Appendix C

Cultural Resources Supporting Information and Section 106 Finding of Effect

- National Historic Preservation Act Section 106 Finding of Effect
- California Historical Resources Information System Records Search
- U.S. Department of Agriculture Natural Resources Conservation Service Soil Resource Report

Draft

Finding of Effect for Long Range Development Plan

San Francisco Veterans Affairs Medical Center

Prepared for:

San Francisco Veterans Affairs Medical Center

Prepared by:

AECOM

August 14, 2012

TABLE OF CONTENTS

TABLES

EXHIBITS

APPENDICES

1. INTRODUCTION

The U.S. Department of Veterans Affairs (VA) is preparing a Long Range Development Plan (LRDP) for the San Francisco Veterans Affairs Medical Center (SFVAMC) at Fort Miley in San Francisco, California. The SFVAMC, which is located in northwestern San Francisco, is a major tertiary care facility that serves as a VA regional referral center for specialized medical and surgical programs. The SFVAMC serves Veterans of the San Francisco Bay Area and northern California coast counties.

The proposed undertaking is an LRDP that supports the mission of the SFVAMC and provides for the healthcare needs of the Veterans it serves. An LRDP is a comprehensive plan that guides physical development such as the location of buildings, open space, circulation, and other land uses. The LRDP for the SFVAMC includes new development and the retrofit of existing buildings and structures that house patient care, research, administrative, and hoptel[1] functions, as well as parking. Implementation of the LRDP would occur in two phases over a 10-year timeframe, through the year 2023. The LRDP is a conceptual planning document that provides a present-day analysis and offers a visionary sketch for a better future. The LRDP is a living, dynamic document, one that will outline a sequence of steps for implementation in both the short and long term, while also providing the institution flexibility to shift priorities as needed. The LRDP is anticipated to go through many changes in the future, as priorities shift to meet the needs of Veterans.

The purpose of the LRDP is to provide a strategic and organized approach for the future development necessary to meet the mission of the Veterans Health Administration (VHA), one of three major VA branches. To meet the needs of Veterans in the San Francisco Bay Area and northern California over the next 20 years, SFVAMC has determined that existing buildings need to be retrofitted to the most recent seismic safety requirements and that an additional 589,000 square feet of building space must be constructed.

Per the requirements of Section 106 of the National Historic Preservation Act (NHPA), VA has initiated consultation on the development of the LRDP. The LRDP Finding of Effect (FOE) report will be used to consult with Section 106 consulting parties about VA's determination of whether the LRDP will adversely affect historic properties.

1.1 PREVIOUS SECTION 106 COMPLIANCE ACTIVITIES

On April 22, 2011, VA contacted the California State Historic Preservation Officer (SHPO) by letter to initiate Section 106 consultation for the SFVAMC Draft Institutional Master Plan (IMP), which was a preliminary planning document that has evolved into the LRDP. On June 16, 2011, SHPO responded with a letter requesting additional information.

In December 2011, AECOM prepared baseline documentation that summarized the previous cultural resources studies and Section 106 consultations that were conducted for the SFVAMC.

[1] A hoptel is an overnight, shared lodging facility for eligible Veterans receiving health care services. This temporary lodging is available to Veterans that need to travel 50 or more miles from their home to the SFVAMC Fort Miley Campus.

Also in December 2011, VA met with SHPO personnel at the SFVAMC Fort Miley Campus to review the baseline documentation and tour the site.

After extensive discussions with the public and interested agencies, VA determined that an LRDP is the more appropriate planning tool for its purposes. As such, an LRDP replaced the Draft IMP as the principal master-planning document for the SFVAMC Fort Miley Campus. The first public review of the LRDP is scheduled to occur in summer 2012 at the same time as the review of the Public Draft Environmental Impact Statement (EIS) and Public Draft LRDP FOE.

Per the requirements of Section 106 of the NHPA, 36 Code of Federal Regulations (CFR) 800.3, VA formally initiated Section 106 consultation for the LRDP in a March 2012 letter to the SHPO. In May 2012, SHPO submitted a letter to VA that stated concurrence with the established Area of Potential Effect (APE), the definition of the proposed undertaking, and VA's approach to the Section 106 process.

1.2 SUMMARY FINDING OF EFFECT

Pursuant to NHPA Section 106, 36 CFR 800.5, VA has determined that the LRDP will have an adverse effect on the SFVAMC Historic District. The LRDP will have no adverse effect on the Fort Miley Military Reservation Historic District or archaeological historic properties. Pursuant to Section 106, 36 CFR 800.6(a), and 800.6(b)(1), VA will consult with SHPO and those parties designated as signatory consulting parties regarding the resolution of adverse effects.

An Administrative Draft LRDP FOE was coordinated with the Section 106 signatory consulting parties prior to public release of the Draft LRDP FOE. The Draft FOE will be released for public review concurrently with the Draft EIS, which is currently being prepared per compliance with the National Environmental Policy Act (NEPA). VA will conduct an integrated public input process, with a concurrent Draft LRDP EIS and Draft LRDP FOE review period and a combined public meeting. Comments provided by the public, concurring consulting parties, and signatory consulting parties will be incorporated into the Final FOE that will be submitted to SHPO with a request for concurrence. The Section 106 process will conclude when VA, SHPO, and the signatory consulting parties execute an agreement document for the resolution of adverse effects (or through concurrence that there are no adverse effects).

Table 1, "Findings of Effect," provides a summary of the findings of effect for each National Register of Historic Places (NRHP) historic property located within the APE. The summary includes a brief statement of how the LRDP would impair individual components of the NRHP Historic District located within the APE.

