the military values of expediency, order, uniformity, and rank.

Figure 27. WWII temporary buildings that exemplify the expediency, order, and uniformity of the military. Photograph taken at Fort Leonard Wood, 1940s. (Missouri SHS)

Consider the military cultural traditions with the following questions:

- How does the installation landscape reflect and represent military cultural traditions?
- In what ways is hierarchy expressed? For example, how does the relative style, quality, and location of residential accommodations for various ranks of personnel show hierarchy?
- In what ways is uniformity expressed? For example: repetition of: building styles, planting design, plant material, sidewalks, patios, and exterior paint colors.
- What parts of the installation show utility?
- How is discipline expressed in the landscape?
- What parts of the installation express patriotism?

5.4 Transportation networks

Transportation networks on military installations are an important characteristic of military landscapes because the movement of troops and equipment is integral to the military mission.

Before the invention of the automobile, horses, stagecoaches, and railways were the predominant forms of transportation. Many modern roads follow old stagecoach routes. These days, vehicular travel is the most common form of transportation on most installations, especially larger ones where facilities are much farther apart.

Historical transportation routes include waterways and trails, such as the Oregon Trail and Santa Fe Trail. Some installations were intentionally sited near trails and rivers. Over the years, transportation technology advanced to include railroads, canals, paved roads, airstrips, highways, and super highways that may be located on or near military installations. Other transportation networks found on military installations may include tank and recreational vehicle trails, pedestrian pathways, and bicycle routes.

To facilitate efficient mobilization of troops and supplies, most transportation systems have a distinct hierarchy. Primary and secondary roads are designed to carry the heaviest traffic and connect major land use areas, while smaller roads, service lanes, and cul-de-sacs provide access to other areas. Where allowed by the topography, installations were laid out in a grid pattern, with streets intersecting at right angles. In the first part of the

twentieth century, the curvilinear streets associated with the City Beautiful movement[14] became popular for the residential areas on installations. This trend carried through to the subdivision-like arrangement of roads within post World War II military housing areas (Figure 28; Figure 29).

Figure 28. The unique circular road system in the Randolph Field Historic District is a series of concentric circles with the Officers' Mess at the center in the middle of the air field. Photograph was taken in 1933, Randolph Air Force Base, TX. (The Portal to Texas History, UNT)

[14] The City Beautiful movement was comprised of a range of beautification efforts, such as park and boulevard planning, tree planting, and pollution regulation, in response to late 19th-century industrialization, pollution, and overcrowding.

Figure 29. At Fort Sam Houston, the massive 20th century parade field in the New Post area separates housing on one side and administration and offices on the other. Major roads cross and flank the parade field for easy commutes back and forth, while smaller secondary roads exist within these distinct areas. (Fort Sam Houston)

At Fort Hood, the transportation networks were crucial in the layout and function of the installation. Built as a tank destroyer center, the main cantonment was laid out parallel to the railroad to the south and the training lands to the north. A network of roadways with a clear hierarchy connects the railroad to the motor pools and spatially organizes the extremely rectilinear layout of the cantonment (Figure 30). At Killeen Base (now part of Fort Hood, and a National Storage Site for atomic weapons during the early part of the Cold War), the transportation networks were an integral part of secretly moving the atomic weapons by air and rail.

Consider the following types of questions regarding transportation:

- What kinds of transportation systems are found on the installation?
- Is there a distinct hierarchy to the road system (primary, secondary, local)?
- Where are rail lines located?

- Why were the rail lines located where they are?
- How have roads and sidewalks been modified over time? Widened or resurfaced?
- What circulation networks represent historical activity on the installation?
- How was the installation sited to take advantage of existing transportation systems such as railroads, highways, and waterways?
- Were runways lengthened, widened, or changed to accommodate new missions or equipment?

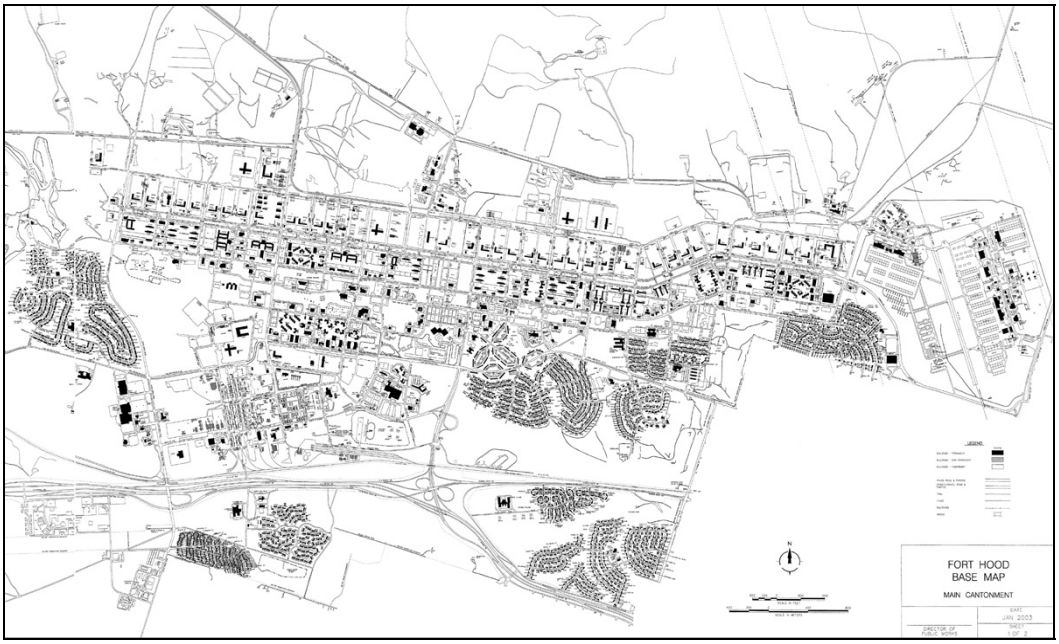

Figure 30. A clear hierarchy of roadways is present at Fort Hood; impressive main road at center of cantonment, heavily traveled east/west roads and small tertiary north/south roads. The motor pools are located adjacent to the training lands along the northern edge of the cantonment, in direct response to the armored mission of Fort Hood. (Fort Hood 2003)

5.5 Boundaries

Most military installations have some form of physical boundary separating it from the local community. This is usually in the form of a chain link security fence, another kind of fence or wall, or a body of water or other natural feature.

For instance, urban installations such as Fort Sam Houston and Washington Navy Yard are adjacent to the city neighborhoods, and have walls or fences defining the boundary (Figure 31). In California, Mare Island and Treasure Island (no longer active) were bounded on all sides by water.

Many installations that were originally sited far away from urban areas, because of the need for large land areas for training, are faced with encroachment from suburban sprawl and other development outside the fence line creating modifications to the physical boundary for the purposes of security and safety.

Figure 31. Latrobe Gate and attached officers housing serves as a section of the northern boundary of Washington Navy Yard along M Street.
This is a view of the gate from Dahlgren Ave, circa 1948. (WNY)

Internal boundaries delineating areas of land use and activities within the installation may be in the form of a fence or a double row of canopy trees edging a parade field or roadways. A residential area may be bounded by paths, roads, or woodland. High security areas such as air fields or testing sites will almost always be delineated by high security fences or signs. Ravines, waterways, and changes in elevation may also be used to define boundaries.

Marine Corps Base Quantico is effectively divided into two parts by I-95, with the eastern part containing the cantonment and most of the built areas. This eastern part, referred to as “Mainside,” is partly bounded by the Potomac River. In the early years of Quantico, the river served as a launch area for seaplanes and provided beaches for amphibious warfare training. The more heavily wooded western part of the installation is largely undeveloped and used for training purposes.

It is important to understand how an installation delineated its boundaries historically and how those boundaries changed, expanded, or decreased over time. As missions changed over time, and testing and training became more expansive with the introduction of new technologies, (including mechanized weaponry, aircraft and tanks), more land was needed and the local communities were greatly affected. Sometimes the need to annex adjacent private land meant the absorption of local farms, homesteads and even towns.

When created, Fort Leonard Wood, Missouri primarily occupied land previously part of the Mark Twain National Forest. Not enough undeveloped land was available, however, so the arrival of the installation meant the departure of residents from the towns of Bloodland, Cookville, Moab, Palace, Tribune, and Wharton. Conversely, sometimes sizable new towns spring up on the borders of military installations to take advantage of the commercial prospects, thereby constraining the installation's expansion possibilities. In other cases, an installation can grow to encompass a town within its boundaries, as the Marine Corps Base Quantico did with its namesake town (Figure 32).

Consider these questions about boundaries:

- In what ways are the external boundaries of the installation physically marked?
- How are interior boundaries marked?
- How have ways of marking boundaries changed over time?
- Have boundaries been changed since the installation was established?

Figure 32. An undated aerial view of Quantico, illustrating the division of the installation by I-95, and showing the inclusion of the town of Quantico within the installation boundaries. (NARA, RG71-CA Box 449)

5.6 Vegetation

Vegetation is a characteristic of the landscape that bears a direct relationship to long-established patterns of land use. Installations with primary missions of training troops and of testing machinery, weaponry and aircraft may have large expanses of land that may or may not be vegetated, depending on the mission requirements and the regional setting.

Range and training lands on western and southwestern installations consist mostly of sparse scrub, cacti and small trees. By contrast, the cantonment areas containing homes, office and administration buildings, schools and parks may be much more heavily vegetated. On the other hand, eastern, southern and northeastern installations may be heavily wooded in the range and training areas, depending on mission requirements which may contrast with a less vegetated cantonment area. The cantonment areas, especially housing, administration, entry roads and other high profile areas almost always have a more manicured appearance, which is evident in the vegetation and landscape design.

Other areas are often left open for various military activities, such as parking or storage. Street trees are usually planted in rows along major traffic corridors and along parade field perimeters. With the exception of tree-lined edges, parade fields are usually open and grass covered. Patterns of vegetation may delineate boundaries, land use areas, and natural areas such as streams or ravines. Forests are frequently used at the edges of an installation, as buffer zones to the surrounding community

Over the years, the military has made conscious efforts to improve the appearance of the installations. For instance, in the 1920s, the Quartermaster Corps employed a group of landscape architects, both military and civilian, "to apply the latest techniques in city planning to Army posts."[15] The objective was that World War I cantonments would benefit from the City Beautiful and Garden City[16] movements in urban planning. Regional, standardized landscape plans were developed by the military during this time to apply to the standardized building plans of the day (Figure 33).

Although many characteristics change over time, vegetation is perhaps the most dynamic. It grows, changes, and declines. Current vegetation may differ greatly from the historical vegetation (Figure 34). The older vegetation may suggest past uses of the land such as old farmsteads or railways. Plantings often reflect the historical trends in landscape design. Some very old trees may even predate the installation. For example, the historic Quadrangle at Fort Sam Houston was constructed around an oak tree in 1876. The old tree is still alive today in the Quadrangle's interior courtyard.

[15] Goodwin, Volume I, 109.

[16] In urban planning, the Garden City movement was the planning of self-contained communities, surrounded by greenbelts and containing carefully balanced areas of residences, industry, and agriculture.

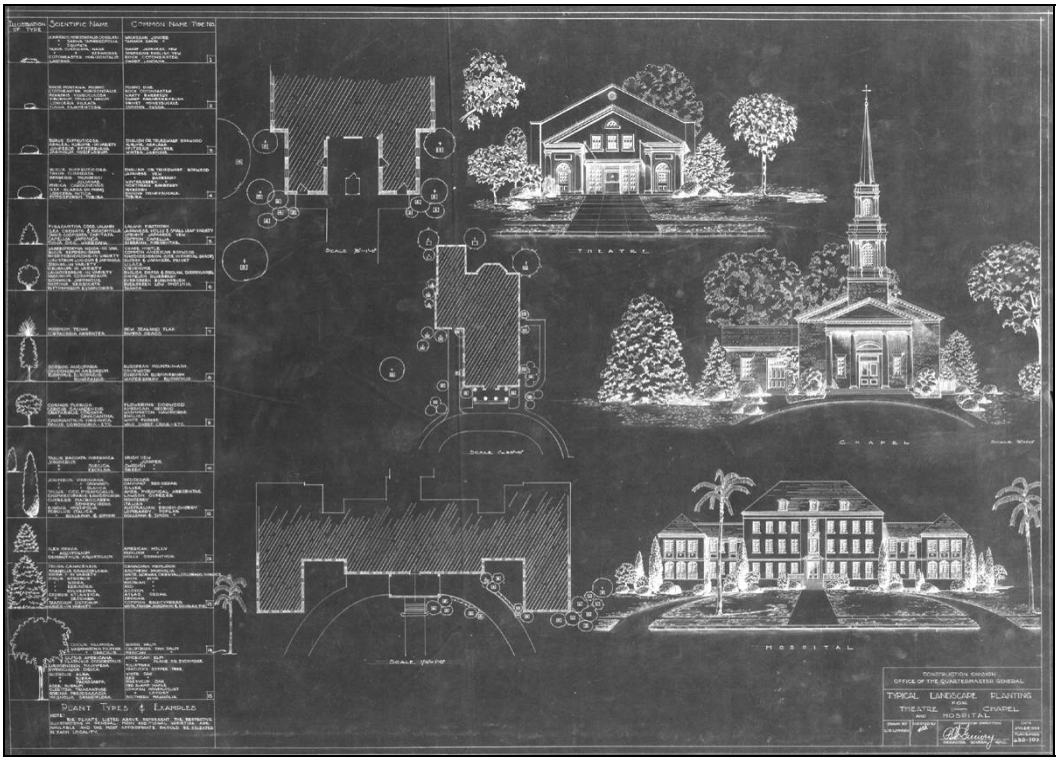

Figure 33. Example of historical planting plans to accompany standardized plans from the Office of the Quartermaster General. This example is titled, "Typical Landscape Planting for Theater, Chapel and Hospital, January 20, 1933." (USACE, HQ History Office)

Figure 34. The "Air Gardens" section of the Terrazzo in the Cadet Area at the Air Force Academy. Designed by landscape architect Dan Kiley, the gardens were filled and leveled in 1975, however sections have been recently restored. (NR, NPS 2002)

An examination of vegetation in aerial photos of an installation may reveal how the housing, administrative and parade ground areas differ greatly from training areas. More organized planting layouts will usually be seen in the housing and higher profile areas, with regularly spaced street trees and foundation plantings around the buildings. These areas are often dressed up and manicured to provide a more impressive image of the installations (Figure 35).

More natural-looking and less-designed vegetation will be apparent in the training areas. Depending on the training mission, the training areas may be wooded and highly overgrown, or barren and sparse. Panama was an important place for troops to train during the Vietnam War because of the dense jungle within the Canal Zone that was similar to the jungles of Vietnam. With the more recent Middle East conflicts, arid and less vegetated installations, such as Forts Hood and Bliss in Texas, are more appropriate for training.

Consider these questions regarding an installation's vegetation:

- How have vegetation patterns reflected land use design decisions through the installation's history?
- Where are native and non-native species of plants found on the installation?
- Have planting conventions changed over time? (Front yard design incorporating foundation plantings, for instance).
- How is vegetation used in relation to military mission? (e.g., are areas used to mimic jungle training?)
- Were standard planting plans used at the installation?

Figure 35. The Ellen Biddle Shipman designed section of the Superintendent's Garden at West Point from the 1930s. While the plant material has changed over the years, much of the form of her design remains today. The garden is used frequently to hold receptions and events. (Special Collections, West Point)

5.7 Clusters of buildings and structures

Clusters of buildings and structures are features that serve human needs related to the occupation and use of the land. Their function, materials, date, condition, construction methods, and location reflect the historical activities, military customs, tastes, and skills of the people who built them. Clusters are groupings of buildings and structures, often similar in style, which function as a cohesive unit — for example a cluster of barracks, residential quarters, or administration buildings.

Clusters of buildings are usually designed to accommodate exterior uses such as courtyards, parking, storage areas, or gardens. Designed clusters generally create a symbiotic relationship, with the exteriors and interiors relating to one another in some way (Figure 36). For example, where the entrances of buildings face the same direction (usually toward a road), they lead the public into more formal sections of the building interior. An installation's buildings, designed to shelter military and other human ac-

tivities, may include officers' quarters, barracks, administration buildings, airplane hangars, warehouses, gunsheds, churches, schools, and commissaries. Structures are also designed for functions other than human shelter. These structures include dams, canals, fences, docks, bridges, ships, and highways. Examples of these clusters include designed housing areas, groupings of hammerhead barracks, and several adjacent hangers on an airfield.

Figure 36. A cluster of stately apartment buildings provides housing for enlisted soldiers at Marine Corps Base Quantico in 1937. (NARA, RG71-CA Box 449)

Over the years, the military has developed a series of standardized plans for most clusters, buildings, and structures on military installations, as well as for the installations as a whole. These plans established an appearance for military installations that is easily recognizable. Historically, the most ubiquitous of the standardized building plans are World War II temporary buildings that were constructed on military installations between 1939 and 1945.

While most of these temporary buildings have been demolished, they were replaced with new standardized designs for barracks, mess halls, and classrooms. Fort Sam Houston used standardized plans for commissioned and non-commissioned officers housing, barracks and administration buildings (Figure 37). These plans reflected a Spanish Mission style and

were also used at other southwest installations, or at other installations throughout the country, with regional modifications to style and material.

Figure 37. A cluster of 9th Infantry barracks around an open area mimics the Quadrangle and the other building-lined parade fields at Fort Sam Houston in this 1935 image. (Fort Sam Houston)

The organizational and spatial relationships among clusters of buildings and structures on military installations are important military landscape features. Installation plans often followed general formulas, to facilitate mission activities.

For example, the rectangular arrangement of buildings around a parade field in a World War II cantonment permitted easy access to the parade field and support facilities for each regimental grouping. Each regiment had its own post exchange (or PX, a general merchandise store), dispensary, and mess halls in an arrangement that promoted organized maneuvers. The distinct arrangement of quarters in housing areas may reflect major civilian town planning principles. For example, the layout of Wherry and Capehart housing areas in installations across the United States were based on principals of suburb design such as uniform setbacks and the use of curvilinear streets to slow traffic (Figure 38).