Table 1: Findings of Effect

Archeological Sites	**No Historic Properties Affected**
Fort Miley Military Reservation Historic District	**No Adverse Effect**
West Fort Miley - Battery Chester (FI-1, FI-2)	Not impaired by LRDP activities
West Fort Miley - Battery 243 (FI-4)	Not impaired by LRDP activities
West Fort Miley - Searchlight Powerhouse (FI-3)	Not impaired by LRDP activities
West Fort Miley - Fire Control Station (FI-350)	Not impaired by LRDP activities
West Fort Miley - Fire Control Station (FI-351)	Not impaired by LRDP activities
West Fort Miley - Fire Control Station (FI-352)	Not impaired by LRDP activities
West Fort Miley - Unidentified earthworks	Not impaired by LRDP activities
East Fort Miley - Battery Livingston (FI-329)	Not impaired by LRDP activities
East Fort Miley - Battery Springer (FI-330)	Not impaired by LRDP activities
East Fort Miley - Ordnance Storehouse (FI-304)	Not impaired by LRDP activities
Historic District feeling, setting, association	Not impaired by LRDP activities
SFVAMC Historic District	**Adverse Effect**
Building 1 (Administration, Research)	Alteration of physical and setting characteristics
Building 2 (Administration, Clinics, Research)	Not impaired by LRDP activities
Building 3 (Engineering)	Not impaired by LRDP activities
Building 4 (Research)	Alteration of setting characteristics
Building 5 (Clinic, Research)	Alteration of physical characteristics
Building 6 (Research, Library)	Alteration of physical and setting characteristics
Building 7 (Various)	Alteration of physical characteristics
Building 8 (Mental Health, Clinic)	Alteration of physical and setting characteristics
Building 9 (Hoptel)	Alteration of physical characteristics
Building 10 (Hoptel)	Alteration of physical characteristics
Building 11 (Research/Offices)	Alteration of physical characteristics
Building 18 (Office)	Demolition
Building 20 (Storage)	Demolition
Flag Pole and Base	Not impaired by LRDP activities
Historic District feeling, setting, association	Alteration of physical and setting characteristics

2. DESCRIPTION OF PROPOSED UNDERTAKING

2.1 PROJECT LOCATION

The SFVAMC is a 29-acre site located in the northwestern corner of the City and County of San Francisco, adjacent to the Outer Richmond District neighborhood (see Exhibit 1, "Project Location"). It is bounded by Clement Street/Seal Rock Drive and the outer Richmond District neighborhood to the south, and Golden Gate National Recreation Area (GGNRA) land, which is owned by the National Park Service (NPS), to the north, east, and west (see Exhibit 2, "Existing SFVAMC Campus").

2.2 AREAS OF POTENTIAL EFFECT

The LRDP includes planned improvements (see Exhibit 3, "Summary Site Plan") within and adjacent to the SFVAMC Historic District and adjacent to the Fort Miley Military Reservation Historic District, which is a listed NRHP district that is administered by the NPS. The proposed archaeological and architectural APEs have been drawn to include the entire SFVAMC Fort Miley Campus, which encompasses the construction footprint and all construction areas and any buildings or structures adjacent to those areas where potential LRDP-related effects may occur (see Exhibit 4, "Areas of Potential Effect").

Due to the proximity of the Fort Miley Military Reservation Historic District boundary to the SFVAMC Fort Miley Campus, there is some potential to affect the setting, feeling, or association of the Historic District through implementation of the LRDP. This potential is significantly reduced on the north and northwest sides of the SFVAMC Fort Miley Campus because of a dramatic drop in topography that renders the Campus difficult to see from that portion of the adjacent Fort Miley Military Reservation Historic District. Thus, the architectural APE extends into a portion of GGNRA land, northeast and east of the Campus. The architectural APE also extends southwest of the Campus—to include residential buildings immediately adjacent to the Campus boundary—to account for potential effects on setting, feeling, and association of these buildings if they qualify as historic properties.

2.3 SFVAMC BACKGROUND

The mission of the VHA is to "Honor America's Veterans by providing exceptional health care that improves their health and well-being." In fulfillment of this mission, VHA provides comprehensive, integrated healthcare services to Veterans and other eligible persons. The SFVAMC carries out the mission of VHA by providing the medical, educational, and research space necessary for care of military Veterans in the San Francisco Bay Area and northern California.

Source: SFVAMC Engineering Department

Project Location **Exhibit 1**

Source: SFVAMC Engineering Department

Existing SFVAMC Campus **Exhibit 2**

San Francisco VA Medical Center

LEGEND

- Site Boundary
- National Register Historic District Boundary
- New Construction
- Expansion
- Retrofit
- No Action
- Demolition/ Removal

0 50′ 100′ 150′

N

AECOM

Summary Site Plan

Exhibit 3

Source: AECOM

Areas of Potential Effect **Exhibit 4**

Since 1930, the VA healthcare system has grown from 54 hospitals to include 152 medical centers; more than 1,400 outpatient clinics; 135 nursing home care units (Community Living Centers); and 48 domiciliaries.[2] The growing population of Veterans (both service-connected and nonservice-connected) seeking VA healthcare services results in an increase in the demand for medical facilities, including research space, on VA medical center campuses.

VA constructed and continues to operate the SFVAMC, which is located at Fort Miley in San Francisco, California. Fort Miley was established as a Coastal Defense Battery in 1893. Approximately 29 acres of land were transferred from the U.S. Army to VA in 1932 for construction of a new Veterans hospital and diagnostic center to provide healthcare options to the San Francisco Bay Area Veteran population. In 1934, this area became the SFVAMC and was included in VA's VHA system.

SFVAMC is the only VA medical center in San Francisco County, and serves Veterans throughout northern California. The SFVAMC is an approximately 1 million-square foot facility that includes a 124-bed tertiary care hospital, primary and specialty care services, and a 120-bed Community Living Center. The SFVAMC has a long history of conducting cutting-edge research, establishing innovative medical programs, and providing compassionate care to Veterans. The SFVAMC has several National Centers of Excellence in the areas of epilepsy treatment, cardiac surgery, post-traumatic stress disorder, human immunodeficiency virus, and renal dialysis. It has many other nationally recognized programs; is one of the few medical centers in the world equipped for studies using both whole-body magnetic resonance imaging and spectroscopy; and is the site of VA's National Center for the Imaging of Neurodegenerative Diseases.

The SFVAMC is considered an aged facility with the need for retrofitting and expansion. The SFVAMC is severely deficient in space and has identified a deficiency of 589,000 square feet of building space to adequately serve San Francisco Bay Area and northern California coast Veterans through the year 2030.

2.4 DESCRIPTION OF PROPOSED UNDERTAKING

The purpose of the LRDP is to establish the road map for the SFVAMC facility development projects necessary to meet the mission of VHA. SFVAMC has determined that to meet the needs of all San Francisco Bay Area and North Coast Veterans over the next 20 years, some of the existing buildings need to be retrofitted to the most recent seismic safety requirements, and an additional 589,000 square feet of building space must be constructed.

SFVAMC has major space and parking deficiencies at the Fort Miley Campus. The mission of the SFVAMC is to continue to be a major primary and tertiary healthcare center that provides cost-effective and high-quality care to eligible Veterans in the San Francisco Bay Area and northern California coast. The SFVAMC strives to deliver necessary care to Veterans while contributing to healthcare knowledge through research and education. SFVAMC is also a ready resource for Department of Defense backup, serving as a Federal Coordinating Center in the

[2] A domiciliary provides residential rehabilitation treatment programs for a wide range of problems including: medical, psychiatric, vocational, educational, and social.

event of a national emergency. New major construction initiatives would transform the SFVAMC, providing seismic improvements and additional facility space over the next 20 years. The proposed LRDP is needed for the SFVAMC to continue to serve the ever-changing needs of the growing Veteran population and to provide appropriate space and facilities to conduct important research.

The overarching goals of the LRDP include:

- Enhance the SFVAMC's function as a vital medical center for Veterans in need.
- Continue to be a state-of-the-art medical facility to serve Veterans well into the future.
- Provide appropriate space to conduct/manage research, clinical, administrative, and educational programs.

The specific objectives of the LRDP are to:

- Address the space deficiency at the SFVAMC Fort Miley Campus.
- Retrofit existing buildings to the most recent seismic safety requirements to meet current VA Seismic Design Requirements (VA Directive H-18-8), in compliance with Executive Order 12941.
- Provide appropriate space to conduct research.
- Strengthen clinical inpatient and outpatient primary and specialty care for San Francisco Bay Area and North Coast Veterans.
- Improve the efficiency of clinical and administrative space through renovation and reconstruction.
- Meet patient privacy standards and resolve Americans with Disability Act deficiencies;
- Increase parking supply to meet current and future demands.
- Improve internal and external campus circulation, utilities, and infrastructure.
- Maintain/improve public transit access to the SFVAMC Fort Miley Campus.

2.5 PROJECT ALTERNATIVES

In parallel with coordination of Section 106 review, VA is conducting review under NEPA with preparation of an EIS. NEPA regulations require that an EIS contain a description of a proposed action and the alternatives considered. Agencies are directed to use the NEPA process "to identify and assess the reasonable alternatives to proposed actions that will avoid or minimize adverse effects of these actions upon the quality of the environment" (40 CFR 1500.2[e]).

The NEPA proposed action is the renovation, expansion, and operation of the SFVAMC to serve Veterans in the San Francisco Bay Area and northern California coast counties. After consideration of a variety of alternatives through the planning process and eliminating alternatives determined to be infeasible, three alternatives were derived that would allow for continued operation of the SFVAMC over the next 20 years:

Alternative 1: SFVAMC Fort Miley Campus Buildout Alternative

Alternative 2: SFVAMC Fort Miley Campus Plus Mission Bay Campus Alternative

Alternative 3: No Action Alternative

There is no preferred alternative at this time. Once VA has gained input from the public and coordinating agencies (including Section 106 consulting parties) through the NEPA and Section 106 public processes, VA will update the LRDP, as necessary, select a preferred alternative, and prepare and sign a Final EIS and Record of Decision. VA will also finalize the FOE with an updated description of the Section 106 undertaking that reflects the revised preferred alternative.

To facilitate Section 106 consultation concurrent with the NEPA process, this Draft FOE discusses effects on historic properties located within the APE at the SFVAMC Fort Miley Campus as well as the Section 106 implications of LRDP alternatives that consider off-site development at an as-yet-unknown specific location. Because Section 106 does not require analysis of a "no action" alternative, only NEPA Alternatives 1 and 2 are discussed in the Section 106 FOE.

2.5.1 Alternative 1: SFVAMC Fort Miley Campus Buildout Alternative

Near-Term Projects

Alternative 1 near-term project components (Phase 1)[3] would involve new development and/or retrofit of patient care, research, administrative, hoptel, and parking structures on the existing 29-acre SFVAMC Fort Miley Campus through mid 2015. The Alternative 1 (Phase 1) development area would total under 1.5 net new acres within the previously developed areas of the existing 29-acre SFVAMC Fort Miley Campus (see Exhibit 3, "Summary Site Plan").