Consider the following questions when assessing an installation's clusters, buildings, and structures:

- How do clusters reflect the installation mission and distinct periods of military or nonmilitary design?
- How do clusters reflect or depart from military planning and design conventions?
- How do clusters reflect organizational needs and command philosophies?
- What kinds of buildings and structures are found on the installation?
- What architectural styles are represented?
- Are buildings and structures based on standardized plans?
- Did the architectural style change over time?
- Are buildings being used for new purposes other than those for which they were built?

Figure 38. An oblique aerial view of Capehart-Wherry housing areas at Fort Hood, illustrating the curvilinear roads, uniform setbacks, and suburban layout of these neighborhoods. (ERDC-CERL, 2005)

5.8 Small-scale features

Small-scale features by definition are small, but they are often important stationary or moveable objects that often contribute to the historical character of the installation. Small-scale features can be functional, decorative, or both.

Examples of such features include markers and monuments, light poles, site furniture (benches, tables), flag poles, machinery and equipment, fencing, fountains, statues, bollards, signs, retaining walls, or planters.

Memorials, monuments, and other commemorative objects are important to the military installation's cultural landscape because they express pride and respect for the past. These small-scale features embody important values such as patriotism and leadership and mark accomplishments important to the military such as victories, conquests, advances in technology and tributes to the fallen. In many ways, they become icons of the installation.

In parks, plazas and other designed landscapes, small scale features such as benches, light poles and bollards contribute to the larger landscape design, and should be evaluated as such.

A good example is Trophy Point at West Point, where a collection of objects was introduced into the landscape at different periods of time, and evolved into a historic landscape area at the Academy. The most prominent object in the collection is Battle Monument designed by McKim, Mead, and White in 1894 (Figure 39). Revolutionary War objects, including cannons and a piece of the Great Chain (which once stretched across the Hudson River to trap enemy ships), were moved to the site at the north end of the historic Plain. These objects mark an important Revolutionary War vantage point which embraces the famous view up the Hudson River and commemorate West Point’s contribution to the Revolution. The site is visited by millions of people a year.

Figure 39. A 1906 photograph of Battle Monument, designed by McKim, Mead and White. It is one of a collection of features on Trophy Point at West Point. (NPS, FRLA)

Some objects, like the obelisk at the Trinity Site at White Sands Missile Range, mark important events – in this case, the test site of the first atomic bomb (Figure 40). Other objects, such as artillery or machinery from an important battle, were added *during* the landscape's period of significance. However, some objects were placed in the landscape *outside* of its period of significance. These objects may hold significance in their own right, but do not necessarily contribute to the overall historic landscape, such as aircraft on display at many Air Force bases.

Consider these questions about small-scale features:

- Where are monuments located in the landscape? Do they have a ceremonial use/location?
- How is fencing used? To delineate boundaries? As protection? For security?
- Is there a consistent use of lighting, security features such as bollards, benches, and signage? Or is the landscape more utilitarian?
- Do any of the modern (more recent) small-scale features detract from the historic areas?

Figure 40. View of the obelisk, made from local lava rock, which stands at the site of the support tower for the world's first nuclear device (code name "Trinity") during its explosion on July 16, 1945. (NR, NPS)

5.9 Archaeological Sites

Military installations often contain both prehistoric and historic archaeological sites. Many of these archaeological sites predate military use of the land, are unrelated to the military mission, and therefore, not covered under the scope of this guidance.

In particular, many installations contain remnants (as either surface or sub-surface remains) of other communities and peoples occupying the area before the military. For example, cave habitation sites exist at Fort Leonard Wood, Missouri, and petroglyphs exist at many installations in the Southwest. A majority of installations probably have ruins of 19th and early 20th century farmsteads or ranches on their property. These properties should be evaluated by an archaeologist, according to National Register criteria, and several bulletins exist to provide guidance for these evaluations (see the list of related National Register Bulletins in the Resources section at the end of this document).

However, some historical archaeology sites may be related to prior military activities (e.g., building foundations or road and railroad bed remnants) which need to be discussed and evaluated, as part of the site history and a layer of the landscape.

An example of this would be remnant rail beds, which are examples of the importance of railroad transportation during WWI and WWII, both to move vehicles and equipment, and to mobilize large numbers of soldiers. Even at Washington Navy Yard, railways were used to transport the manufactured weapons from buildings to docked ships (Figure 41). While no section of this track is extant on the landscape today, sections may remain under roads and pavement, and would be a feature of the installation's former weapons manufacturing mission.

Consider these questions, relating to archaeological factors:

- Do the archaeological sites on the installation relate to the past installation missions?
- Are they used for current recreation/education?
- Do the sites provide information about earlier land uses?
- Are there artifacts on the sites that could contain information about the users of the site?

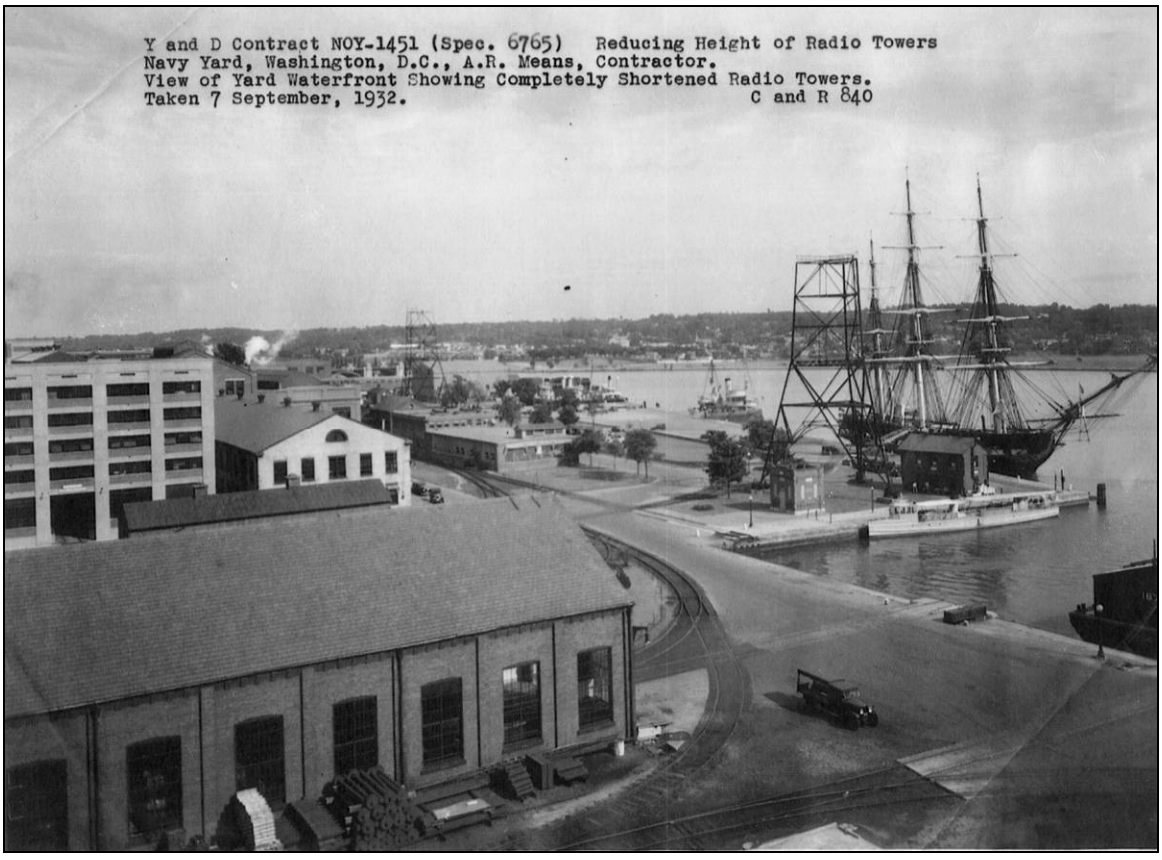

Figure 41. A 1932 photograph of the waterfront at Washington Navy Yard depicts the rail tracks used to transport manufactured weapons from the buildings to the ships. Portions of these tracks may remain under paving. (NARA, Box 524-c)

5.10 Onsite landscape surveys

To accurately evaluate historic military landscapes, onsite surveys are essential. Only through a survey, can researchers collect information about an installation's characteristics, current site conditions, and integrity.

The general approach for surveying is one of starting broadly and narrowing in. The statement of historical context, developed through archival research, should be used as a guide for determining the most important installation sub-areas and features.

Once the potentially significant historic areas are identified, the relative size, scale, and importance of these areas will guide the amount of documentation needed for each characteristic. The survey methods below can be used as a supplement to the methods already established by the National Register, which can be found in NRHP bulletins.

The character-defining features of the historic military landscape, as explained in previous sections, are listed below for review:

- Site and Layout
- Land Use
- Expression of Military Cultural Traditions
- Transportation Networks
- Boundaries
- Vegetation
- Clusters, Buildings, and Structures
- Small-scale Features
- Archaeological Sites

Some installations may choose to conduct the surveys using onsite researchers, while others may decide to hire outside contractors. In that case, this guidance will be useful to ensure contractors are conducting surveys appropriately. Some level of survey may have already been completed, by the installation or by others. The survey process described here should integrate earlier work, to avoid duplication of effort.

5.10.1 Reconnaissance survey

After the initial archival work, researchers should conduct a reconnaissance survey – a preliminary site visit to provide an orientation to the in-

stallation, including its archival collections, security procedures, and key personnel.

This first visit usually occurs through a meeting with the installation's point of contact (POC) for historic preservation compliance projects. This person is usually the cultural resource manager (CRM) or base preservation officer, who may be a trained architect, landscape architect, archaeologist, or planner.

The primary purpose of this person's position is to ensure that the installation is complying with federal preservation laws. If a historic military landscape evaluation is required, the cultural resource manager will oversee the work or, in some cases, conduct the work. The cultural resource manager should therefore be able to inform researchers of the installation's status on historic preservation compliance. Architectural and archaeological surveys may have already been conducted. These studies may provide useful information for a historic landscape study.

Additionally, the manager should be able to introduce researchers to key personnel including base historians, archivists, natural resource managers, management agronomists, arborists, gardeners, master planners, and architects who can provide information about the current and past "condition" of the installation. Installations may employ all or some of these specialists.

The first site visit is intended to allow researchers to discover what information sources and personnel are available to them.

5.10.1.1 Security procedures

Researchers should always carry proper identification with them while conducting a survey. An official document should be carried at all times, stating that the work being conducted is for official government business. Documents should include government travel orders or work orders, if they have been issued. If employed by the government, researchers should also carry a government identification card.

Many military installations have areas to which access is restricted. Researchers may be able to obtain permission to enter these areas. If permission is not granted, declassified archival and historical photo documenta-

tion will have to suffice. **Restricted areas should never be entered without proper authorization.**

Before conducting intensive surveys, researchers should understand clearly what areas they can and cannot visit and photograph, and should develop a plan for addressing inaccessible areas.

A possible approach would be to locate someone on the installation with the required security clearance to access the area, have that person enter the site and look around, and provide the information necessary to complete the inventory. Since the individual would also be aware of what information could and could not be passed along, compliance with security regulations would be maintained as well.

Some areas not officially restricted are sensitive in other ways, for instance the grounds of high ranking officers' quarters or other residential areas. The CRM should make sure the Military Police/Security Police (MPs/SPs) and the residents are informed of the project, and that the researchers have been granted the required permission before they enter the sensitive site.

5.10.1.2 Windshield survey

On most installations, a general tour via car, or a "windshield survey," should be completed before the intensive site survey commences. Researchers should have a good general map of the installation for reference before, during, and after the reconnaissance survey.

If the researchers are not already familiar with the installation, a guided tour with the CRM (or other knowledgeable individual) will be very beneficial. During the survey, researchers need to listen carefully to the tour guide and ask a lot of questions. The CRM may not be trained in documenting and evaluating historic landscapes and districts, and therefore, may not stress potentially important points.

Researchers must also carefully look at the landscape and, based on preliminary archival research, try to identify which historical periods and military missions are associated with extant features in the potential landscape area. Researchers should take general notes and annotate the reference map. But the goal, at this time, is to pay attention to the installation landscape and gain a feel and general sense of the place. If possible, re-

searchers should tape record the guide while touring the installation, periodically referencing the location at which the comments are made.

As soon as possible after the survey, researchers should write comments and first impressions from the windshield survey. Often these first impressions reveal important patterns and anomalies on the landscape, which familiarity with the place tends to obscure.

Researchers should make note of areas that seemed cohesive and those that did not. Areas that seemed disorienting should also be noted. Sometimes sketching a map of the installation from memory reveals perceptions of orientation, scale, and boundaries that are useful later in the process, when determining issues of extent and integrity of a district or site. Finally, it is useful to retrace the path of the reconnaissance survey on an installation map for clarity and orientation.

5.10.2 Intensive-level surveys

The archival work to date should provide researchers with the general history of the installation, including the location and setting, major land use areas, important events and persons associated with the installation, historical property types, and the installation features that are likely to exist.

The time and effort required for the intensive-level survey will depend on the size and complexity of the installation. For example, when surveying an entire installation it is not necessary to record the location of every light post, however if looking at one parade ground, the presence of historical or modern lighting can positively or negatively affect the integrity of the site and should be considered.

The approach should be to first look holistically at the entire installation, then progressively narrow in on areas of potential significance. In so doing, researchers are less likely to miss important areas, and will better understand the geographical context of the areas identified. These investigations should be directed toward identifying existing character-defining features, and determining the extent to which historic properties and characteristics remain intact.

The survey team should view the installation from a variety of perspectives including from roads, on foot, or by bicycle, boat, or helicopter. Viewing the installation from the air is helpful if the installation is very large and

has many different land use areas. In addition, broad patterns of development, layout, and design are more easily viewed from above. Coastal or riverside installations should be viewed by boat, since travel to and from the installation historically (and in many cases presently) often occurred over water.

During the survey, researchers in the field should be prepared to take photographs, make detailed notes, and sketch maps. Bringing copies of maps and photographs from a variety of time periods into the field while surveying is extremely helpful. Referring to the different maps allows the researcher to distinguish the past from the present, to locate historical features, and to illustrate historical context. Being able to take photographs from the same viewpoints present in historical photographs is extremely helpful when evaluating condition. It is also useful to carry current topographic and base maps for reference during field investigations.

All survey activities should comply with installation security measures. For example, some areas may not be restricted access, but nonetheless, taking photographs may be strictly forbidden.

Field observations should be recorded systematically in a standard format that can be readily used for evaluation, registration, and planning. Depending on the size and complexity of the installation, the survey area should be divided into geographical units, perhaps based on land use. This will facilitate recording the character-defining features. If desired, a global positioning system (GPS) can be utilized to provide coordinates for those features.

Researchers should refer to the characteristics and questions covered by "Identifying the Character-Defining Features of Military Landscapes" (Sections 5.1 – 5.9) and follow the recommendations below:

5.10.2.1 General

- Date features as accurately as possible. (Dates can be verified by archival research either before or after the field investigation.)
- Relate characteristics to the statement of context and historical data by associating existing features with specific historical events and activities, land uses, persons, military customs and tradition, and periods of time.
- Note any features or processes requiring further research.

5.10.2.2 Site and layout

- Describe and mark on a sketch map, the natural features, including topography and waterways.
- Note how the installation was laid out and designed, in response to natural features.
- Delineate areas on the map that reflect defined periods of the installation's history, layout, and design. Note how much of the historical fabric still remains, by comparing what is still visible to what is shown on the historical maps and photos.

5.10.2.3 Land use

- Map and delineate land use areas. At some installations, this information may be acquired from the master planning office and then checked by researchers in the field.
- Using the historical maps and archival research, determine what land uses were present throughout the development of the installation. Note land use areas that have remained consistent; note areas that have changed.

5.10.2.4 Expression of military cultural traditions

- Determine what areas, buildings, open space, or natural features are most celebrated on the installation.
- Note how the buildings, landscape, and vegetation are maintained in different areas throughout the installation. Are some areas maintained more than others; do they appear more orderly?
- Note areas of hierarchy.

5.10.2.5 Transportation networks

- Determine primary, secondary and tertiary roadways.
- Note all other modes of transportation, why they were used historically, and how they are used, or not used, today.

5.10.2.6 Boundaries

- Note how installation boundaries are marked: fence, vegetative screen, river, or other natural feature.
- Note how boundaries are used within the installation: in residential, storage, training, and recreational areas, for example.

- Use the historical maps and archival information to determine how boundaries were marked over time.

5.10.2.7 Vegetation

- Identify both natural and introduced vegetation that is predominant.
- Determine how vegetation and planting design/layout are related to land use areas.

5.10.2.8 Clusters of buildings and structures

- Identify areas of repetitive building styles (housing, administration, or residential areas).
- Note how the building styles are arranged.
- Use historical maps and archival information to determine what period the building styles are associated with, and if they are part of a larger installation design or site plan.
- Identify any clusters of structures (bunkers, windmills, towers...).

5.10.2.9 Small-scale features

- Note important small-scale features such as statues, monuments, flagpoles, and other commemorative or decorative objects.
- Use historical maps and archival research to determine the significance of small-scale features and their locations over time. The installation historian or museum personnel often have information regarding monuments.
- Note fencing types, and how they are used, for small-scale features.

5.10.2.10 Archaeological sites

- Note the location of any historic or prehistoric archaeological site.
- Discuss with CRM and/or staff archaeologist, and locate relevant research on the site.

Recent aerial photographs of a military installation are useful for assessing the current landscape. Aerial views can help determine the spatial relationships among land use areas, natural features, vegetation, open fields, waterways, circulation networks, and buildings and structures.

Aerial surveys are quite helpful in identifying building and landscape layout, but are of little use in describing the condition of individual structures

and buildings. Note that historical aerial photographs from the 1930s and 1940s may also be helpful.