Alternative 1 near-term projects include:

- Phase 1.1: Building 41 Research (requires demolition of Building T-17)
- Phase 1.2: Emergency Operations Center and Building 211 Parking Garage Expansion (477 spaces; 295 net new)
- Phase 1.3: Building 22 Hoptel and Seismic Retrofit of Buildings 5, 7, 9, 10, 11, and 13, in accordance with VA Seismic Design Requirements (VA Directive H-18-8), in compliance with Executive Order 12941
- Phase 1.4: Patient Welcome Center and Drop-Off Area
- Phase 1.5: Building 24 Mental Health Clinic Expansion (requires demolition of Building 20)

Long-Term Projects

The Alternative 1 long-term project components (Phase 2) would involve new development and/or retrofit of patient care, research, administrative, and ambulatory care structures on the 29-acre SFVAMC Fort Miley Campus through 2023. The Alternative 1 (Phase 2) development area would total approximately 0.5 net new acre within the previously developed areas of the existing 29-acre SFVAMC Fort Miley Campus.

Furthermore, there would be a need to add approximately 24,000 square feet of modular building swing space into the northwest parking lot of the SFVAMC Fort Miley Campus. This modular swing space would be temporary, as it would be removed from the northwest parking lot after approximately 13 months. The use of this modular swing space would not require any

[3] LRDP Phase 1 spans the 2013 through 2015 timeframe. LRDP Phase 2 spans the 2015 through 2023 timeframe.

construction or demolition of buildings because it would be located on a previously developed parking lot which can accommodate the use.

Alternative 1 long-term projects include:

- Phase 2.1: Operating Room Expansion (D-Wing)
- Phase 2.2: IT Support Space Expansion (Building 207)
- Phase 2.3: Building 23 (Mental Health Research Expansion)
- Phase 2.4: Building 40 Research (requires demolition of Buildings 12, 18, 21, and T-23, and removal of Building 14) and Seismic Retrofit of Buildings 1, 6, and 8, in accordance with VA Seismic Design Requirements (VA Directive H-18-8), in compliance with Executive Order 12941
- Phase 2.5: Ambulatory Care Center (ACC)

2.5.2 Alternative 2: SFVAMC Fort Miley Campus Plus Mission Bay Campus Alternative

Near-Term Projects

Alternative 2 near-term project components (Phase 1) would be the same as Alternative 1 near-term project components (Phase 1). Thus, all Alternative 2 near-term project components (Phases 1.1 through 1.5) would be located at the SFVAMC Fort Miley Campus.

Long-Term Projects

The Alternative 2 long-term project components (Phase 2) would primarily involve new development and/or retrofit of patient care, research, and administrative structures at the SFVAMC Fort Miley Campus as well as ambulatory care, research, and parking structures at a potential new SFVAMC Mission Bay Campus.

For purposes of the Section 106 analysis, it is assumed that a new SFVAMC Mission Bay Campus would be constructed somewhere within an approximately 2.5-square mile area bounded by Interstate-80 on the north, 2nd Street and San Francisco Bay on the east, Cesar Chavez Street on the south, and 7th/Brannan/Potrero Streets on the west. See Exhibit 5, “Alternative 2 Mission Bay Campus Location,” for the location of the off-site portion of Alternative 2. In addition, it is assumed that all off-site space in Mission Bay would be four stories, with the proposed off-site new development area totaling approximately 3.5 acres. The actual footprint, concept plan, and site location within Mission Bay have not been determined at this time.

Alternative 2 long-term project components (Phase 2) at the SFVAMC Fort Miley Campus would be constructed between late 2015 and early 2023, while a new SFVAMC Mission Bay Campus would be constructed roughly between mid 2023 and late 2027.

Source: SFVAMC Facilities Planning Department

Alternative 2 Mission Bay Campus Location **Exhibit 5**

3. CONSULTATION AND PUBLIC PARTICIPATION

3.1 CONSULTATION AND PUBLIC INVOLVEMENT PROCESS

In accordance with VA's responsibilities under both Section 106 and NEPA, VA is required to solicit public comments on the environmental review documents that will, in turn, facilitate the incorporation of comments into the Final LRDP and Final LRDP EIS. This process includes coordination with agencies and organizations with a demonstrated interest in heritage resources or in the SFVAMC Fort Miley Campus. This process also includes providing members of the public with similar interests an opportunity to comment on the identification of historic properties and finding of effect. VA will take those comments into consideration during consultation with SHPO under Section 106.

3.1.1 Consulting Parties

During the early stages of the development of the LRDP, VA identified organizations that have a demonstrated interest in the treatment of historic properties in San Francisco. These early efforts include the NEPA scoping meetings held in late 2010 and early 2011 and individual meetings held with NPS GGNRA and the City and County of San Francisco in late 2011. Based on these meetings, as well as input provided by SHPO, VA submitted letters to the following parties on June 15, 2012, notifying them of their opportunity to participate in the Section 106 process:

- City and County of San Francisco (Certified Local Government)
- San Francisco Veterans Affairs Commission
- NPS, Western Regional Office
- GGNRA
- Planning Association for the Richmond
- Friends of Lands End
- California Preservation Foundation
- National Trust for Historic Preservation, Western Regional Office
- NCIRE (The Veterans Health Research Institute) Board of Directors
- University of California at San Francisco (UCSF) Medical School
- Legion of Honor
- Presidio Trust
- San Francisco County Veterans Service Officers

Responses to these letters may lead to the identification of consulting parties who would become signatories to the agreement document that will be developed during the resolution of adverse effects (if warranted). At this time, we assume that NPS would be a consulting/signatory party by virtue of GGNRA's proximity to the SFVAMC Fort Miley Campus and status as a federal agency.