5.10.2.11 Follow-up survey

A follow-up survey may be necessary if important site information was not gathered, or is not clear from previous surveys. Further research often points to resources previously not recognized.

6 Evaluating Historic Military Landscapes

Evaluation entails three major activities: defining significance, assessing integrity, and selecting boundaries. This process uses information gathered through field survey and historical research to determine which properties within a military installation possess features of importance, and what those features represent. Significance, integrity, and boundaries depend on the presence and condition of features associated with the establishment and development of the installation.

The result of evaluation is the determination of contributing and noncontributing resources, and the definition of the boundaries of a historic military landscape eligible for the National Register. In some cases, there will be no findings because nothing significant is found.

6.1 Defining significance

Defining significance requires several steps:

1. Researchers summarize the installation's history in a way that permits temporal and spatial analysis. Constructing a set of maps representing historical time periods helps in this regard. It also will be helpful to use archival information (photographs, reports and plans discussed in Photographs section, Chapter 7).
2. Establish the significance of the installation resources themselves, using the standardized National Register criteria. The NRHP Criteria Considerations are also applied when accounting for exceptional significance of properties less than 50 years old.
3. Determine periods, areas, and levels of significance.
4. Draft a statement of significance that summarizes the significance of the property as evaluated.

6.1.1 Summarizing the installation history

An installation's history is the elemental component of NRHP significance, providing the basis for understanding its importance within the larger local, state, or national context. Without this understanding, eligibility cannot be determined.

The history necessary for evaluation contains: information on the events that occurred at the installation; the relationship of these events as part of a larger trend or pattern comprised of other events, either at the installation or elsewhere; and the presence of important individuals or groups, such as influential officers or notable units of soldiers. It will also contain information on the physical development of the installation, both as an entity unto itself, and as it relates to its surroundings. Spatial relationships and changes over time are most easily understood when represented graphically in the form of a map or plan.

The following tasks utilize information gathered during the archival and field research stages and produce thematic maps that will assist in summarizing the installation history. These tasks form the basis of the evaluation process.

1. Review all relevant historical base material (maps, documents, etc.). This provides a broad overview of the installation's history in general, and its site development history in particular. Additionally, it ensures that all information collected is reviewed and evaluated for accuracy and importance.
2. Prepare historical base maps for significant periods of development, based upon site history. This task results in the creation of a visually-based record of the site development history, through a series of historical base maps. The maps should clearly delineate those features built during the map's period, as well as those features that remained from previous periods. In addition, if appropriate, each map may also indicate features built during previous periods yet subsequently removed or destroyed. Copies of existing historical maps may be used, or new maps may be created. Standard graphic symbols should be used, when creating new maps or when adding details to existing maps. If possible, new maps should be created in an electronic format. This will allow for easily changed scales and details. If a computerized standard (such as a particular type of Computer-Aided Design [CAD] or GIS program) exists for an installation, there may be opportunities to share information between installation offices, such as public works and cultural resources management.
3. Identify contributing features from each historical period. The purpose of this task is to identify those features developed during each historical period that changed or altered the installation in a critical or defining manner. Each set of two consecutive historical base maps should be

compared, to determine those features built or developed between the dates of the maps. Periods of significance should become apparent during this task. Some cross-checking with real property records may be necessary during this task, since maps may show features that were planned but either never built, or built at a later date, or features that were removed or destroyed before the map was produced.

4. Prepare a current base map. Completion of this task provides a current base map that includes all of the features, regardless of their eventual significance and integrity assessment. This base map should be completed in a format similar to the historical base maps, employing the same symbols and other graphic qualities. If feasible, build upon an existing current base map, but verify its accuracy carefully.
5. Compare the current base map with historical base maps. This will allow the identification of installation characteristics and features that survive from previous historical periods. In this task, the current base map is overlaid with each historical base map. Each characteristic is dated, based upon the first historical base map on which it appears. Where appropriate, use color-coding to help distinguish between layers of information in both manually drawn format and computerized format.
6. Develop a preliminary map of surviving historical features. The map will delineate a clear set of surviving features from each historical period, as identified in the site history. This will provide the necessary understanding of the significant periods of site development. In this task, those defining features from each historical period identified previously are mapped and identified on the current base map. This step identifies not only surviving historical features but also those that appear to have significance from each historical period.

In completing these tasks, historical facts and field survey information should verify the presence of significant characteristics that shaped the installation and the condition of the properties during each development period. Integrate archival material with field research to identify the patterns of each historical period.

For example, at Fort Sam Houston, historical photographs and written histories reveal that the Infantry Post was an open, treeless parade ground, bounded on all sides by Victorian officers' quarters and the Long Barracks (Figure 42). In the 1940s, the parade field was in-filled with multi-family housing (Figure 43). The only tangible features that remain of the old pa-

rade field are the structures and the road that encircles it. Side by side comparison of historical and present day photographs can clearly illustrate such features and their condition (Figure 44, Figure 45).

Figure 42. The Infantry Post square parade field on far right, showing the open space in 1925, lined on all sides by officer's quarters and Barracks. (Fort Sam Houston)

Figure 43. The Infantry Post area from 1957, showing the parade field filled in with multi-family housing. (Fort Sam Houston)

Figure 44. The Academic Area at West Point, from around the turn of the 20th century. (West Point Archives)

Figure 45. Current view of the Academic Area at West Point, showing the historical character and integrity present. (ERDC-CERL, 2002)

6.1.2 Applying National Register criteria

A historic property is determined significant or not significant, based on the application of standardized National Register criteria within the property's historical context (as established earlier in this report).

A property is determined significant if it is associated with one or more of four criteria based on: historically important events, persons, design/construction styles and methods, or information potential. Each is described below as it relates to military installations. (The National Register Bulletin #15 "How to Apply the National Register Criteria for Evaluation" provides more detailed guidelines.)

CRITERION A: Properties can be eligible for the National Register if they are associated with **events** that have made a significant contribution to the broad patterns of our history.

Most military installations are in some way associated with important events in U.S. history. Eligibility for listing on the National Register of Historic Places is only appropriate if the association is determined to be *significant*.

Edwards Air Force Base is eligible under Criterion A for its association with the development of aerospace technology. Edwards AFB is not only the site of the first jet airplane flight, the Bell-made XP-59A in 1942, but also the site of the first supersonic flight in 1947, when Chuck Yaeger piloted the Bell XS-1 to be the first to break the sound barrier. In addition, Edwards was the site, in 1981, of the maiden landing of the world's first reusable manned spacecraft, NASA's Space Shuttle *Columbia* (STS-1). Edwards AFB has continued to play a role in aerospace flight, currently serving as NASA's alternate location (to Kennedy Space Center) for space shuttle landings (Figure 46).

Figure 46. The Space Shuttle Atlantis (STS-117) successfully landing at Edwards Air Force Base on June 22, 2007. This landing was the 51st shuttle landing at Edwards AFB, supporting its significant role in space exploration. (Edwards AFB)

An event important in the history of the U.S. Navy is the construction of the *U.S.S. Chesapeake* because the ship was constructed at Norfolk Naval Shipyard in 1794, immediately following the establishment of the Department of the Navy. The *Chesapeake* was one of the first six frigates authorized by Congress at the close of the eighteenth century, to be constructed in response to the need for mobilized national defenses.

CRITERION B: Properties may be eligible for the National Register if they are associated with the lives of **persons** significant in our past.

While a site may gain historical importance from its association with a person significant in our past, that the site must be representative of the person's productive life.

For example, Brigadier General Smedley Butler, Base Commander at Quantico from 1920-1924 and from 1929-1931, initiated and oversaw construction of a football stadium at the installation. Since no funding was

available, BG Butler championed the use of troop labor and donation of supplies to build the large stadium that bears his name.

At Pearl Harbor, Hawaii, Commander in Chief, Pacific Fleet Headquarters Building is listed in the National Register because of its association with Admiral Chester Nimitz, who was appointed Commander in Chief of the Pacific Fleet, shortly after the Japanese attack on Pearl Harbor. The headquarters building is the property most closely associated with Admiral Nimitz's leadership of the Pacific Fleet during World War II.

Keep in mind, however, that it can be difficult to apply Criterion B within a military landscape context, as the speed of rotation of personnel provides little opportunity for an individual to make a lasting impression on the physical development of an installation.

CRITERION C: Properties may be eligible for the National Register if they embody the distinctive characteristics of a type, period, or method of **design/construction**, or represent the work of a master, or possess high artistic values, or represent a significant and distinguishable entity whose components may lack individual distinction.

Some military installations contain features that possess the distinctive characteristics of a type, or represent the work of a master. The site plan of an installation may be the work of a master, or may be a representative example of a type of land use significant in military practice. As large numbers of military buildings and structures are identical (i.e. housing units) and not the work of a single individual, significance is often found in the collective whole being representative of a style, type, or period.

The large collection of Lustron homes assembled at Marine Corps Base Quantico fall into this latter use of Criterion C. Together, they created a remarkable showcase for the innovative, pre-fabricated, porcelain-enameled homes that were a style of their own.

CRITERION D: Properties may be eligible for the National Register if they have yielded, or may be likely to yield, **information** important in prehistory or history.

Both former and active installations may contain surface or subsurface remains that are likely to yield information on the installation's history as well as any previous occupation or use of the site.

Examples include Fort Bliss, which contains a large number of archaeological sites representative of indigenous Americans. At the Fort Larned National Historic Site, the 1867 stables used by the Buffalo Soldiers were destroyed by fire in 1869. Subsurface remains could provide information on the location, contents, and uses of the building.

Historic military landscapes, because of their usually complex histories, often relate to more than one of the criteria. Archival information and site surveys, in conjunction with the map sets constructed earlier in the process, will help determine the historical themes associated with the installation and how the themes are evident on the landscape. Historical facts and survey data should verify the presence of significant historical features and the condition of the properties that retain those features.

6.1.2.1 Criteria considerations

Certain kinds of properties are not usually considered for listing in the National Register. These properties include: cemeteries, birthplaces or graves associated with historical figures, properties owned by religious institutions or used for religious purposes, structures that have been moved from their original locations, reconstructed historical buildings, properties primarily commemorative in nature, and properties that have achieved significance within the past 50 years.

However, exceptions will be made if a property is an integral part of a historic district, or if it falls within any of the following seven categories of *criteria considerations*: [17]

- Religious property that derives primary significance from architectural or artistic distinction, or historical importance.
- Building or structure removed from its original location, but which is significant primarily for architectural value, or which is the surviving structure most importantly associated with a historical person or event.

[17] see National Register Bulletin #15: "How to Apply the National Register Criteria for Evaluation" for further information on criteria considerations.

- Birthplace or grave of a historical figure of outstanding importance, if there is no other appropriate site or building directly associated with his or her productive life.
- Cemetery which derives its primary significance from graves of persons of transcendent importance, from age, from distinctive design features, or from association with historical events.
- Reconstructed building, when accurately executed in a suitable environment and presented in a dignified manner as a part of a restoration master plan, and when no other building or structure with the same association has survived.
- Property primarily commemorative in intent if design, age, tradition, or symbolic value has invested it with its own historical significance.
- Property achieving significance within the past 50 years, if it is of exceptional importance.

Of particular concern for military properties is determining the significance of newer properties. Since passage of some time is necessary to gain the perspective needed to recognize historical importance, properties less than fifty years of age may be listed *only* if they are exceptionally important.

Military missions are ongoing, and many recent missions were associated with national or international events of exceptional importance or significance. The Korean and Vietnam conflicts, the Cold War, advances in weapons technology, and space exploration are only a few examples (see end references for a list of context reports).

For guidance on how to apply the National Register criteria to properties that potentially derived significance within the past fifty years, refer to National Register Bulletin #22: “Guidelines for Evaluating and Nominating Properties That Have Achieved Significance Within the Last Fifty Years.”

Military cemeteries can also fall within the National Register's categories of special consideration, from their association with persons of transcendent importance, from age, from distinctive design features, or from association with historical events. A number of significant historical figures are buried at the U.S. Military Academy at West Point, including LTG Winfield Scott, MG George W. Goethals (engineer-in-charge of the Panama Canal construction), and GEN George A. Custer.

Military cemeteries can also be significant for their distinctive military design and layout. For more information on evaluating cemeteries and burial places, refer to National Register Bulletin #41: "Guidelines for Evaluating and Registering Cemeteries and Burial Places". Similarly, churches and chapels on military installations may also qualify, because of their association with historical events and persons. Religious properties may also be listed for their design and construction (under Criterion C).

6.1.3 Periods and areas of significance

A **period of significance** is the span of time when a property was associated with important events, activities, persons, cultural groups, and land uses, or attained important physical qualities or characteristics. Although a period of significance may be short, more often it extends many years, covering a series of events, a continuum of activities, or an evolution of physical characteristics. Properties may have more than one period of significance.

For military installations, the period of significance will most likely, but not always, begin with the date of establishment. Continuous land use, association, or function does not by itself justify continuing the period of significance. Properties that have evolved and achieved importance at separate times should be given separate periods of significance.

The length of time should be based on the years when the property historically made important contributions. Generally speaking, the period closes with the date when the events, activities, and construction having historical importance ended. Many military installations, from old frontier forts to recently closed bases, are no longer active. The closing date for now-inactive installations, in most cases, is the date that it ceased being a military facility. If the installation is active, but a specific period of significance cannot be identified, a date fifty years from the present can be used.

A great number of historic events have been associated with the military in the past fifty years, such as the Cold War and the Vietnam War, as well as broad trends, such as the increasing technological sophistication of weaponry and the ever-larger number of military roles taken on by women. Exceptionally significant properties associated with these events and trends may be eligible, even if their significance was achieved within the last fifty years.

Criteria Consideration C, regarding eligibility for recent properties, should be reviewed carefully (see NRHP Bulletin #15: "How to Apply the National Register Criteria for Evaluation").

The National Register defines a series of standardized **areas of significance** that represent aspects or themes of historical development, in which a property made contributions. Developing the historical context for an installation should provide the researcher with knowledge applicable to selecting the appropriate areas of significance.

For nearly all historic military landscapes, *military* will be the primary area of significance. In some cases, *archaeology* will be an important area of significance for an installation. Other relevant areas of significance may be associated with the designed or built environment such as *architecture* or *landscape architecture*, *engineering*, *community planning and development*, and/or *transportation*. Other areas of significance may be associated with the particular mission of an active or inactive installation, such as *communications*, *education*, *exploration/settlement*, *health/medicine*, *invention*, and/or *maritime history*. The support facilities on an installation could be significant under *entertainment/recreation* or *performing arts*.

Historic military landscapes: areas of significance

Architecture: where high-style or vernacular buildings, by their historical association, function, design, spatial arrangement, or setting, are integrally related to large areas of landscape and are indicative of the physical development, building practices, materials, traditions, or land uses of military installations.

Archaeology: where patterns visible upon the land, or evident in either subsurface or above-grade remains, can provide important information about prior military activities.

Communications: where the technology and process of transmitting information was applied toward the accomplishment of military mission(s). For example, downrange missile tracking stations could be significant under the area of communications.

Community Planning and Development: where the spatial organization and character of the military landscape are the result of a plan de-

signed by military or civilian personnel, using contemporary planning styles of the day.

Education: where the process of conveying or acquiring knowledge or skills through systematic instruction, training, or study is geared to military subjects. The Army, Navy, and Air Force academies are obvious examples, but this area of significance could also apply to installations providing educational services such as specialized weapons training, instructor training, or medical training.

Engineering: where the installation site and its uses reflect the practical application of scientific principles to serve military needs, such as missile launch facilities, research and development facilities, and shipyards.

Exploration/Settlement: where the installation site continues to reflect military involvement in the exploration, establishment, or early development of the nation or region. This could include remnants of migration trails, ferry sites, locations of treaty signings, or space exploration facilities.

Health/Medicine: where the military care of the sick, disabled, and handicapped, and the promotion of health and hygiene, is reflected in the landscape, ranging in scale from the Walter Reed Army Medical Center to an installation's clinic.

Landscape Architecture: where the historic military landscape contains sites, including residential landscapes, gardens, parks, or recreation areas that have been based on established design principles or conscious designs, or are the work of a master, having importance within the context of landscape design but adapted for military use.

Maritime History: where the exploration, fishing, navigation, and use of in-land, coastal, and deep sea waters for military purposes is reflected in the landscape.

Military: where the system of defending the territory and sovereignty of a people is expressed in the landscape. Most nominations for historic military landscapes will document significance in this area.

Transportation: where the process and technology of conveying passengers or materials for military purposes is reflected on the installation. Modes of transportation involving the military include foot, animal (oxen, horse, or mule), motorized vehicles, railways, ships, and aircraft.

6.1.4 Writing a statement of significance

The **statement of significance** is a narrative used to describe why the property was important and how, through its character-defining features, it is directly related to specific historic contexts, National Register criteria, areas and periods of significance, and criteria considerations, where applicable. The important events, persons, activities, and physical qualities are discussed in relation to specific landscape character-defining features. The more important features should be given a more detailed discussion.

The statement of significance is a requirement of the NRHP registration process (described beginning on page 124), and also is necessary as a preliminary step in evaluating the integrity of a property. The statement should begin with a summary paragraph describing the overall importance of the historic military landscape. This should be followed with subsequent paragraphs supporting the significance of the landscape, events, persons, activities, and physical qualities. This statement should also make clear the level of significance (local, state, or national) that a property holds.

Because the statement involves delineating those features that are associated with historic events, periods, designers, or trends, (as specified in the National Register criteria), it is useful to return to the historical maps constructed in the Summary of Installation History on pages 108-109.

The following two tasks must be completed:

1. First, field check the preliminary map to determine accuracy and make necessary additions. The purpose of this task is to locate and add features not previously identified through the mapping process. This task requires an extensive knowledge of both the site and the site's history and significance. It is especially important to determine an acceptable level or scale of documentation prior to field work.

For example, in some sites, large-scale features such as the geographic location of a road, housing complex, battery, or airfield will be emphasized. In other sites, a more detailed level of documentation such as recording

curbs, gun placement, or detailed materials will be important. In all cases, the level of detail should be appropriate for the level of historical documentation and analysis.

2. Secondly, refine any map(s) of surviving, contributing historic features. The purpose of this task is to modify the map(s) of contributing historic features, based upon the field work in the previous task. This will require a review of all of the historical base maps and the current base map, a refinement of the scale based upon historical data, and the modification of the map(s) of contributing historic features to reflect this new information.

6.2 Assessing integrity

Integrity is the ability of a property to convey its significance. Logically, integrity assessments are contingent upon significance, which must be determined first. Within the concept of integrity, the National Register criteria recognize seven qualities, or aspects, that in various combinations define integrity.

In any evaluation, the seven components of integrity do not receive equal weighting; for any particular property, some are more important than others in conveying significance. Determining this weighting depends upon the historical character and appearance of the property, in conjunction with knowing why, where, and when the property is significant. A property's periods of significance become the benchmark for measuring whether subsequent changes to its character-defining features contribute to its historical evolution or alters its historic integrity.

The seven aspects of integrity are: location, design, setting, materials, workmanship, feeling, and association.

Decisions about the integrity of historic military landscapes require well-reasoned judgments by experienced professionals about whether the property today reflects the spatial organization, physical components, and historical associations that it attained during the periods of significance. Although no landscape will appear exactly as it did 50 or 100 years ago, those areas with integrity retain recognizable qualities of their past.

6.2.1 Levels of Integrity

Using the installation history, current and period maps, graphic images, and lists of resources and features compiled during the establishment of significance, apply the following types of questions as they relate to the installation in question.

Location: the place where the historic property was constructed, or the place where the historic event occurred. This applies to the spatial relationships among component parts of the installation.

- Are important elements of the installation in their original location?
- Have buildings been moved or streets relocated in a way that compromises integrity?

Design: the combination of elements that creates the form, plan, space, structure, and style of a property. This applies to both conscious and unconscious design decisions over time that affect where land use, organization of space, circulation networks, buildings and structures, and vegetation are located.

- Has the general structure of the installation changed since its period of significance?

Setting: the physical environment of a historic property. This is not to be confused with location, which refers to the specific place where a property was built or an event occurred. On the other hand, setting refers to the character of the place in which the property played its historical role.

- Do parts of the installation retain important features such as topography, vegetation, and relationships between open space and buildings that convey the setting from its period of significance?

Materials: the physical elements that were combined or deposited during a particular period of time, and in a particular pattern or configuration, to form a historic property.

- Are the original materials used in the structuring and shaping of the installation still extant?

Workmanship: the physical evidence of the crafts of a particular culture or people, during any given period in history or prehistory. For military landscapes, this would apply to both formally designed areas or installation plans that represent particular styles and areas that reflect institutional, prefabricated construction techniques.

- Does the property reflect evidence of landscape design or installation planning?
- Does the property retain characteristic workmanship from the period of significance?

Feeling: a property's expression of the aesthetic or historical sense of a particular period of time.

- Does the property invoke a particular sense of time and place?
- Is it possible to tell that one has entered a historic area on the installation, based on its appearance?

Association: the direct link between an important historic event or person and a historic property. A property retains association if it *is* the place where the event or activity occurred, and is sufficiently intact to convey that relationship to an observer.

- Is it possible to associate the important events or people with elements of the installation?

The relationship of historical character-defining features and integrity is complex. Patterns of spatial organization, circulation networks, and clusters directly relate to design, and strongly influence the cohesiveness of military landscapes. Responses to the natural environment, boundary demarcation, clusters of buildings, and vegetation all add to location and setting, as well as to the design. Continuing and compatible land use and activities can enhance integrity of feeling and association. Clusters of buildings, vegetation, and land uses all reflect materials, workmanship, and design. Each of these factors requires consideration when establishing the integrity of a resource.

6.2.2 Establishing integrity

The following two tasks complete the integrity assessment process.

1. Develop a list of character-defining features for the properties with historic significance, as identified through the mapping and field study process. The purpose of this task is to identify and describe the features that allow the property to convey its significance (and document any important features that have been lost). Perform this task first on the individual properties with significance to determine if any are individually eligible to the National Register due to possessing both significance and integrity. In many cases, there will not be any individually eligible properties, and the landscape will need to be evaluated for integrity, as a district containing many properties. Clearly list those areas and specific properties that retain integrity, and any properties that do not retain integrity due to alterations (loss of historic fabric, non-historic additions, etc.) that undermine the historical appearance and character of the property. It will be helpful to key this narrative to both historical and current base maps.

2. Develop a final map of contributing landscape features. The purpose of this task is to develop a current base map that indicates only those features that contribute to the landscape's integrity, as determined through this process. This map will also serve as a graphic list of features to be protected, or, in the case of development, mitigated. As with the other maps, this map should conform to established professional norms for graphic symbols and displays.

In combination, these factors – the statement of significance, the set of maps developed during the establishment of significance, the statement of integrity, and the map of contributing resources – will establish a clearly defensible set of steps toward determining the boundaries of a historic military landscape district.

6.3 Establishing boundaries

Boundaries for historic military landscapes must encompass the area having historical significance, and containing the contributing resources that express the characteristics of the historical property. Selecting the boundary involves formally establishing the proper edges of such areas.

6.3.1 Selecting edges

National Register boundaries must encompass a concentration of historical military, character-defining features. The boundaries should include

resources that have both historical significance and integrity. Boundaries must be fixed in space and capable of accurate description by metes and bounds, legal descriptions, mapping coordinates, or site plans drawn to scale. Requirements for selecting and describing boundaries can be found in National Register Bulletin #16A: "How to Complete the National Register Registration Form."

Both active and former military installations will have specific boundaries in place. The National Register boundary will rarely exceed the outer boundary of the installation. For most installations, the boundaries of the historic military landscape will not encompass the entire installation. Often, historical installation boundaries can guide the establishment of historic landscape boundaries. For most installations, a legal boundary description will have been defined when the installation was created, and subsequent changes to that boundary will also have been recorded. However, boundaries will need to be selected that conform to the current situation regarding contributing resources.

Boundaries selected often follow the natural landscape, and natural landforms can provide edges. A stream can serve as an easily identifiable edge, as can a steep hillside or ravine. Man-made features in the landscape, such as building footprints and parking lots, can also serve to define boundaries.

Often, the historical character-defining features determined to be present and retaining integrity can themselves serve as edges. For example, a spatial shift between land uses may present a useful edge, as where a residential area meets an administrative one.

Circulation networks often create edges such as roads, railroad tracks, pedestrian pathways, and other transport routes that can be used to frame a historic military landscape. Existing boundary demarcation methods, such as fencing or previously planted screening vegetation may serve as edges.

When a historic military landscape contains a significant view that affected location or design decisions, edges should be selected that include the primary characteristics of the historic view.

6.3.2 Multiple properties and discontiguous districts

Historical military, character-defining features should occur throughout the area being proposed for nomination. Peripheral areas having a concentration of non-historical features should be excluded, while the impact on historical integrity of centrally located, non-historical features should be considered.

Because military installations are constantly changing and evolving, it will most often be the case that only smaller areas, within the installation as a whole, will be identified as historic military landscapes. It is possible to have a combination of sites and districts within the installation as a whole.

For the smallest properties, designation as a contributing site will be the most efficient method of identification. For most historic military landscapes, more than one resource will be included in the nomination. When this occurs, it is most useful to designate the area as a district. Particularly on large installations, there may be historically associated groups of resources physically separated from each other, by intervening development or by large groups of non-contributing resources. If the separated resources are identifiable and distinct in their own right, a discontiguous district may be delineated. This is not a common situation, and the NRHP should be contacted for more guidance.

Historic military landscapes can be nominated and listed individually on the National Register Registration Form (NPS 10-900), or as part of a group of thematically related properties in a multiple property approach using the National Register Multiple Property Documentation Form (NPS 10-900-b). The latter form is used to document the contexts, property types, and methodology as a cover document; separate individual registration forms are then used to register each eligible property.

If an installation contains a large amount of various property types as eligible, but not contiguous resources, a multiple property approach could prove helpful in developing the nomination. If there are several historical contexts for the historic landscape districts, these could be separated out and representative property types developed for each.

Historic military landscape districts are often very complex collections of resources, and the multiple property approach helps to streamline the method of information collected in surveys and research for registration

and preservation planning purposes. Evaluation of individual properties is facilitated by comparing them with resources that share similar physical characteristics and historical associations. Multiple property documentation can provide essential comparative information for preservation planning and can be used to establish preservation priorities based on historical significance. A multiple property approach may be appropriate where resources are geographically separated, or when themes and periods of significance are distinct for each area.

6.3.3 Individual property types

If the properties under evaluation do not prove to have a concentration of eligible resources, several individual properties may be eligible. Should this be the case, boundaries will need to be drawn for the individually eligible properties. Information is available in National Register Bulletins regarding drawing boundaries for sites, objects, buildings, and structures.[18]

[18] See particularly U.S. Department of the Interior, National Park Service *How to Establish Boundaries for National Register Properties* (Washington, D.C.: GPO), 1997.

7 Registration of Historic Military Landscapes

This section provides guidance for developing a National Register nomination of a historic military landscape. It follows National Register guidance closely, and is organized according to the section names on the registration form. It should be used to supplement National Register Bulletin #16A: "How to Complete the National Register Registration Form." Nominations are processed in accordance with the regulations specified in 36 CFR Part 60, and are submitted to the Keeper of the National Register through the appropriate Federal or State Historic Preservation Officer.

7.1 Classification

Historic military landscapes will usually be classified as a *district*, one of the property types in the National Register of Historic Places. A property that contains a significant concentration, linkage, or continuity of properties (buildings, structures, objects, or sites), united by plan or physical development is classified as a district.[19] Although districts will likely be the most common form of eligible resource classification on military installations, it is possible that individual properties may also be eligible. The resources contained within a historic district are classified as either *contributing* or *non-contributing*.

By National Register definition, a *contributing* resource enhances the historic property, other historical associations, historical architectural qualities, or archaeological values for which a property is significant because (a) it was present during the period of significance, relates to the documented significance of the property, and possesses historical integrity or is capable of yielding important information about the period, or (b) it independently meets the National Register criteria.

[19] National Register of Historic Places, *National Register Bulletin: How to Apply the National Register Criteria for Evaluation*, (Washington, D.C.: U.S. Department of the Interior, National Park Service, 1991), 4-5.

By National Register definition, a *non-contributing resource* detracts from either a historic property, other historical associations, historical architectural qualities, or archaeological values for which a property is significant.

A resource could be labeled non-contributing because (a) it was not present during the period of significance or does not relate to the documented significance of the property, (b) due to alterations, disturbances, additions, or other changes, it no longer possesses historical integrity nor is capable of yielding important information about the period, or (c) it does not independently meet the National Register criteria.

Contributing and non-contributing resources are counted, according to the guidance found in National Register Bulletin: "How to Apply the National Register Criteria for Evaluation" and "How to Complete the National Register Registration Form." Buildings, structures, objects, and sites within the landscape district that are substantial in size and scale, or are specifically discussed as significant, are counted.

7.2 Function

Data categories such as domestic, commerce or trade, social, education, religion, funerary, recreation and culture, health care, defense, landscape, and transportation could have sub-categories applicable in defining the past and present functions of the historic military landscape. See National Register Bulletin #16A: "How to Complete the National Register Registration Form" for a complete list. Only the most predominant functions of the property should be listed.

7.3 Description

According to the National Register guidelines, this section of the nomination form is a narrative description of the evolution and current condition of the historic military landscape. The processes that have shaped the landscape are discussed and related to specific features within the property. Changes that have occurred in the use and character of the land should be dated as accurately as possible. Table 2 in National Register Bulletin #16A lists the information to be included for each characteristic.

Organize information about the historical military character-defining features to best describe the character of the property. If a multiple property approach is being used, describe the resources in a manner that explains

how they fit the appropriate property type defined in the cover document. For individual site or district nominations, it may be best to describe the general layout and character of the property, and then provide a more detailed description of the military character-defining features it contains.

Specialized terminology may be necessary for describing architectural, engineering, botanical, or geological resources. When these terms are necessary, they should be clearly explained. Whenever possible, use common names or terms to describe the property rather than military terminology. It will often be necessary to use the military names for activities, land uses, structures, objects, etc. If the military term is not easily understood, include an explanation.

Begin the narrative with a summary paragraph briefly describing the historic military landscape, noting its major physical characteristics and assessing its overall integrity. Use subsequent paragraphs to describe the district and provide support for the summary paragraph.

7.4 Significance

Following National Register bulletin guidelines, the statement of significance is a narrative used to describe why the property was important and how, through its characteristics, it is directly related to specific historical contexts, National Register criteria, areas and periods of significance, and criteria considerations, where applicable. The important events, persons, activities and physical qualities are discussed in relation to specific character-defining features of the historic military landscape. The more important features should be given a more factual and detailed discussion.

Begin the statement of significance with a summary paragraph describing the overall importance of the historic military landscape. Subsequent paragraphs should support the significance of the district, events, persons, activities, and physical qualities.

7.5 Boundaries

Delineate boundaries of a historic landscape as accurately as possible by using a measured description, legal descriptions, tax parcel numbers, lines and sections on USGS maps, or a sketch map drawn to a scale (preferably no smaller than 1 inch equals 200 feet).

7.6 Maps

National Register guidelines request a detailed sketch map for all properties meeting the definition of historic district. The map depicts the extent of the district through clear demarcation of boundaries, and indicates the locations and relationships of the principal landscape features.

Mark the buildings and structures, landscape sites, circulation networks, major land uses, archaeological sites, important natural features, and large areas of vegetation on the map. Label each resource that is substantial in size, scale, and importance by its name, number, or other symbol, and mark the resource as either *contributing* or *non-contributing*.

Often, an installation will have current maps available showing all physical property. Other maps may be available that indicate current landforms and contour lines, vegetation types, and/or land uses. These can be combined, and used as a base map for indicating sites or districts.

According to the National Register procedures, several maps drawn to different scales may be used in place of one overall sketch map for properties consisting of a large acreage. A USGS topographic map in the 1:24,000 series should be used to delineate the overall property, and to depict boundaries, principal land use areas, circulation networks, important natural features, isolated resources, and clusters. Maps drawn to a larger scale, for example, 1 inch equals 200 feet, may then be used to locate the individual resources within each cluster.

A series of maps, such as the ones developed for the evaluation of integrity, can be used to show the evolution of the historic military landscape. Copies of historical maps showing the installation at various points in time are useful records, and should be included with the nomination if available. The installation property office and history office are good places to look for historical maps. In addition, the collections of the National Archives or other repositories could possess appropriate maps.

7.7 Photographs

Representative views of historical and non-historical land areas and military installation character-defining features must be submitted with the registration form. Copies of historical photographs, engravings, and illustrations may also be included. Contemporary photographs taken from the

vantage point of historical photographs may supplement the written description of land changes.

Any photographs submitted as official documentation must meet the National Register standards for photo-documentation[20], including an expected longevity of at least 75 years. The NRHP photographic policy is currently undergoing a transition to allow the use of digital photography that meets certain standards.[21]

There is always a possibility that some areas of a military installation will be off-limits for taking photographs. When scheduling field work, be sure to determine which areas are sensitive and secure permission to photograph all areas. In some instances, installation security may provide an escort to inform the researcher what can and cannot be photographed.

[20] For further information on taking photographs for National Register nominations, see National Register Bulletin #23: "How to Improve the Quality of Photos for National Register Nominations."

[21] For the most current guidance on NRHP photographic policy, check the website at http://www.nps.gov/nr/policyexpansion.htm.

Resources

Legislation and other requirements

The two most important legislative requirements regarding historical and cultural resources on military installations are Sections 106 and 110 of the National Historic Preservation Act (NHPA) of 1966, as amended.

First, Section 106 of the NHPA requires federal agencies to take into account the effect of their actions on historic properties. More specifically, it requires an agency to take into account the effects of the undertaking on any district, site, building, structure, or object that is included in, or eligible for inclusion in the National Register, before using federal funds for the undertaking. In addition, the agency head must give the independent federal agency known as the Advisory Council on Historic Preservation a reasonable opportunity to comment on the undertaking.[22]

Secondly, Section 110 requires federal agencies to develop and implement plans for the identification, management, and nomination of cultural resources.

The main relevant provisions provide[23] that federal agencies shall:

- Reuse and preserve historic properties for agency work rather than acquire new ones.
- Establish a preservation program for identifying, evaluating, and nominating to the National Register, and for protecting historic properties.
- Have a system for assuring permanent documentation of historic properties before they are substantially altered or demolished.
- Designate a qualified Federal Historic Preservation Officer.
- Carry out agency programs and projects to comply with this Act.
- Produce planning and actions from any undertaking to minimize harm to a National Historic Landmark (NHL).

[22] National Historic Preservation Act of 1966, as amended, Section 106 (16 U.S.C. 470f).

[23] Ibid., Section 110 (16 U.S.C. 470h-2)

Federal legislation

National Environmental Policy Act of 1969, as amended (NEPA): Among other things, NEPA requires the U.S. government to improve and coordinate federal plans, functions, programs, and resources to the end that the nation may preserve important historical, cultural, and natural aspects of the nation's heritage. Federal undertakings must be examined for their expected level of impact on historical resources, including historic views. For undertakings with findings of significant impact to environmental or cultural resources, an Environmental Impact Statement (EIS) is required. An EIS identifies the significant effects to the resources, and includes alternatives to the proposed undertaking.

National Historic Preservation Act of 1966, as amended (NHPA): The NHPA provides requirements for consideration of historic properties by federal agencies. Historic properties are those properties that are either listed in, or are eligible for listing in, the NRHP. Section 106 of the NHPA requires federal agencies to take into account the effects of their undertakings on historic properties and consult with preservation agencies[24] regarding these effects and possible mitigating actions, before spending federal funds on the undertaking. Section 110 of the NHPA requires federal agencies to develop and implement plans for the identification, management, and nomination of cultural resources to the NRHP.