3.1.2 Public Involvement

VA solicited input from the general public through the standard NEPA public involvement process. Opportunities for public comment have already been provided through the posting of a Notice of Intent to Prepare an EIS in the Federal Register and the EIS public scoping meetings. The Draft EIS will be circulated for a 60-day public review period (longer than the standard 45-

day period), and a Draft EIS public meeting will be held during that review period. The Section 106 Baseline Documentation package and Draft FOE will be available via the SFVAMC website, and VA will have copies available for review at the Draft EIS public meeting. Members of the public will be invited to comment on the Section 106 documentation, and their comments will be compiled and provided to SHPO for consideration during SHPO's review of the FOE.

3.2 CONSIDERATION OF ISSUES RAISED THROUGH CONSULTATION AND PUBLIC INVOLVEMENT

At this time, VA has not received any public comments on the Section 106 review process.

Future versions of this document will emphasize the cultural resources issues discussed at public meetings, and, if concerns are raised, discuss steps taken to ensure that public concerns are incorporated into the Section 106 process.

4. DESCRIPTION OF HISTORIC PROPERTIES

4.1 HISTORIC CONTEXTS

This section provides a brief overview of the prehistoric and historic period context of the SFVAMC, reviews investigations that were previously conducted on the SFVAMC, and summarizes previously identified cultural resources.

4.1.1 Prehistoric Archaeological Context

Few archaeological sites have been found in the San Francisco Bay Area that date to the Paleo-Indian Period or the subsequent Lower Archaic (8000 to 5000 years before present [B.P.]) time period, probably due to high sedimentation rates and sea level rises. Archaeologists have, however, recovered a great deal of information from sites occupied during the Middle Archaic Period (5000 to 2500 B.P.). By this time, broad regional subsistence patterns gave way to more intensive procurement practices. Economies were more diversified, possibly including the introduction of acorn processing technology. Populations were growing and occupying more diverse settings.

Permanent villages that were occupied throughout the year were established, primarily along major waterways. The onset of status distinctions and other indicators of growing sociopolitical complexity mark the Upper Archaic Period (2500 to 1300 B.P.). Exchange systems became more complex and formalized, and evidence of regular sustained trade between groups was seen for the first time.

Several technological and social changes characterized the Emergent Period (1300 to 200 B.P.). Territorial boundaries between groups became well established. It became increasingly common that distinctions in an individual's social status could be linked to acquired wealth. In the latter portion of this period (500 to 200 B.P.), exchange relations became highly regularized and sophisticated. The clamshell disk bead became a monetary unit, and specialists arose to govern various aspects of production and material exchange.

The Middle Archaic, Upper Archaic, and Emergent periods can be further broken down according to additional cultural manifestations that are well represented in archaeological assemblages in the San Francisco Bay Area:

- The Windmiller Pattern (5000 to 1500 B.P.) peoples placed an increased emphasis on acorn use as well as a continuation of hunting and fishing activities. Ground and polished charmstones, twined basketry, baked-clay artifacts, and worked shell and bone were hallmarks of Windmiller culture. Widely ranging trade patterns brought goods in from the Coast Ranges and trans-Sierran sources, as well as closer trading partners.

- The Berkeley Pattern (2200 to 1300 B.P.) exhibited an increase in the use of acorns as a food source than was seen previously in the archaeological record. Distinctive stone and shell artifacts differentiated it from earlier or later cultural expressions. Burials were predominantly placed in a tightly flexed position and frequently included red ochre.

- The Augustine Pattern (1300 to 200 B.P.) reflected increasing populations resulting from more intensive food procurement strategies, as well as a marked change in burial practices and increased trade activities. Intensive fishing, hunting and gathering, complex exchange systems, and a wider variety in mortuary patterns were all hallmarks of this period.

4.1.2 Historic Period Context

The earliest documented Euro-American incursions into what is now the City and County of San Francisco occurred in 1776, when a Spanish exploring party led by Juan Bautista de Anza arrived in the area to locate sites for a presidio (military base) and Mission Dolores. By 1836, the small settlement of Yerba Buena sprang up between the presidio and the mission. In 1847, Yerba Buena became known as San Francisco, and its primary function served as a shipping and transportation hub.

The Gold Rush of 1849 transformed the small shipping community, virtually overnight, into a booming city. Within 1 year, the population exploded from 500 to 25,000. The city continued to grow at a brisk pace over the next few decades, as the population steadily increased from less than 150,000 in 1870 to 342,000 by 1900. By the early 1900s, despite a devastating earthquake and fire, San Francisco boasted a population of 350,000 and served as a major port and financial center on the west coast, a position it enjoys well into the 21st century (Kyle et al. 1990).

In 1850, after California's entry into the United States, President Fillmore reserved the land comprising Fort Miley for strategic value because it overlooked the entrance to the San Francisco Bay. It remained relatively unused until the 1860s, when the City of San Francisco purchased 200 acres—including the site of the future Fort Miley—for the municipal Golden Gate Cemetery (also known as the City Cemetery Reservation). In 1893, the U.S. Army obtained 54 acres of the Golden Gate Cemetery land from the city to construct a military reservation and coastal artillery batteries. In 1900, the reservation was named Fort Miley after Lieutenant Colonel John D. Miley, one of the planners of San Francisco's coastal battery network. The Fort Miley post was developed between 1902 and 1906, and included a horseshoe-shaped parade ground and several frame barracks and quarters in the center of the reservation, between the east and west batteries (the current site of the SFVAMC Fort Miley Campus). (See Photographs 1–4 for historic photographs of the Fort Miley post.)