As established by the NHPA, an NHL designation is reserved for historic properties possessing national significance in illustrating or representing the prehistory and history of the U.S. To qualify for NHL status, the property must also contain high historical integrity. Section 110 of the NHPA requires federal agencies to undertake planning and actions as necessary to minimize harm to any designated NHL, and to consider all prudent and feasible alternatives to avoid an adverse effect to a NHL.

Executive orders

Executive Order 11593 (Protection and Enhancement of the Cultural Environment): Requires agencies of the executive branch of the Government to "...administer the cultural properties under their control in a spirit of stewardship and trusteeship for future generations, [to] initiate

[24] Relevant agencies most commonly will be the state's Historic Preservation Officer and the Advisory Council on Historic Preservation.

measures necessary to direct their policies, plans and programs in such a way that federally owned sites, structures, and objects of historical, architectural or archaeological significance are preserved, restored and maintained for the inspiration and benefit of the people, and in consultation with the Advisory Council on Historic Preservation, to institute procedures to assure that federal plans and programs contribute to the preservation and enhancement of non-federally owned sites, structures and objects of historical, architectural or archaeological significance." [25]

Executive Order 13287 (Preserve America): Executive Order 13287 encourages the federal government to provide leadership in preserving America's heritage by actively advancing the protection, enhancement and contemporary use of historic properties, and by promoting intergovernmental cooperation and partnerships for the preservation and use of historic properties. It is also designed to improve federal agency planning and accountability and federal stewardship of historic properties while promoting preservation through heritage tourism.[26]

Executive Order 13327 (Federal Real Property Asset Management): This Executive Order promotes efficient and economical use of America's real property assets and establishes a process to assure management accountability for implementing federal real property management reforms. The order includes a provision to direct agencies to develop and implement agency asset management plans. Additionally, the order authorizes the development of a single and descriptive database of federal real properties – including historic real properties.[27]

Military directives, instructions and regulations

Department of Defense Instruction 4715.16 (Cultural Resources Management, 18 September 2008): This Instruction establishes DoD policy and assigns responsibilities under the authority of DoD Directive (DoDD) 5134.01 and in accordance with DoDD 4715.1E to comply with applicable Federal statutory and regulatory requirements, Executive orders, and Presidential memorandums for the integrated management of cultural resources on DoD-managed lands.

---

[25] Richard Nixon, The White House, May 15, 1971

[26] George W. Bush, The White House, March 5, 2003

[27] George W. Bush, The White House, February 4, 2004.

Army Regulation 200-1 (Environmental Protection and Enhancement, 13 December 2007): This regulation implements Federal, State, and local environmental laws and DOD policies for preserving, protecting, conserving, and restoring the quality of the environment. This regulation should be used in conjunction with 32 Code of Federal Regulations (CFR) Part 651 (32 CFR 651), which provides Army policy on National Environmental Policy Act (NEPA, 42 USC 4321–4347) requirements, and supplemental program guidance, which the proponent of this regulation may issue as needed to assure that programs remain current.

Army Regulation 210-20 (Master Planning, 16 May 2005): This regulation establishes and prescribes the Army's real property master planning process. It establishes the objectives and purpose of real property master planning and its relationship to the Planning, Programming, Budgeting, and Execution (PPBE) process.

SECNAV Instruction 4000.35A (Department of the Navy Cultural Resources Program, 9 April 2001): Serves to establish policy and to assign responsibilities within the Department of the Navy (DON) for fulfilling legislative and regulatory requirements related to cultural resources under DON control. This policy includes consideration of cultural resource requirements in planning and maintenance activities.

OPNAVINST 5090.1C (Navy Environmental Readiness Program Manual, 30 October 2007). This instruction discusses requirements, delineates responsibilities, and issues policy for the management of the environmental, natural and cultural resources for all Navy ships and shore activities.

Marine Corps Order P5090.2A Ch. 1 (Environmental Compliance and Protection Manual, 22 January 2008). This Manual sets forth Marine Corps policies and responsibilities for compliance with environmental statutes and regulations, as well as the management of Marine Corps environmental programs.

Air Force Instruction 32-7065 (Cultural Resources Management Program, 1 June 2004). Supplements U.S. Air Force policy for managing cultural resources, to support the military mission and to meet legal compliance. It establishes guidelines for managing and protecting cultural

resources on property affected by Air Force operations in the United States and U.S. territories and possessions.

Glossary of terms

Armory: 1) A place for storing weapons and equipment. Also an Army Reserve or National Guard installation where the principal purpose is drilling and training, storage of weapons and equipment incidental. 2) A factory for making arms. 3) An arsenal.

Arsenal: 1) An installation where weapons, ammunition, and other military materiel is made, repaired, or stored. 2) An armory, but without drill facilities. 3) A stock of weapons.

Artillery Range: See Firing Range.

Barracks: Buildings used for housing military personnel. The term is often used specifically to designate housing for enlisted personnel, in distinction from separate quarters in which officers and noncommissioned officers live.

Base, Military: An installation consisting of facilities for support of military service activities, including living quarters, means of security, internal lines of communication, utilities, and other elements essential to maintaining and operating armed forces units.

Bivouac: A temporary assembly or encampment of troops in the field, with either temporary shelter or, more often, no shelter.

Blockhouse: A defensive structure of heavy timbers or other substantial material with small openings or loopholes for observation and for firing weapons. In North America from the colonial period into the nineteenth century, blockhouses were often two-story log structures with the second overhanging the first on all sides.

BRAC: Base Closures and Realignment Commission. A commission formed by an act passed by Congress on 3 May 1988 to direct the downsizing of the military.

Camp: A group of tents, huts, or other shelter for temporarily housing troops. Often synonymous with military post.

Cantonment: 1) A group of temporary structures used for housing troops. 2) A military post or camp.

Character-Defining Features: A prominent or distinctive aspect, quality or characteristic of a cultural landscape that contributes significantly to its physical character.

Citadel: Fortifications that command or defend the approaches to a city, often on a hill.

Cultural Landscape: A geographic area, including both cultural and natural resources, associated with a historical event, activity or person, or exhibiting other cultural or aesthetic values.

Depot: A facility, often an installation, for the receipt, storage, issue, maintenance, manufacture, assembly, or salvage of supplies; or for the reception, processing, training, and assignment of personnel.

DoD: Department of Defense

Encampment: A temporary camp in the field involving more troops than a bivouac, established for a longer period of time.

Firing Range: An area equipped with targets for practice firing.

Fort: 1) A strong or fortified structure that is protected by walls and ditches. 2) Permanent U.S. Army installation or garrison.

Fortress: A fortified place generally larger than a fort and often including a town within its fortified perimeter.

Garrison: 1) All units assigned to a base or area for defense, development, operation, and maintenance of facilities. 2) A military post.

Historic Context: An important theme, pattern, or trend in the historical development of a locality, state, or the nation, at a particular time in history or prehistory.

Integrity: The ability of a property to convey its significance.

Landscape: The surface features of a place and the spatial relationship among those features, including natural terrain, human-affected terrain, and the built environment.

Landscape Components: The physical elements of landscape that, in combination, define its features. Examples are circulation networks, boundary demarcations, vegetation, buildings, and structures.

Landscape, Designed: Landscape designed or planned by a professional. Often refers to landscape designed by a famous landscape architect or planner.

Landscape, Historic: A geographical area that historically has been used by people, or shaped or modified by human activity, occupancy, or intervention, and that possesses a significant concentration, linkage, or continuity of areas of land use, vegetation, buildings and structures, roads and waterways, and natural features.

Landscape, Historic Military: A landscape that is uniquely shaped in support of a particular military mission and is associated with historically important persons or events, or is an important indicator of the broad patterns of history.

Landscape, Military: A landscape that is uniquely shaped through activities in support of a particular military mission.

Landscape Process: A series of human actions, or a continuous human action, that is instrumental in shaping the land. Both large-scale and small-scale landscape processes are the forces that result in the creation or alteration of landscape components. For example, the process of fortification may result in earthworks or redoubts; the process of war-time expansion may result in a cluster of barracks of a particular style, or an airfield.

Landscape, Vernacular: 1) Landscapes that are not designed by professional designers or planners. 2) Landscapes of the everyday or ordinary. 3) Landscapes identifiably shaped by the activity of the people of particular historical period, region, or group.

Launch Complex: A localized arrangement of structures and facilities necessary for launching rockets.

Main Post: Portion of a military installation where administrative and support services are concentrated.

Military Installation: A military facility in a fixed or relatively fixed location, together with its buildings, building equipment, and subsidiary facilities such as piers, spurs, access roads, and beacons. Often synonymous with base, post, camp, and station.

Mission: 1) The objective; the task, together with the purpose, which clearly indicates the action to be taken. 2) More commonly, a duty assigned to an individual or unit. 3) The dispatching of one or more aircraft to accomplish one particular task. 4) A group or detachment of officers and enlisted men serving in a friendly country for the purpose of providing training or support (often called a "military mission").

Mobilization: Preparation for war by assembling and organizing the military resources and, at times, the societal and economic resources of a nation or other political group.

Navy Yard: A naval shore establishment which provides a variety of important services to fleets. The largest naval yards have complete facilities for building, refitting, modernizing, repairing, docking, storing, and providing logistic support for ships. Most yards provide only some of these services, and, with regard to maintenance of ships, are specialized to a particular class of warships.

NHPA: National Historic Preservation Act. A federal law passed in 1966 requiring and encouraging the consideration of historic properties in the planning and implementation, and the use and development, of projects. Section 106 of this act requires that federal agencies take into account the effects of their undertakings on historic properties. When a historically significant property may be substantially altered or demolished, Section 110 requires that appropriate records be made of the property and deposited in the Library of Congress.

NRHP: National Register of Historic Places. 1) A list of properties which are significant in American history and worthy of preservation. 2) The office in the Interagency Resources Division of the Cultural Resources branch of the National Park Service which is charged with maintaining

and expanding the list through established National Register Criteria for Evaluation.

Operations: Military activities that occur when combat is either underway, or being rehearsed.

Ordnance: All military weapons, ammunition, explosives, combat vehicles, battle matériel, and maintenance supplies.

Parade Ground: A large, flat expanse of land, usually covered with mowed turf grass, where troops march in review.

Post: Location where troops are stationed, or reside permanently. Synonymous with Fort.

Significance: An attribute possessed by a property that represents an important part of the history, architecture, archaeology, engineering, or culture of an area.

Station: 1) A general term meaning any military or naval shore installation, location, activity, function or group of functions. 2) A particular kind of activity or function to which other activities or individuals may come for a special service, often of a technical nature.

Recommended reading

General resources

Alanen, Arnold R. and Robert Z. Melnick. *Preserving Cultural Landscapes in America*. Baltimore, MD: The Johns Hopkins University Press. 2000.

Batzli, Sam and Helen Tyson Siewers. "Historic Landscape Inventory, Fort Sam Houston, Texas" (draft). Champaign, IL: U.S. Army Corps of Engineers, Construction Engineering Research Laboratories, 1996.

Baum, Willa K. *Oral History for the Local Historical Society*. From the series: American Association for State and Local History. Lanham, MD: AltaMira Press, 1987.

_____. *Transcribing and Editing Oral History*. From the series: American Association for State and Local History. Landham, MD: AltaMira Press, 1991.

Birnbaum, Charles A., ed. "The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes." Washington, D.C: Department of Interior, National Park Service, 1996.

_____. "Preservation Brief 36: Protecting Cultural Landscapes: Planning Treatment and Management of Historic Landscapes." Washington, D.C: Department of the Interior, National Park Service, 1994. Available at: www.nps.gov/history/hps/tps/briefs/brief36.htm.

Brown, Glenn. "The Proposed Marine Barracks at Quantico, Va." *The Architectural Record*, June 1925:510-516.

Center for Air Force History. *Coming in from the Cold: Military Heritage in the Cold War: Report on the Department of Defense Legacy Cold War Project*. Prepared for the Legacy Resource Management Plan. Washington, D.C.: Center for Air Force History, U.S. G.P.O., 1994.

Coletta, Paolo Enrico and K. Jack Bauer. *The United States Navy and Marine Corps Bases, Domestic*. Westport, CT: Greenwood Press, 1985.

Copps, David and Will Abberger. "Views From the Road: A New Guide for Assessing Historic Landscapes." *Historic Preservation Forum*. Vol. 8. May/June 1994:18-25.

Cragg, Dan. *Guide to Military Installations*. 3rd ed. Harrisburg, PA: Stackpole Books, 1991.

Dupuy, Trevor N., Curt Johnson, and Grace P. Hayes. *Dictionary of Military Terms: A Guide to the Language of Warfare and Military Institutions*. New York: H. W. Wilson Company, 1986.

Edwards Air Force Base. *2007 Base Guide*. Edwards AFB, California: 2007. http://www.edwards.af.mil/shared/media/document/AFD-070103-051.pdf

Enscore, Susan I. National Register of Historic Places Registration Form: Quantico Marine Corps Base Historical District. (completed form as online PDF) Champaign, IL: U.S. Army Construction Engineering Research Laboratory, 1996.

Everett, Stephen E. *Oral History: Techniques and Procedures*. Washington, D.C.: U.S. Army, Center of Military History, 1992.

Evinger, William R. ed. *Directory of Military Bases in the U.S.* Phoenix, AZ: Oryx Press, 1991.

Foster Wheeler Environmental Corporation and JRP Historical Consulting Services. "California Historic Military Buildings and Structures Inventory." Sacramento, CA: U.S. Army Corps of Engineers, Sacramento District, March 2000.

Freeman, Martha Doty and Gordon Marchant. *Fort Sam Houston: An American Depot, Headquarters, and Training Facility 1876-1946*. Fort Worth, TX: Komatsu/Rangel, Inc., 1994.

Garner, John S. *WWII Temporary Military Buildings*. Technical Report TR CRC 93/01. Champaign, IL: U.S. Army, Construction Engineering Research Laboratory, 1993.

Griess, Thomas E., ed. *The West Point History Series: Definitions and Doctrine of the Military Art*. Wayne, N.J: Avery Publications Group, 1985.

Johnstone, Robert. "Rogers Dry Lake NHL Nomination." Edwards Air Force Base, CA: January 1986.

Keller, Genevieve P. "The Inventory and Analysis of Historic Landscapes: Defining the Approach." *Historic Preservation Forum*. Vol. 7. May/June 1993:26-35.

Loechl, Suzanne K., Manroop Chawla, Bethany Grashof, Marcus Griffin, Adam Smith, and Steve Smith. *Integrated Cultural Resources Management Plan, Washington Navy Yard*. Prepared in 2000 from Champaign, IL: U.S. Army Construction Engineering Research Laboratory, n.p. (Contact: adam.smith@usace.army.mil)

Loechl, Suzanne K., Tad Britt, Bill Meyer, Robert R. Sands, Adam D. Smith, Julie Webster, and Lucy Whalley. *Edwards Air Force Base ICRMP*. Prepared in 2001 from Champaign, IL: U.S. Army Construction Engineering Research Laboratory, n.p. (Contact: adam.smith@usace.army.mil)

Meinig, D. W., ed. "Symbolic Landscapes; Models of American Community" in *The Interpretation of Ordinary Landscapes; Geographical Essays*. New York: Oxford University Press, 1979.

Military Services Publishing Company. *Air Force Bases*. 1st ed. Harrisburg, PA: Military Services Publishing Company, 1958.

Muller, Robert. *Air Force Bases: Active Air Force Bases Within the United States of America on 17 September 1982*, Volume I. Washington D.C.: Office of Air Force History, 1989.

Newton, Norman T. *Design on the Land*. Cambridge, MA: Belknap Press, Harvard University, 1971.

O'Donnell Patricia M. "The Treatment of Historic Landscapes: Determining the Most Appropriate Approach." *Historic Preservation Forum*. Vol. 7. May/June 1993:36-45.

Ritchie, Donald A. *Doing Oral History: A Practical Guide*, 2nd ed. Oxford, U.K.: Oxford University Press, 2003.

Roberts, Robert B. *Encyclopedia of Historic Forts: The Military, Pioneer, and Trading Posts of the United States*. New York: MacMillan Publishing Co., 1988.

Schein, Richard H., *Landscape and Race in the United States*. New York: Routledge, 2006.

Weeks, Kay D. and Anne E. Grimmer. "The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring and Reconstructing Historic Buildings." Washington, D.C.: Department of the Interior, National Parks Service, 1995.

University of South Carolina History Department. "The Cold War in South Carolina, 1945-1991: An Inventory of Department of Defense Cold War Era Cultural and Historical Resources in the State of South Carolina," 2nd Interim Report. Columbia, SC: University of South Carolina, History Dept., 1994.

United States Department of Defense. "Base Structure Reports, Fiscal Year 2008 Baseline." Washington, D.C.: Office of the Deputy Undersecretary of Defense for Installations and Environment, DoD-2, 2008.

United States Navy, Bureau of Yards and Docks. General Correspondence, Shore Establishment, 1918-25. Box 474. Folder: 677-1, Quantico. Board on Permanent Development of a Marine post at Quantico, Va. to the Major General Commandant, 17 April, 1923. Record Group 71. Washington, D.C.: National Archives.

DoD historic context studies

Center for Air Force History. *Coming in from the Cold: Military Heritage in the Cold War: Report on the Department of Defense Legacy Cold War Project*. Prepared for the Legacy Resource Management Plan. Washington, D.C.: Center for Air Force History, U.S. G.P.O., 1994.

Geo-Marine, Inc., Duane E. Peter, "A Historic Context And Database For The Military-Industrial Complex In The State Of Texas." Prepared for the Legacy Resource Management Program. (Project #04-231) Plano, TX: Geo-Marine, Inc. (Pending).

Grashof, Bethanie C. *A Study of United States Army Family Housing Standardized Plans Volumes 1 - 5*. Atlanta, GA: Georgia Institute of Technology, College of Architecture, Center for Architectural Conservation, 1986.

Lavin, Mary K. *Thematic Study and Guidelines: Identification and Evaluation of U.S. Army Cold War Era Military-Industrial Historic Properties*. Aberdeen Proving Ground, MD; U.S. Army Environmental Center. 1998.

Lewis, Karen. *A Systematic Study of Air Combat Command Cold War Material Culture: Volume 1; Historic Context and Methodology for Assessment*. Langley, VA: United States Air Force Headquarters, Air Combat Command, 1995.

Loechl, Suzanne K., Manroop Chawla, Bethany Grashof, Marcus Griffin, Adam D. Smith, and Steve Smith. "Integrated Cultural Resources Management Plan, Washington Navy Yard." Prepared in 2000 for sponsor by staff at Champaign, IL: U.S. Army Engineer Research Development Center, Construction Engineering Research Laboratory, n.d. (Contact adam.smith@usace.army.mil)

Loechl, Suzanne K., Tad Britt, Bill Meyer, Robert R. Sands, Adam D. Smith, Julie Webster, and Lucy Whalley. "Edwards Air Force Base ICRMP." Prepared in 2001 for sponsor by staff at Champaign, IL: U.S. Army Construction Engineering Research Laboratory, n.d. (Contact: adam.smith@usace.army.mil)

Lonnquest, John and David F. Winkler. *To Defend and Deter: The Legacy of the United States Cold War Missile Program*. Special Report, SR97/01. Champaign, IL: Construction and Engineering Research Laboratory, 1996.

Morrison, Dawn and Susan Enscore. *The Built Environment of Cold War Era Servicewomen*. Miscellaneous Report M-06-02. Champaign, IL: Engineer Research and Development Center, Construction Engineering Research Laboratory, 2006.

Murphey, Joseph, Dwight Packer, Cynthia Savage, and Duane E. Peter. *Army Ammunition and Explosives Storage in the United States: 1775-1945*. Plano, Texas: Geo-Marine, July 2000.

Panamerican Consultants, Inc. *Military Historic Context Emphasizing the Cold War including the Identification and Evaluation of Above Ground Cultural Resources for the Thirteen Department of Defense Installations in the State of Georgia*. Prepared for the Legacy Resource Management Program. Tuscaloosa, FL: Panamerican Consultants Inc., 2005.

Pedrotty, Michael A., Julie L. Webster, Gordon L. Cohen, and Aaron R. Chmiel. *Historical and Architectural Overview of Military Aircraft Hangars: A General History, Thematic Typology, and Inventory of Aircraft Hangars Constructed on Department of Defense Installations*. Technical Report No. 98/105 prepared for United States Air Force Headquarters, Air Combat Command. Champaign, IL: U.S. Army Construction Engineering Research Laboratory, 1999 (revised 2001).

R. Christopher Goodwin and Associates, *Legacy: Historic Military Quarters Handbook*. Produced as a demonstration project for Legacy Resource Management Project. Frederick, MD: R. Christopher Goodwin & Associates, 1993.

_____, Deborah K. Cannan, and R. Christopher Goodwin. *National Historic Context for Department of Defense Installations, 1790-1940. vol. 1-4*. Prepared on behalf of the Baltimore District, U.S. Army Corps of Engineers for the DoD Legacy Resource Management Plan. Frederick, MD: R. Christopher Goodwin and Associates Inc., 1995.

_____, Kathryn M. Kuranda. *Historic Context for Army Fixed-Wing Airfields, 1903-1989*. Prepared for the Department of the Army. Frederick, MD: R. Christopher Goodwin and Associates Inc., 2002.

_____. *Historic Context for Department of Defense Facilities World War II Permanent Construction*. Frederick, MD: R. Christopher Goodwin and Associates Inc., 1997.

_____. *Housing an Army: The Wherry and Capehart Era Solutions to the Postwar Family Housing Shortage (1949-1962)*. Report #SFIM-AEC-CD-CR-2003009. Aberdeen Proving Ground, MD; U.S. Army Environmental Center, 2003.

_____. *The Navy Cold War Guided Missile Context: Resources Associated with the Navy's Guided Missile Program, 1946-1987*. Frederick, MD: R. Christopher Goodwin and Associates Inc., 1995.

_____, and R. Christopher Goodwin. *Unaccompanied Personnel Housing (UPH) During the Cold War (1946-1989)*. Report #SFIM-AEC-CD-CR-2003015. Aberdeen Proving Ground, MD: U.S. Army Environmental Center, 2003.

_____, Deborah K. Cannan, and R. Christopher Goodwin. *Support and Utility Structures and Facilities (1917-1946); Overview, Inventory and Treatment Plan*. Final Report for U.S. Naval Facilities Engineering Command, Atlantic Division. Frederick, MD: R. Christopher Goodwin and Associates Inc., 1995.

Shiman, Dr. Philip, and Julie Webster. *Forging the Sword: Defense Production During the Cold War*. Special Report No. 97/77. Champaign, IL: U.S. Army Construction Engineering Research Laboratory, 1997.

Smith, Adam and Sunny Stone. *Military Hospitals Historic Context*. ERDC/CERL SR-08-10. Champaign, IL: Engineer Research and Development Center, Construction Engineering Research Laboratory, 2008.

Smith, Adam, Megan Weaver Tooker, and Sunny Stone. *Military Chapels Historic Context*. ERDC/CERL SR-08-5. Champaign, IL: Engineer Research and Development Center, Construction Engineering Research Laboratory, 2008.

Smith, Adam, Megan Weaver Tooker, and Sunny Stone. *Military Post Exchanges, Commissaries, and Theaters Historic Context*. Champaign, IL: Engineer Research and Development Center, Construction Engineering Research Laboratory, forthcoming in 2009.

Smith, Adam, Daniel Archibald, Manroop Chawla, and Sunny Stone. *Military Training Lands Historic Context: Small Arms Ranges*. Champaign, IL: Engineer Research and Development Center, Construction Engineering Research Laboratory, forthcoming in 2009.

Smith, Adam, Daniel Archibald, Manroop Chawla, and Sunny Stone. *Military Training Lands Historic Context: Large Arms Ranges*. Champaign, IL: Engineer Research and Development Center, Construction Engineering Research Laboratory, forthcoming in 2009.

Smith, Adam, Daniel Archibald, Manroop Chawla, and Sunny Stone. *Military Training Lands Historic Context: Training Villages, Mock Sites, and Large Scale Operation Areas*. Champaign, IL: Engineer Research and Development Center, Construction Engineering Research Laboratory, forthcoming in 2009.

Smith, Adam, Daniel Archibald, Manroop Chawla, and Sunny Stone. *Military Training Lands Historic Context: Miscellaneous Training Areas.* Champaign, IL: Engineer Research and Development Center, Construction Engineering Research Laboratory, forthcoming in 2009.

Smith, Adam, Megan Weaver Tooker, and Christopher Cochran. *Military Recreation: A Historic Context of How the Military Has Fun*. Champaign, IL: Engineer Research and Development Center, Construction Engineering Research Laboratory, forthcoming in 2009.

Smith Steven D. and James A. Ziedler. *A Historic Context for the African-American Military Experience*. Technical Report No. TR CRRC 98/87. Champaign, IL: U.S. Army Construction Engineering Research Laboratory, 1998.

Wasch, Diane Shaw, Perry Bush, Keith Landreth and James Glass, PhD. *World War II and the U.S. Army Mobilization Program: A History of 700 and 800 Series Cantonment Construction*. Washington, D.C.: Department of the Interior, National Park Service, Cultural Resources, 1993.

Weitze, Karen J. *Keeping the Edge; Air Force Materiel Command Cold War Context (1945-1991)*. Wright-Patterson Air Force Base, OH: Headquarters Air Force Materiel Command, 2003.

_____. *Cold War Infrastructure for Air Defense: The Bomber Mission*. Langley Air Force Base, VA: Headquarters, Air Combat Command. 1999.

_____. *Cold War Infrastructure for Strategic Air Command: The Fighter and Command Missions*. Langley Air Force Base, VA: Headquarters, Air Combat Command. 1999.

_____. *Training to Fight: Training and Education During the Cold War*. Special Report No. 97/99. Champaign, IL: U.S. Army Construction Engineering Research Laboratory, 1997.

_____, and Julie Webster. *Searching the Skies; The Legacy of the United States Cold War Defense Radar Program*. Special Report 97/98 for United States Air Force Headquarters, Air Combat Command. Champaign, IL: U.S. Army Construction Engineering Research Laboratory, 1997.

U.S. Army Corps of Engineers. *Context Study of the United States Quartermaster General Standardized Plans: 1866-1942*. Seattle, WA: U.S. Army Corps of Engineers, Seattle District, Technical Center of Expertise for Preservation of Structures and Buildings, 1997.

_____. *California Historic Military Buildings and Structures Inventory, vol. 1-4*. Sacramento, CA: U.S. Army Corps of Engineers, Sacramento District, 2000.

National Register bulletins

Note: At time of publication,, these bulletins have the following numbers, and most can be downloaded from the following Web site:
http://www.nps.gov/history/nr/publications/bulletins.htm

National Register Bulletins providing general nomination guidance

#15: How to Apply the National Register Criteria for Evaluation

#16A How to Complete the National Register Registration Form

#16B How to Complete the National Register Multiple Property Documentation Form

#19 Reviewing National Register Nominations

#21 How to Establish Boundaries for National Register Properties

#22 Guidelines for Evaluating and Nominating Properties That Have Achieved Significance Within the Last Fifty Years

#23 How to Improve the Quality of Photos for National Register Nominations

#29 Guidelines for Restricting Information About Historic and Prehistoric Resources

#32 Guidelines For Evaluating And Documenting Properties Associated With Significant Persons

#35 Examples of Documentation: National Register Casebook

#39 Researching a Historic Property

none How to Prepare National Historic Landmark Nominations

none Telling the Stories: Planning Effective Interpretive Programs for Places Listed in the National Register of Historic Places

National Register Bulletins pertaining to landscape topics

#18 How to Evaluate and Nominate Designed Historic Landscapes

#30 Guidelines for Evaluating and Documenting Rural Historic Landscapes

#38 Guidelines for Evaluating and Documenting Traditional Cultural Properties

#40 Guidelines for Identifying, Evaluating, and Registering America's Historic Battlefields

#41 Guidelines for Evaluating and Registering Cemeteries and Burial Places

none Historic Residential Suburbs: Guidelines for Evaluation and Documentation for the National Register of Historic Places

National Register Bulletins Associated with Archaeology

in #21 Definition of National Register Boundaries for Archeological Properties (Currently combined with How to Establish Boundaries for National Register Properties)

#29 Guidelines for Restricting Information About Historic and Prehistoric Resources

#36 Guidelines for Evaluating and Registering Historical Properties

National Register Bulletins Associated with the Military

none Guidelines for Evaluating and Documenting Historic Aviation Properties

#20 Nominating Historic Vessels and Shipwrecks to the National Register of Historic Places

#34 Guidelines for Evaluating and Nominating Aids to Navigation

#40 Guidelines for Identifying, Evaluating, and Registering America's Historic Battlefields

Appendix: Examples of Historic Military Installations

Washington Navy Yard

Geographic Location and Setting:

The Washington Navy Yard is located in the southeast quadrant of the District of Columbia, bordering the Anacostia River to the south and facing the Anacostia area of the District. It is bounded by M Street along the northern edge and by 11th Street along the eastern edge.

The topography in the area is relatively flat, and Washington Navy Yard is nearly level to gently sloping. The waterfront has been altered significantly due to infilling open water and marshlands areas along the river. Its location (in the Middle Atlantic Coastal Plain thirty miles west of the Chesapeake Bay) has a climate that is neither dry nor wet, with precipitation divided equally throughout the year.

Brief Summary of Historic Development:

- **Founding of the Navy Yard, 1799-1815**: Congress appropriated $1,000,000 to construct six large ships and six navy yards on the east coast in Boston, New York, Portsmouth, Philadelphia, Norfolk, and Washington D.C. The Secretary of the Navy chose to build the Washington Navy Yard due to "the city's secure inland location, its proximity to timber supplies for shipbuilding, and the ease with which the federal government could supervise a locally situated yard" (Loechl 2000, 2-5). The site was rural, and the construction of the Navy Yard was one of the first major building projects in Washington. Only two buildings were built in the first few years, and then, in 1803, President Thomas Jefferson designated the Navy Yard as the Navy's homeport. Architect and surveyor of the Public Buildings of the United States, Benjamin Henry Latrobe, was commissioned by Jefferson to develop a comprehensive plan that included a dry dock, residential quarters, and elegant gates. The Navy Yard was the country's largest shipbuilding installation. On the evening of August 24, 1814 as the British were preparing to capture Washington, the Secretary of the Navy ordered the Superintendent to set fire to the Navy Yard and the vessels to avoid their use or

destruction by the British. Only three structures and the Main Gate (the only remaining structure designed by Latrobe) survived the fire. A plan developed in 1815, after the fire, revealed much about the original structures and the natural landscape features. It appeared that the overall horseshoe configuration of the Navy Yard was guided by the shoreline of the natural inlet. Shipbuilding was located in two different locations on the water's edge. The residential area, containing officers' quarters and gardens, was located near Latrobe Gate.

- **Shipbuilding, 1815-1830:** The Navy Yard was rebuilt according to an 1815 plan that included a timber dock, three landing slips, rigging lifts, mast lofts, a sawmill, and a block and smith's shop. The first Marine Railway was constructed in 1822, making it possible for ships to be hauled out of the river for repairs. In 1827, the Navy Yard increased its manufacturing to include equipment such as anchors, cables, and steam machinery. During this time, the physical appearance of the Navy Yard was improved. Improvements included a tree-lined boulevard that visually connected Latrobe Gate on the north side to the Commandants Quarters (on the waters edge) on the south side. The mission of the Navy Yard began to shift by the late 1820s from ship construction and repair, to ordnance development. The water had become too shallow in the approaches to support the large ships. By 1828, the Navy Yard acquired 40 acres to the west to support the new mission.

- **Ordnance Installation, 1830-1920:** During this period many new buildings were constructed to accommodate the new mission, and "represented major additions to the developing manufacturing complex" (Loechl 2000, 2-7). Leutze Park was surrounded by buildings and lined with trees. Several quarters were also built along the wall running along M Street on the north edge, and the Dahlgren Foundry was built in 1860, thus forming the physical layout of the Navy Yard that remains today (Figure 47). In 1886, the Naval Gun Factory was established, resulting in the conversion of all the remaining shipbuilding structures into ordnance production. Since much of the production was done by candlelight, the design of the new buildings included "long and narrow forms, punctuated along all facades by a series of repetitious, oversized windows (Figure 48). In addition to natural daylight, this building form also allowed for the adequate ventilation of fumes that were created during the production of various ordnance materials"

(ibid., 2-8). Most of the improvements were completed by the mid 1890s. The mission of the Navy Yard increased to include research and development, which was evidenced by the introduction of the Experimental Model Basin, where "model ships were tested in an environment simulating the open seas" (ibid.). During the Spanish American War beginning in 1898, the Navy Yard went into a 24-hour-per-day ordnance production schedule. Shortly thereafter in 1899, the first practical submarine was tested, marking the beginning of the country's submarine fleet. In 1902, the Navy Yard expanded again to include land between M Street, Fourth Street, and the Anacostia River. A new foundry was in operation to help supply Theodore Roosevelt's build-up of the Navy's "Great White Fleet." In the years preceding and during World War I, some of "the greatest technological advances in the field of naval ordnance were made" (ibid.).

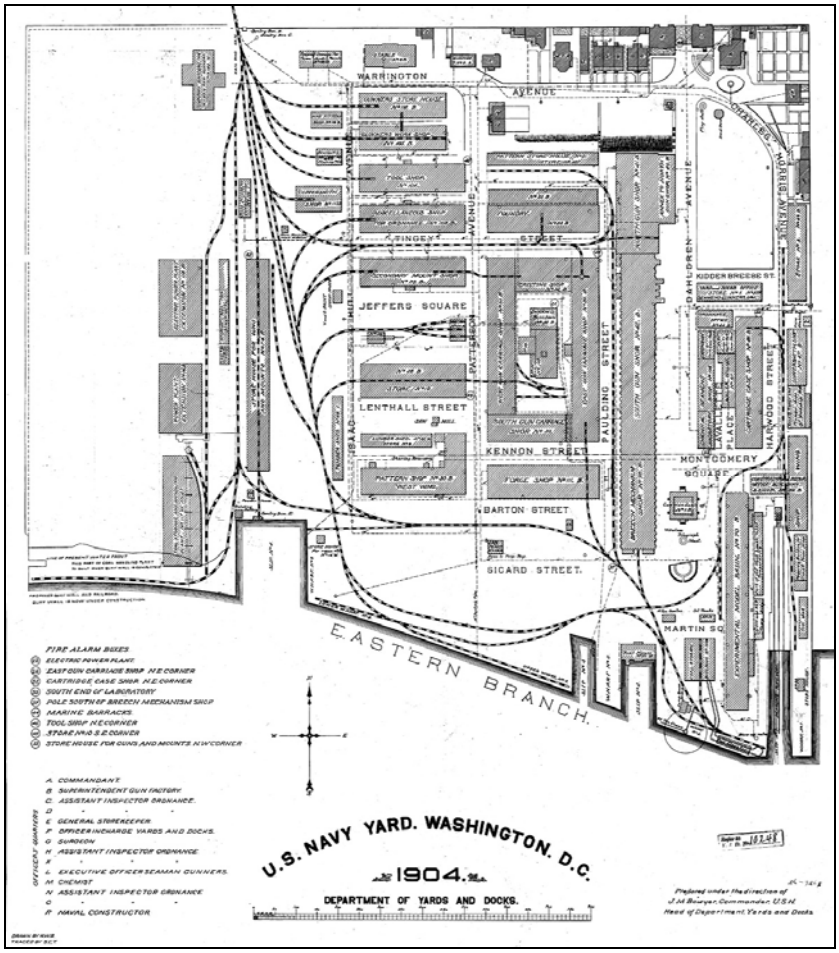

Figure 47. A 1904 map of Washington Navy Yard depicting buildings, structures and features, such as rail lines for the transport of weapons, during its use as an ordnance installation. (WNY)

Figure 48. A view south down Dahlgren Avenue, with Leutze Park on the left and gun shop buildings on right, at Washington Navy Yard, circa 1900. (NH86350)

- **Manufacturing and Research, 1920-1962**: Due to funding restrictions after World War I, employment at the Navy Yard fell from 10,000 to about 3,000. But in 1933, Franklin Roosevelt brought change with a new naval policy that called for the building up of the Navy to "the absolute limit under international treaty" raising employment back up to 8,000. Following the attacks on Pearl Harbor, the Navy Yard employed over 25,000 people and was responsible for administering a country-wide ordnance program (Loechl 2000, 2-9). All ordnance production ceased in 1962, after the Secretary of Defense made the decision to contract out much of the production to private companies. The buildings at the Navy Yard were transformed from factories to offices and museum, and the mission became administration and public interpretation.