During World War I, the Fort Miley batteries were quickly outdated with the advent of aerial bombardment. Fort Miley is now part of the GGNRA, which is managed by NPS (VA 2003). Bordered by Lands End to the west and Lincoln Park to the north and east, the natural setting of the original military reservation has remained largely intact.

In 1932, VA acquired 29 acres of Fort Miley and began construction of the SFVAMC. When completed, the SFVAMC consisted of several Art Deco buildings that were primarily located in the northern and eastern portions of the site. Few changes occurred at the site until the 1960s, when VA undertook efforts to modernize the SFVAMC through the addition of several new buildings and parking lots, and the modification of existing buildings. (See Photographs 5–10 for historic photographs of the Fort Miley medical center.)

4.2 PREVIOUS INVESTIGATIONS

In 1980, VA conducted a survey of its potential historic properties at the SFVAMC to fulfill the requirements of Section 110 of the NRHP, and concluded that there was an NRHP-eligible historic district in the northeastern portion of the SFVAMC Fort Miley Campus. The district boundaries were altered in 1982 because of the significant construction and renovation work that occurred since the original facility was built. In 1987, the Keeper of the National Register issued a Determination of Eligibility Notification for the SFVAMC. In 2005, a formal NRHP nomination was submitted to the SHPO and the Keeper of the National Register. In May 2005, the SHPO concurred with the finding that the Historic District was eligible for the NRHP under Criterion A in the areas of health and medicine for its association with early 20th century innovative and comprehensive health care for American Veterans, and Criterion C in the areas of architecture and engineering as an early example of a federal complex designed with seismic-resistant building technologies.

In 2008, VA withdrew the original nomination because of physical changes to the SFVAMC Fort Miley Campus, and resubmitted a modified version to the Keeper of the National Register. The updated documentation recommended that the SFVAMC Historic District is eligible under NRHP Criterion A as a site of an early standardized VA hospital, and under Criterion C as an early example of a federal building designed with seismic-resistant buildings technologies and for its Mayan Art Deco-inspired design. The period of significance for the updated district is 1934–1941. The Historic District was listed in the NRHP in April 2009.

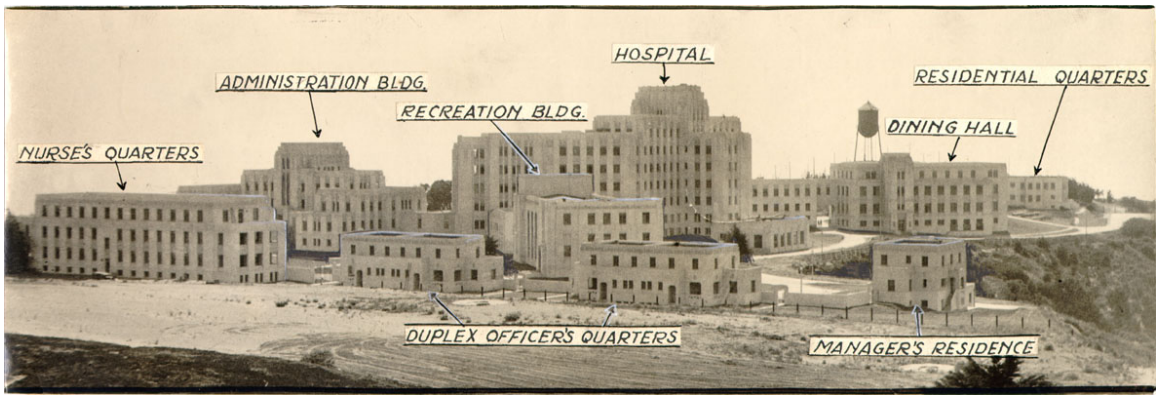
A records search was conducted at the Northwest Information Center (NWIC) in June 2010. The NWIC records search indicated that no archaeological resources, sites, or features of Native American cultural importance have been identified at the SFVAMC. Four prehistoric midden sites have been identified and recorded within approximately 0.25 mile of the SFVAMC Fort Miley Campus. The Campus is within the area that was originally the site of the City Cemetery Reservation. The City Cemetery Reservation included a large portion of present-day Fort Miley, Lincoln Park, and the SFVAMC. Records indicate that the burials were removed in 1908; however, construction activities at the Palace of the Legion of Honor (located approximately 0.25 mile to the northeast) uncovered human remains in 1921 and 1993.

Photograph 1: Fort Miley, 1905. View looking south (photograph courtesy of San Francisco Public Library)

Photograph 2: Demolition of barracks buildings at Fort Miley, 1933 (photograph courtesy of San Francisco Public Library)

Photograph 3: Soldiers testing rangefinder at Fort Miley, 1941 (photograph courtesy of San Francisco Public Library)

Photograph 4: Soldiers in front of battery at Fort Miley, 1963 (photograph courtesy of San Francisco Public Library)