Significance

Washington Navy Yard was listed as a National Historic Landmarks district in 1976 for its role in naval ship building and ordnance manufacturing and research. Significant as one of the United States' first naval yards, it was the nation's primary navy yard until 1815. In the nineteenth century it became the Naval Gun Factory, and a center for naval ordnance research and production. During the nineteenth century, it was probably the most important manufacturing establishment in Washington D.C. The historic

district is made up of 35 buildings and structures including: the Latrobe Gate; five single sets of quarters – Quarters A, B, H, R and V; two duplex buildings with quarters C and D and quarters N and O; two triplex buildings – quarters E, F and G; the Commandant's Office, the Marine Barrack, and several administrative and industrial buildings and structures.

Sources:

Loechl, Suzanne K., Manroop Chawla, Bethany Grashof, Marcus Griffin, Adam D. Smith, and Steve Smith. "Integrated Cultural Resources Management Plan, Washington Navy Yard." Prepared in 2000 for sponsor by staff at Champaign, IL: U.S. Army Engineer Research Development Center, Construction Engineering Research Laboratory, n.d. (Contact adam.smith@usace.army.mil)

Edwards Air Force Base

Geographic Location and Setting:

Edwards Air Force Base is located in the Antelope Valley of the Mojave Desert/Great Basin. The valley is bounded by the Tehachapi Mountains to the northwest, and the San Gabriel Mountains to the southwest. The site is 100 miles northeast of Los Angeles. It is served by the local communities of Rosamond to the west, Mojave to the northwest, Boron to the east, and Lancaster and Palmdale to the southwest.

Within the installation boundaries are three Pleistocene Era playas (dry lakes): Rogers, Buckhorn, and Rosamond. These lakebeds, naturally flat and unusually hard, accommodate takeoffs and landings of even the heaviest of aircraft. Composed of silts and fine clays, these playas are dry most of the year, except for brief periods during the winter.

Of the three, Rogers Dry Lake is the largest at 65 square miles (Figure 49). The concrete-like lakebed serves as natural extensions of the runways at Edwards. Even today, Rogers Dry Lake has black lines painted on it to mark seven official "runways" which are available for pilots operating in the area, and there are two painted on Rosamond Dry Lake. In addition, the world's largest compass rose is painted on Rogers Dry Lake. It is used by pilots for calibrating instruments that give heading indicators.

Most of the Edwards AFB facilities are located at Main Base and South Base, on the western margin of Rogers Dry Lake. The lakebed, clean air,

lack of vegetation, isolated location, ideal weather, and variable terrain make it a perfect site for aeronautical testing and training for the military. The natural landscape is directly responsible for the establishment of Edwards AFB and NASA's Dryden Flight Research Center, and both have had a profound impact on aviation and aerospace technology, respectively.

Figure 49. A 2002 satellite image of Edwards Air Force Base showing Rogers Dry Lakebed, to the right, and Rosamond Lake Bed, on the left. Main Base area is located along left side of Rogers. (NASA, Johnson Space Center)

Brief Summary of Historic Development:

- **Pre-military History** (prior to1933): The Gold Rush and the American conquest of California brought about the first permanent, non-native settlement. Transportation corridors that crossed the Antelope Valley began to be heavily used by traffic from Los Angeles to the San Joaquin Valley and San Francisco. When the railroad arrived in 1876, the Antelope Valley was a watering stop for the Atchison, Topeka and Santa Fe line. In 1910, the Corum Family settled at the edge of Rogers Lake Bed. The Corum Family helped attract other homesteaders to the area, helping them find land and drill wells. They established the area's first post office and named it Muroc, their name spelled backwards, since there was already a postal facility with the similar name of Coram. The settlement of Muroc is gone today, located under Edward's runways.

- The Depression brought an influx of homesteaders to the area, due to an increase in employment opportunities with the railroad and mining, and the availability of cheap land. For example, borate mining provided work for many in the Edwards area. Also during this time, the lakebeds were used for testing and racing automobiles. Rogers Dry Lake was considered the best for automobile racing since it was smoother, harder, and longer than the other lakebeds.

- **Arrival of the Military (1933-1941)**: The Army Air Corps became interested in Rogers Dry Lake in 1928. Wanting to establish two bombing and gunnery ranges on the West Coast, Colonel Henry Harley "Hap" Arnold established the Muroc Bombing and Gunnery Range in September 1933. A tent city, later known colloquially as Hap Arnold's Camp, was established on the east shore of Rogers Dry Lake. While the bombing and gunnery range was used only part-time, it attracted squadrons from other military bases, and twenty people on detached duty from March Field staffed this isolated camp full-time. By the end of 1935, the camp contained a barracks, mess hall, storehouse, radio station, two underground magazines, and a well. In response to the latest displays of German aviation technology, it became clear that American aviation was not nearly as advanced. On 16 January 1936, Officers of the Pacific Coast Army Air Corps visited Hap Arnold's camp and determined that it should be made into a permanent base for practice bombing. Both the War Department and Congress funded the acquisition of additional land in the area. By the end of 1940, the Army had acquired a total of 156,560 acres and the Range encompassed previous holdings, all of Rogers Dry Lake, and property east of the lake up to the modern boundaries of Edwards AFB. The Muroc Bombing and Gunnery Range was officially activated on 21 June 1940, under the command of Army Major Glen L. Arbogast.

- **World War II and a Permanent Installation (1942-1945):** During World War II, the Government believed that air power would be a key to winning the war. In addition to purchasing over 300,000 aircraft from the aircraft industry and becoming the industry's biggest customer, the government also became involved in aircraft research and experimentation. An isolated site was needed to keep any technological developments secret. In 1942, the Army Materiel Command established the Materiel Center Command Flight Test Base on the northwest shore of Rogers Dry Lake in an area called North Base. The Base

was later renamed the Muroc Flight Test Base (Figure 50). On October 1, 1942, Bell test pilot Bob Stanley lifted the wheels of the Bell XP-59A Airacomet off the flat dry surface of Rogers Dry Lake and America had her first jet airplane. While the camp on the east side of the lakebed was adequate, military decision-makers believed the western shore of Rogers had more advantages. It was believed a site closer to the settlement of Muroc would have better access to roads, the railroad, a better water supply, and better prevailing winds. By the fall of 1941, the Muroc Bombing and Gunnery Range had moved to the western shore of the lake although Hap Arnold's Camp was still used as a training area. Immediately following the declaration of war, the 41st and 30th Bombardment Groups arrived at the Muroc Bombing and Gunnery Range and began patrolling the West Coast. Muroc Bombing and Gunnery Range was made a separate post in 1942 and renamed Muroc Army Air Base and then, Muroc Army Air Field in 1943. During WWII, the Base provided advanced fighter and bombardment training for the P-38 Lightning fighter, and the B-24 Liberator and B-25 Mitchell bombers. Muroc Army Air Field grew dramatically during World War II. To support this population, the Army constructed 1,090 temporary hutments, and 383 permanent hangars and support buildings on the western shore of Rogers Dry Lake. While demobilization shrank the base population following World War II, the population soon increased to support a growing number of on-base flight testing programs.

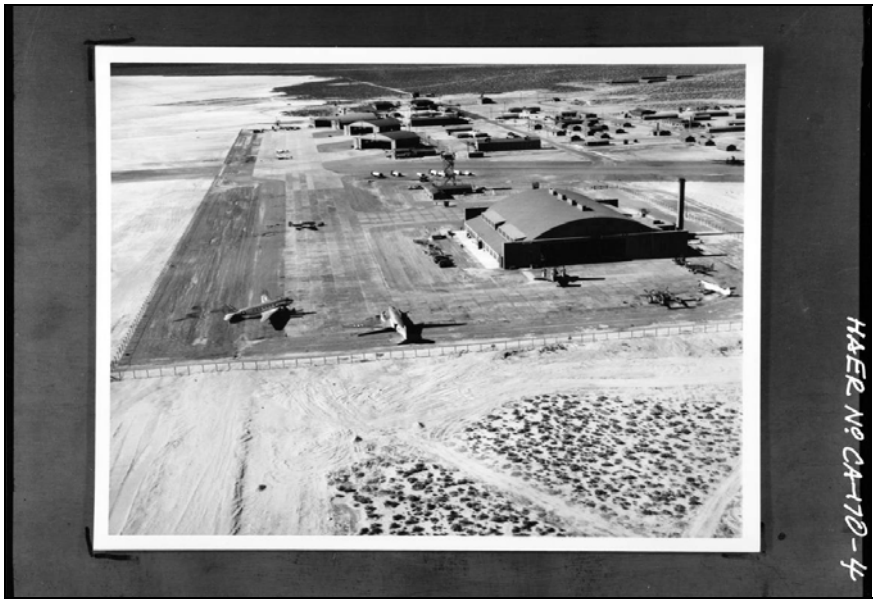

Figure 50. A low-level oblique aerial of Muroc Flight Test Base (North Base), circa 1945, at Edwards Air Force Base, CA. A HANG-P-A hanger (Building 4505) is to the right, and Rogers Dry Lakebed is to the left. (HABS/HAER, USAF)

- **Aeronautics and the Cold War (1946-1980s):** During the post-war years, all of America's first-generation jets underwent testing at Muroc. In collaboration with the National Advisory Committee for Aeronautics (NACA), the Bell X-1 was the first in a long series of experimental airplanes that were designed to prove or disprove aeronautical concepts. On October 14, 1947, Capt. Charles E. "Chuck" Yeager became the first man to exceed the speed of sound in this small bullet-shaped airplane. In 1947, NACA established the High Speed Flight Research Center, later named the Dryden Flight Research Center, at Muroc. Research at Dryden during this period was on supersonic light technology and re-entry on the return from orbit. NASA began operating the center in 1958 and it was subsequently renamed the NASA Dryden Flight Research Center. Muroc AFB was renamed Edwards Air Force Base on December 1949 in honor of Capt Glen W. Edwards who was killed in crash of YB-49 Flying Wing. The 50s and 60s were a period of expansion for Edwards; land was acquired until the current boundaries were established in 1961, and new facilities and runways were constructed. After 1947, flight testing at North Base focused on new and unusual aircraft. In 1962, Major Robert M. White piloted the X-15, the only airplane to fly in near space 314,000 feet above ultimately reaching Mach 6.72, which remains the highest speed ever attained by a manned airplane. The X-15 demonstrated the ability of pilots to fly rocket-propelled aircraft in to the stratosphere and back again to precision landings. Sled tracks, located at North and South Base, were used during the 1940s and 1950s to study effects of deceleration on humans, and for testing safety equipment used to test aircraft components at high speeds. In 1981, the Space Shuttle *Columbia* touched down on the Rogers Dry Lake bed. It was the first successful landing for an orbiting space vehicle, leaving earth on rocket power and returning on the wings of an airplane. The dry lakebed proved perfect for shuttle take-offs and landings. In 1985, the NPS found Rogers Dry Lake an eligible NHL for its role in the testing of high-speed and high-altitude military aircraft, which began the Man in Space program. The NHL property just includes the lakebed and two runways, but no buildings or structures.

Significance

Rodgers Dry Lake, located within Edwards AFB, was determined a National Historic Landmark site in 1985 for its significant contribution to aerospace and aviation technology. First used in 1933, the lake bed forms

the largest natural landing field in the world. It is the primary resource associated with establishment of Edwards Air Force Base, a premier flight testing and research center. The NHL property includes the lakebed and two runways, but no buildings or structures. Other historic properties at Edwards AFB are generally associated with three broad historical themes: (1) World War II (WWII), (2) the Cold War, and (3) Man in Space. Edwards AFB has over 3,700 buildings and structures, of which 124 are eligible for listing on the NRHP. Twenty-seven buildings and structures have been determined individually eligible under the WWII, Cold War, Man-In-Space, or other themes. Some of these individually NRHP-eligible properties are also contributing elements of a historic district. The remaining 97 eligible properties are contributing elements of the following five historic districts: South Base Sled Track historic district, North Base historic district, X-15 Engine Test Complex historic district, Jet Propulsion Laboratory/Edwards Test Station historic district, and Phillips Laboratory historic district.

Sources:

Edwards Air Force Base, 2007 Base Guide (www.edwards.af.mil), 2007.

Foster Wheeler Environmental Corporation and JRP Historical Consulting Services, *California Historic Military Buildings and Structures Inventory*. Sacramento, CA: USACE Sacramento District, March 2000.

Loechl, Suzanne K., Tad Britt, Bill Meyer, Robert R. Sands, Adam D. Smith, Julie Webster, and Lucy Whalley. "Edwards Air Force Base ICRMP." Prepared in 2001 for sponsor by staff at Champaign, IL: U.S. Army Construction Engineering Research Laboratory, n.d. (Contact: adam.smith@usace.army.mil)

Robert Johnstone, "Rogers Dry Lake NHL Nomination," Edwards Air Force Base, CA: January 1986.

Fort Sam Houston

Geographic Location and Setting:

San Antonio is situated in south central Texas between the Edwards Plateau to the northwest and the Gulf Coastal Plains to the south. The terrain is gently rolling and dotted with oak trees, mesquite, and cacti. The skies are sunny or partly cloudy most of the time, and temperatures reach above 90 degrees for 111 days a year, on average. Fort Sam Houston is an active Army installation located two miles northeast of downtown San

Antonio. The main post is comprised of 3,150 acres, with over 900 buildings considered historical. Together, the National Historic Landmark District and the Historic Conservation District include about 500 acres.

Brief Summary of Historic Development:

- **Quadrangle and Staff Post (1876-1881):** Following the Mexican War (1846-1848), the Army used the Alamo as a quartermaster depot and rented buildings in the city of San Antonio to support operations against Mexico and the Indians. In 1876, the first permanent construction at the Fort Sam Houston site began with the building of a permanent depot named the Quadrangle. In 1875, prior to construction, Quartermaster General M.C. Meigs developed specifications for the Quadrangle. He was very sensitive to the natural environment and placed the Quadrangle on the highest point of land to take advantage of the range of view and defensive capabilities, and to facilitate drainage. Meigs also recommended that offices be located on the second floor to take advantage of the summer breezes and that the central courtyard be planted with trees appropriate to the climate of San Antonio. The Army quickly grew out of the Quadrangle. By 1879, the mission of the Quadrangle and surrounding land increased substantially to include the headquarters of the Department of Texas, a garrison for four cavalry troops, two light artillery, and six infantry companies. During the 1880s and 1890s, the Army decided to consolidate the temporary frontier posts into larger permanent facilities including Fort Sam Houston. This was due to both the decreased Indian threat, and the dilapidated and unhealthy conditions of the many scattered frontier posts. Installations located near cities and railroads benefited from the consolidation. Local architects were commissioned to design officers' quarters and other permanent buildings on the posts. Alfred Giles, a San Antonio-based architect, would be responsible for designing the staff quarters and hospital around the new parade ground to the west of the Quadrangle known as the Staff Post (Figure 51).

Figure 51. Aerial view of the Staff Post area and Quadrangle from 1956-1960, Fort Sam Houston, TX. Officers' quarters line the north and west sides of the large rectangular parade field. (Fort Sam Houston)

- **Infantry Post (1881-1895):** The Army purchased more land to the east of the Quadrangle in 1885. The Infantry Post consisted of barracks and officers' quarters to accommodate the increasing companies of cavalry, artillery and infantry who were living in temporary buildings and tents. The Infantry Post contained a large sloping parade field with barracks along the east side and officers' quarters flanking the north, south and west sides. Designs for the new buildings were drawn up by architect Giles and civil engineer C.H. Millington, under the direction of the Chief Quartermaster in Texas, Major J.G.C. Lee.

- **Cavalry and Artillery Post (1895-1913):** Army consolidation continued, resulting in another reduction of garrisons from 97 to 77, between 1892 and 1896. Fort Sam Houston again benefited, and by the end of the 1890s, became the second largest post in the United States as one of the country' brigade-sized posts. The Army purchased 471 acres just north of the original post and developed a curving parade ground that featured 75 buildings within two areas – one for cavalry and one for artillery (Figure 52). This distinction was carried through the architecture. Both used standardized plans, but the materials differed; yellow brick was used for the artillery post quarters and red brick for the cavalry post.

Figure 52. A 1935 aerial looking southwest at officers' quarters and barracks lining Treat Field in the Cavalry and Light Artillery Post area of Fort Sam Houston. (Fort Sam Houston)

- **Temporary Encampments (1913-1918):** Camp Wilson, the first temporary encampment at Fort Sam Houston, was established in 1913, in response to growing tensions with Mexico. The camp was located north and east of the Cavalry and Artillery Post. Over the next several years 9,000 troops trained at Camp Wilson. In 1917, in response to the United State's impending involvement in World War I, Camp Wilson was replaced with Camp Travis. It was much larger and more elaborate than Camp Wilson, and was part of a program consisting of 19 similar temporary encampments built nationwide. Well-known architects, planners and landscape architects were sent to installations around the country to lay out the plans for the encampments. City planner George Kessler of St. Louis laid out the plan for Camp Travis. He had a great deal of experience with large-scale design and was best known for his work on the 1904 World's Fair at St. Louis, the city plan for Dallas, and boulevard plans for Kansas City and Fort Worth.

- **New Post (1918-1939):** The Camp Travis buildings deteriorated quickly, since they were designed to be only temporary. This occurred at many temporary encampments nationwide, which created huge problems for the Army. Congress passed the Army Housing Act of 1926 which established a national building program. Camp Travis was

cleared away in 1927, and in 1928 new construction began on permanent buildings, adhering to the grid previously laid out by Kessler. This new post area became known as "New Post." Designers including architects, landscape architects and planners incorporated principles from the "City Beautiful" and "Garden City" planning movements. Hundreds of new quarters were erected, using a Spanish colonial revival style of architecture that was adopted through the recommendation of local architect, Atlee B. Ayres. The Cavalry and Artillery parade ground was extended, with quarters and administration buildings flanking both sides, and the new Brooke Army Medical Center at the northern terminus.

- **World War II and after (1939-1957):** In 1939 and 1940, President Franklin D. Roosevelt declared a Limited Emergency and the War Department initiated an Emergency Construction Program. Plans were developed for temporary wooden buildings to be erected on military installations throughout the country, to house thousands of personnel coming to the training camps. In 1941, 400 barracks, administrative offices, fire stations, medical facilities, clinics, shops, theatres, and chapels were erected at Fort Sam Houston. The Fort, with the largest number of troops at any one installation in the United States, expanded its roles in support of ground troop training and mobilization. Following the war, Fort Sam became one of the most vital medical facilities in the Army, with Brookes General Hospital and its new 200-bed wing. In 1945, the Medical Field Service School moved from Carlisle Barracks in Pennsylvania to Fort Sam Houston. From that point on until the present day, Fort Sam Houston has continued its role as an important Army medical facility.

Significance

The significant contributions of Fort Sam Houston to the United States were recognized in 1975, when the post was designated as a National Historic Landmark. Fort Sam Houston is significant for its history as the Army's principal southwestern supply base, as well as for its contributions to military aviation, Army tactics and medicine. With more than 900 buildings in its historic districts, Fort Sam Houston boasts one of the largest collection of historic military post structures. Today, structures survive in good condition from every period of the post's history, and reflect a century of varying architectural styles and concepts in planning and design. Besides the Quadrangle, completed in 1879, four groups of buildings were erected on the Fort Sam Houston Reservation in the late 19th and early

20th centuries. These were the Staff Post, Infantry Post, Artillery Post, and Cavalry Post. Each group remains virtually intact, and except for the Infantry Post, none has a significant number of modern intrusions. Each group of structures is connected visually with the Quadrangle, and together they cover about 400 acres, and include approximately 130 major historic edifices and numerous accompanying outbuildings such as kitchens, mess rooms, and storage facilities.

Sources:

Batzli, Sam and Helen Tyson Siewers, *Historic Landscape Inventory, Fort Sam Houston, Texas*, (Draft) Champaign, IL: Construction Engineering Research Laboratories, 1996.

Freeman, Martha Doty. *Fort Sam Houston, An American Depot, Headquarters, and Training Facility 1876-1946*. Fort Worth, TX: Komatsu/Rangel, Inc., 1994.

GeoMarine, Inc. *Fort Sam Houston Integrated Cultural Resource Management Plan*, Plano, TX: GeoMarine, Inc., 2007.

R. Christopher Goodwin and Associates, Inc., *National Historic Context for Department of Defense Installations, 1790-1940*, vol.3, 1995

Marine Corps Base Quantico

Geographic Location and Setting:

Marine Corps Base Quantico is located in northern Virginia, along the western shore of the Potomac River, and 40 miles south of Washington, D.C. The installation's approximately 100 square miles lie on both the east and west sides of Interstate 95. The dominant physiography is relatively flat terrain, with occurrences of low terraces and gently sloping topography. Away from the river, the land rises to long, narrow winding ridges with steep side slopes. On the western side of I-95, the land is more heavily forested with more pronounced hills. This area is utilized for military camps, training activities, support facilities, and a reservoir. Although the native vegetation and topography has been altered considerably over the years, a majority of the base remains in its native hardwood forest (primarily poplar, oak, hickory, and pine), brush, and marsh. The town of Quantico, Virginia is an enclave along the river and enclosed within the base.

Brief Summary of Historic Development:

1. **Pre-military history (until 1917):** Spanish explorers entered the area during the late sixteenth century. English explorer, Captain John Smith, explored areas along the banks of the Potomac during 1608, and traded with Native American groups including the Algonquin, Iroquois, and Dogue. Settlements and plantations grew up along the river and tributary streams. Tobacco became the economic mainstay supported by local customs houses and warehouses. After the War of 1812, the commercial importance of the Quantico area diminished, as cotton replaced tobacco as the major cash crop. The banks of the Potomac gained strategic importance during the Civil War with the Confederates establishing gun batteries at the entrances of Aquia and Quantico Creeks into the Potomac. Several Confederate units, including the 12th Regiment of North Carolina Volunteers, occupied the Quantico area at various times during the Civil War. Although commercial interest in the Quantico area waned after the Civil War, development companies including the Potomac Land and Improvement Company (1872) and the Quantico Company (early 1900s) incorporated and improved a town known as Potomac (later Quantico) on the northern edge of the present base (this area should not be confused with the incorporated town of Potomac, Va. that was annexed into the city of Alexandria, Va.). The town was promoted as a tourist and vacation center and a nearby industrial site where the Quantico Shipyards were established in 1916. Within a year, the United States Marine Corps would arrive at Quantico and permanently alter the physical and cultural landscape of the town and surrounding areas.

2. **Initial Development (1917-1925):** In the second decade of the 20th Century, the need for a permanent home base for the newly established Advanced Base Force, a large increase in the size of the Marine Corps, and the anticipation of needed manpower and training bases for the First World War, combined to spur the creation of a Marine Corps base at Quantico. Development began when the Marine Corps purchased land from developers, beginning in 1917. Marine Barracks, Quantico was established on May 14, 1917. To accommodate the influx of Marines, the initial construction plans consisted of temporary accommodations for 3,500 men, including a hospital, headquarters, barracks, kitchens, mess halls, bathhouses/latrines, storehouses, and utilities. After the war, the installation was made permanent, and more durable construction began during 1918, when a number of structures

were built in the Bungalow style. This was the dominant style for smaller houses throughout the country from 1905 through the early 1920s. Between 1919 and 1946, Quantico's airfields served as the Marine Corps' primary aviation center. Beginning with seaplanes, facilities were constructed to support both sea and landplanes in 1919. Two airfields were constructed on opposite sides of the railroad tracks by 1920 with barracks, logistical facilities, hangars, and other buildings (Figure 53). Both fields were joined as Brown Field in 1922, and supported the Marine Corps' largest group of aviators, who trained in close air support of ground troops. This period also saw the beginning of what would become a cherished landscape feature at Quantico, Butler Stadium. Promoted by General Smedley Butler to enhance the public's awareness of the Marine Corps at a time when its long term future was not assured, the large stadium was constructed with Marine labor. Begun in 1922, the stadium was not completed until after the Second World War.

Figure 53. A 1925 aerial view of the early airfields at Quantico, showing seaplane hangars and access ramp. (NARA, 80-G, box 459803)

3. **Education and Tactical Development (1928-1936).** In 1923, Major General John A. Lejeune had established a board, to create a master plan for Quantico's development that provided for the installation's new role as the educational center for the Marine Corps. By the late 1920s, their recommendations began to reshape the base. The board proposed a large, campus-like design with a terraced composition for the overall form of the base. Although the overall plan proved too expansive for the available labor and funding, several key aspects were implemented. The general location of most quarters, schools, and barracks adhered to the plan, with a large parade ground dominating the lower level, and barracks and other buildings placed successively up the slope (Figure 54). This led upward to apartment buildings in the hills northwest of the barracks area. The buildings followed the recommendation of the plan, utilizing the Georgian Colonial Revival style. At the time, this was the prevailing classical architectural style in the eastern U.S., and was chosen because it would allow the use of plain materials with little ornamentation through dignity and proportion, which was "typical of the straightforward service and life of the Marines" (Brown 1925, 513). The nature of the landscape was not left out of the considerations; "the character of the ground of the Marine reservation offers an opportunity for a dignified and imposing installation of buildings and a picturesque and pleasing park treatment, with unexcelled vistas and broad views of the wide Potomac combined with the wooded hills of Maryland and Virginia" (United States Navy 1923, n.p.). This aesthetic sensitivity was probably influenced largely by Glenn Brown, a Washington, D.C. architect hired to assist with the overall long-range plan. The new buildings were not the only changes during this time. Advances in airplane technology required larger areas and facilities at airfields, and by 1936, a new field (Turner Field) was constructed north of Brown Field, by filling in marsh areas. The educational mission at Quantico resulted in techniques of amphibious warfare being conceived and perfected at Quantico, and taught to Marine units.

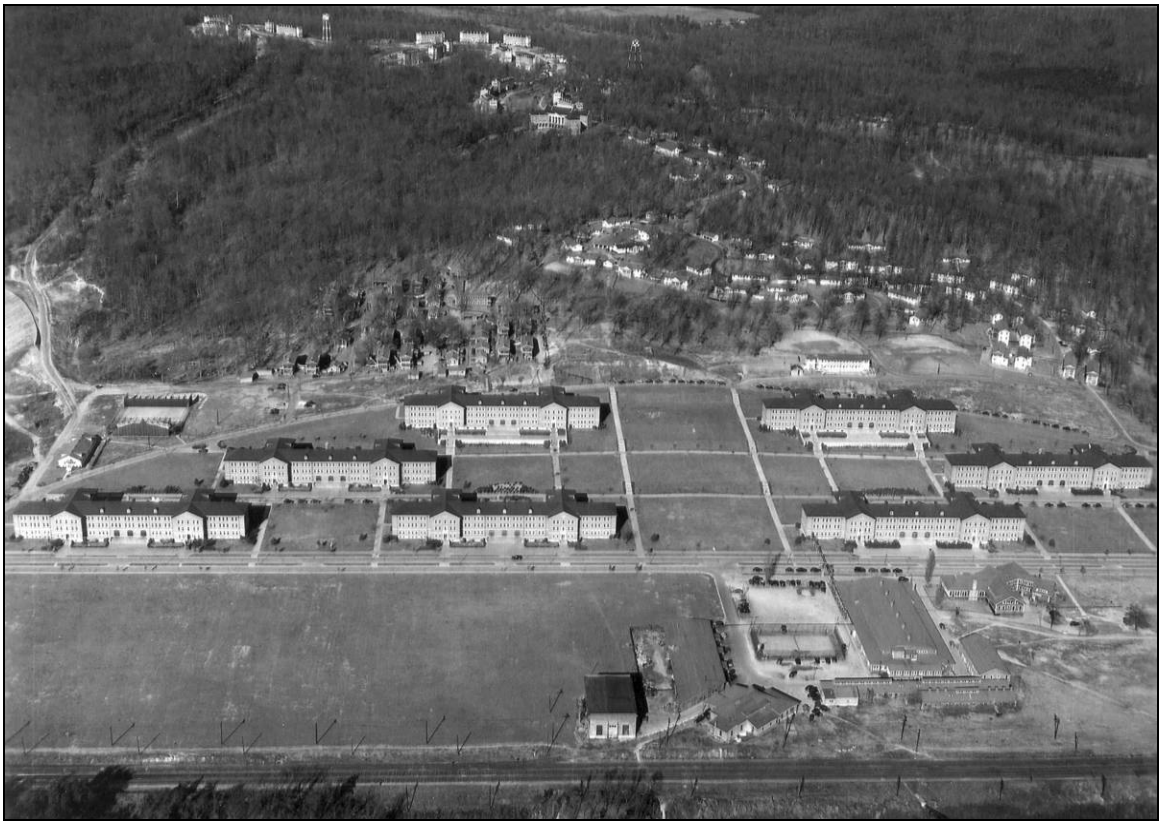

Figure 54. A 1937 aerial photograph showing 1920s and 1930s permanent construction at Quantico. Massive enlisted barracks dominate the foreground, officers' bungalows and Dutch Revival houses climb the hills, and enlisted personnel apartments adorn the ridges. (NARA)

- **World War II (1941-1945).** During the war, Quantico provided specialized individual training to over 15,000 Marine Corps officers, officers of other U.S. Armed Forces, and Allied nations. Education of these troops continued to integrate the development of experimental field techniques with classroom education, and resulted in the refinement of amphibious warfare techniques. Additional educational facilities were constructed during this time. The need for more aircraft training and the increasing role of aviation in war resulted in the construction of a large hangar and a separate, large repair shop at Turner Field.

- **Early Cold War (1946-1958).** After the war, Quantico's educational mission was codified by the National Security Act of 1947, which formally assigned amphibious warfare and the development of its tactics, techniques, and equipment to the Marine Corps. One result of this at Quantico was the establishment of the Corps' first helicopter squadron, Marine Helicopter Squadron One (HMX-1), which tested the concept of

carrying troops from ship to landing zones on hostile shores. Techniques derived at Quantico were invaluable in the Korean and Vietnam wars. An important change to the built environment occurred in 1949 with the construction of enlisted family housing. In a departure from traditional building practices, sixty mass produced homes were purchased and installed at Quantico. After World War II, an increase in marriage, and the subsequent baby boom, led to an acute shortage of military family housing. To address this concern, the Marine Corps purchased sixty Lustron houses, and erected the buildings in two planned military subdivisions on the hills and ridges of the installation. The brainchild of engineer Carl Strandlund, Lustron houses were constructed entirely of pre-engineered porcelain enameled steel panels, which made them an innovative pre-engineered answer to solving the housing shortage. Offered in several pastel exterior colors, the houses were virtually maintenance free, and included modern built-in appliances such as a combination clothes washer/dishwasher. The Lustrons were arranged in a manner typical of suburban planning of its time, with identical houses placed on average size lots including front, rear, and side yards. The Lustron housing areas at Quantico were the single-largest concentration of this unique building type.

Significance

The importance of Marine Corps Base, Quantico's historic properties was formalized in 2001 with the establishment of the Quantico Marine Corps Base Historic District. The 122 buildings, 2 sites, 1 object, and 1 structure listed are significant under the areas of Military History, Education, Health/Medicine, and Architecture. Marine Corps Base Quantico is significant for its role in military aviation as its air fields served as the Marine Corps' primary aviation center, and pushed the evolution of military aviation technology. Quantico has made a significant contribution to the development of a professional military education system and continues to serve as the primary education facility for the Marine Corps. The base has excellent examples of Colonial Revival architecture that give it the appearance of a campus. There is also a group of Dutch Colonial Revival quarters and Bungalows that express the popular styles of the era when the base was first established. In addition to the above mentioned aviation landscape, the other site of significance is Butler Stadium, constructed by Marines under the direction of Brigadier General Smedley Butler, Base Commander.

Sources:

Brown, Glenn. "The Proposed Marine Barracks at Quantico, Va." *The Architectural Record*. June 1925: 510-516.

Enscore, Susan I. "National Register of Historic Places Registration Form: Quantico Marine Corps Base Historical District." Prepared in 1996 from Champaign, IL: U.S. Army Corps of Engineers, Construction Engineering Research Laboratory. (Non-published; contact: susan.i.enscore@usace.army.mil)

United States Navy. Bureau of Yards and Docks. General Correspondence, Shore Establishment, 1918-25. Box 474. Folder: 677-1, Quantico. Board on Permanent Development of a Marine post at Quantico, Va. to the Major General Commandant, 17 April 1923. Record Group 71. National Archives and Records Administration, Washington, D.C.

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

1. REPORT DATE (DD-MM-YYYY)
February 2009

2. REPORT TYPE
Final

3. DATES COVERED (From - To)

4. TITLE AND SUBTITLE
Guidelines for Identifying and Evaluating Historic Military Landscapes

5a. CONTRACT NUMBER

5b. GRANT NUMBER

5c. PROGRAM ELEMENT NUMBER

6. AUTHOR(S)
Suzanne Keith Loechl, Susan I. Enscore, Megan Weaver Tooker, and Samuel L. Batzli

5d. PROJECT NUMBER
05-197

5e. TASK NUMBER
W31RY051521019

5f. WORK UNIT NUMBER
103774

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)
U.S. Army Engineer Research and Development Center (ERDC)
Construction Engineering Research Laboratory (CERL)
P.O. Box 9005
Champaign, IL 61826-9005

8. PERFORMING ORGANIZATION REPORT NUMBER
ERDC/CERL TR-09-6

9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES)
Department of Defense
Legacy Resource Management Program
1225 S. Clark St., Suite 1500
Arlington, VA 22202

10. SPONSOR/MONITOR'S ACRONYM(S)
DoD LRMP

11. SPONSOR/MONITOR'S REPORT NUMBER(S)

12. DISTRIBUTION / AVAILABILITY STATEMENT
Approved for public release; distribution is unlimited.

13. SUPPLEMENTARY NOTES
Copies are available from the National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161.

14. ABSTRACT

The U.S. Congress created the National Historic Preservation Act (NHPA) to provide guidelines and requirements aimed at preserving tangible elements of our past primarily through the creation of the National Register of Historic Places (NRHP). Federal agencies are required to inventory and evaluate their cultural resources, defined as any prehistoric or historic district, site, building, structure, or object. Over the last several years, historic landscapes have been recognized as significant cultural resources on DoD military installations. As a result, concern with efficient management of these landscapes found a place in the military consciousness. To achieve efficient management, enabling guidelines became necessary. This document provides information on identifying, inventorying, and evaluating historic military landscapes to the standards established by the NRHP.

15. SUBJECT TERMS
National Register of Historic Places (NRHP), cultural resources management, historic landscape, military installations, Legacy Resource management Program (LRMP)

16. SECURITY CLASSIFICATION OF:			**17. LIMITATION OF ABSTRACT**	**18. NUMBER OF PAGES**	**19a. NAME OF RESPONSIBLE PERSON**
a. REPORT	**b. ABSTRACT**	**c. THIS PAGE**			Susan Enscore
Unclassified	Unclassified	Unclassified	SAR	169	**19b. TELEPHONE NUMBER (include area code)** (217) 373-4434