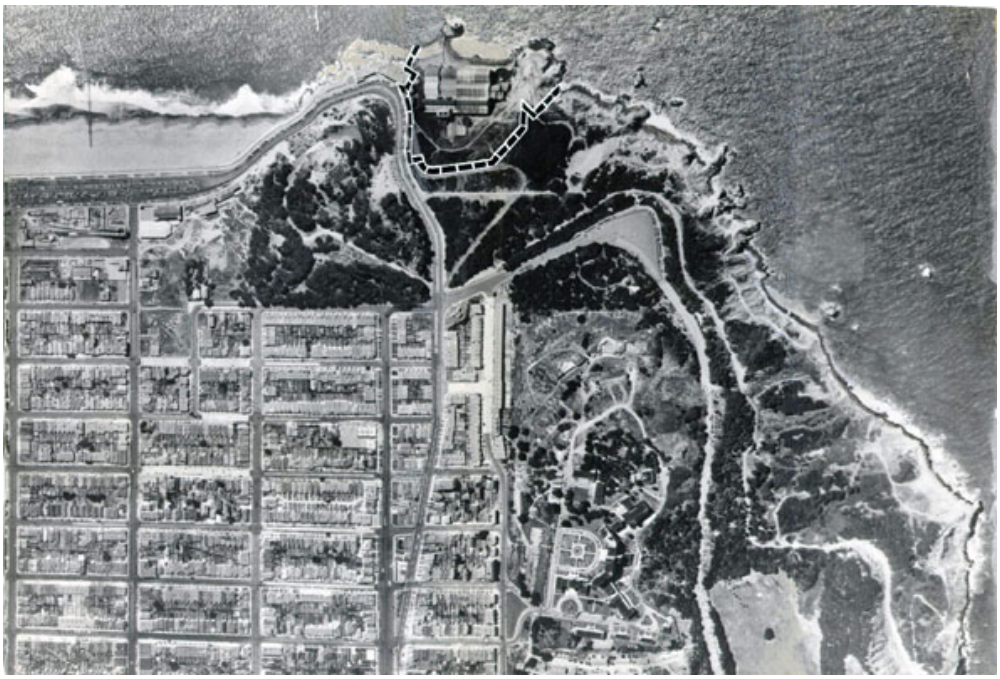


Photograph 5: SFVAMC, 1934, view looking southwest (photograph courtesy of San Francisco Public Library)

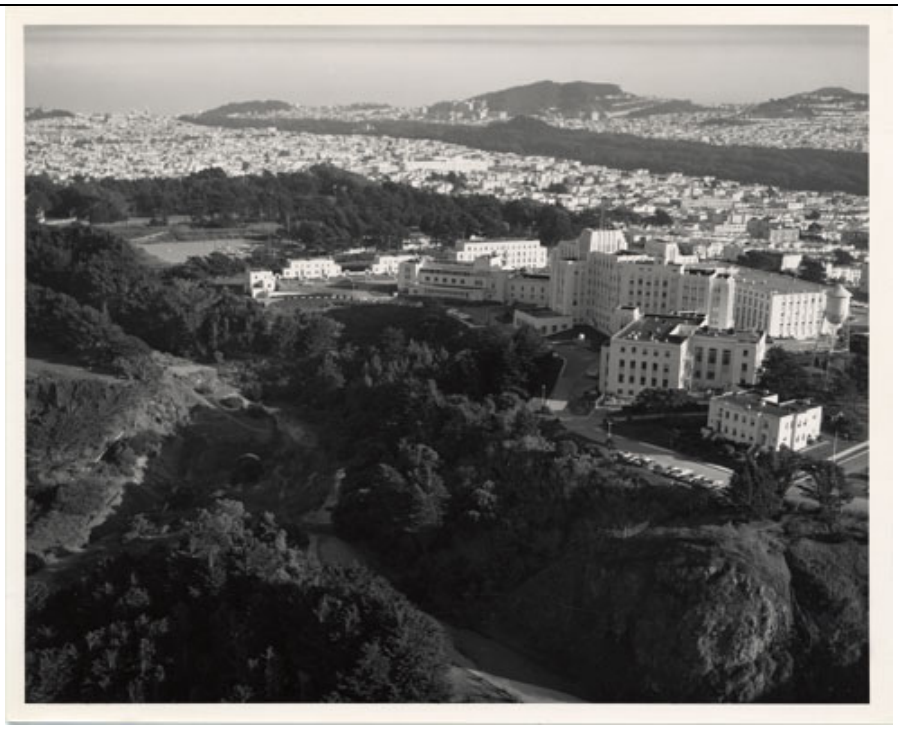
Photograph 6: Aerial view looking north of SFVAMC, 1935 (photograph courtesy of San Francisco Public Library)

Photograph 7: SFVAMC, 1934, view of Building 2 looking northwest (Photograph courtesy of San Francisco Public Library)

Photograph 8: SFVAMC building (number unknown), 1948, showing original window details (photograph courtesy of San Francisco Public Library)



Photograph 9: Aerial photograph of SFVAMC, 1951 (photograph courtesy of San Francisco Public Library)



Photograph 10: Aerial photograph of SFVAMC, looking southeast, 1971 (photograph courtesy of San Francisco Public Library)

Recent investigations on the SFVAMC Fort Miley Campus that were not identified in the NWIC records search include work conducted for the Mental Health Patient Parking Addition (Winzler & Kelly 2010a) and the North Slope Seismic/Geologic Stabilization Project (Winzler & Kelly 2010b).

4.3 PREVIOUSLY IDENTIFIED HISTORIC PROPERTIES

4.3.1 Archaeological Resources

No archaeological resources have been identified directly within the SFVAMC Fort Miley Campus, and as such, the prehistory of the specific Campus location is not known. However, archaeological sites that reflect the character and nature of early Native American occupation of the Campus and surrounding region have been found in the immediate area.

Because most of the SFVAMC Fort Miley Campus is paved or covered in structures or landscaping, assessments have been based on record searches alone, and there have been no specific archaeological investigations. Although prehistoric archaeological sites may once have been present within and near the lands now occupied by the Campus, heavy urban development has likely destroyed or substantially damaged such evidence. In addition, the geotechnical report prepared by Treadwell & Rollo (2010) indicated that most of the Campus has a layer of fill material, 1 to 6 feet deep, overlaying bedrock. For these reasons, the Campus has an overall low sensitivity for the presence of intact prehistoric archaeological sites.

The SFVAMC is sensitive for historic-era archaeological resources because a portion of Fort Miley once stood on the SFVAMC Fort Miley Campus. The SFVAMC is also sensitive for the presence of human remains. Fort Miley once contained the City Cemetery Reservation, which covered present-day Fort Miley, the SFVAMC, and a large portion of Lincoln Park. The burials were removed in 1908, but construction activities at the Palace of the Legion of Honor discovered human remains in 1921 and 1993, indicating that perhaps not all of the human remains were removed.

Although the SFVAMC Fort Miley Campus may have an elevated sensitivity for the presence of historic-era archaeological remains and burials and could also contain prehistoric archaeological remains (although the Campus has low sensitivity for the presence of prehistoric archaeological resources), no historic-era or prehistoric archaeological resources have been identified within the APE.

4.3.2 Fort Miley Military Reservation Historic District

The Fort Miley military reservation was first conceived in 1850, when President Millard Fillmore set aside Point Lobos for military purposes, but the land was not officially acquired from the City and County of San Francisco until 1893. Construction began on the defense fortifications at Fort Miley in 1899, and continued through 1944, when the last gun battery was built.

Rectangular in plan, the Fort Miley Military Reservation historically consisted of three complexes of structures: three gun batteries, searchlight facilities, fire control stations, and earthworks at the west; a gun battery at the east; and the Fort Miley post in the middle, which contained barracks, storehouses, and officers' quarters. In 1932, the Fort Miley military

reservation was divided into two parts when 25 acres (eventually 29 acres total) of land was transferred to VA for the SFVAMC. In 1934, all but one of the buildings and structures that composed the post of Fort Miley were demolished. Fort Miley now surrounds the SFVAMC Fort Miley Campus to the east and the west, and is unofficially divided into two parts: East Fort Miley and West Fort Miley.

The Fort Miley Military Reservation Historic District was listed in the NRHP in 1980, under Criterion A, for its significance at the national level as part of the military defense system of San Francisco. The period of significance is 1892 to 1950. Extant structures and buildings within the Fort Miley Military Reservation Historic District include battery emplacements, fire control stations, searchlight facilities, and an ordnance storehouse.

The gun batteries at Fort Miley, along with Fort Barry on the northern side of the Golden Gate Bridge, represent the last phase of the Endicott period of seacoast defense—a modernization and construction program for coastal fortification that began in 1890. Battery Chester in West Fort Miley and Battery Livingston in East Fort Miley, completed between 1901 and 1903, are significant as the first defense structures constructed within the boundaries of Fort Miley. Constructed in 1902, the Ordnance Storehouse—the only extant building from the Fort Miley post—was moved a short distance to its current location sometime between 1934 and 1942; despite being moved, the Ordnance Storehouse is significant as the sole survivor of the Fort Miley post buildings. Structures and buildings constructed at West Fort Miley during World War II, including the searchlight powerhouse and three fire control buildings, are significant for their association with the continued improvement of harbor defense through World War II. Battery 243, completed in 1944, was the last structure constructed at Fort Miley, and it represents the last phase of the "traditional concept" of coastal defense; Battery 243 was the only 6-inch gun battery of its kind in the GGNRA.

Buildings and structures that have been removed include the following:

- Battery Call, constructed in 1915 in West Fort Miley and salvaged in 1921.
- Searchlights 5 and 6, constructed in 1937 in West Fort Miley and removed at an unknown date.
- Four of the original seven fire control stations, all located in West Fort Miley and built by World War II (removal date unknown).
- Two 3-inch anti-aircraft gun emplacements located near Battery Livingston, constructed in the 1920s (removal date unknown).
- All but one of the buildings that composed the original Fort Miley post.

The NRHP nomination form for Fort Miley does not specifically address character-defining features of the buildings, structures, or landscape, but the nomination notes that Battery Chester's "simple, but impressive architectural lines, its massiveness, and its unique aspect of having gun platforms designed for both 'disappearing' (2) and barbette (1) carriages" contribute to the

significance of the site.[4] Additionally, Battery Livingstone is notable for its "simpl[e] and functional lines, and the massiveness of its earthworks."[5]

The NRHP nomination form describes the overall condition of the site in 1979 as "good," and the integrity of most extant features in the Historic District as moderate to high. A report by Winzler & Kelly notes that Historic District integrity was high in 2010 (Winzler & Kelly 2010a).

4.3.3 SFVAMC Historic District

The NHPA Baseline Documentation package includes the 2009 NRHP nomination, 2011 photo survey, previous Section 106 consultation materials, and an expanded discussion of the character and integrity of the SFVAMC Historic District (AECOM 2011). The following discussion of the district was adapted from the Baseline Documentation, which can be consulted for additional detail.

Construction of the SFVAMC hospital and diagnostic center began in 1933, and the hospital was dedicated in November of 1934. In 1934, the SFVAMC consisted of 21 concrete buildings, designed in the Art Deco style with Mayan-inspired ornamentation. The original SFVAMC Fort Miley Campus was designed by VA architects and built by the Herbert M. Baruch Corporation. The buildings were clustered in the northern and eastern sections of the lushly landscaped Campus to lessen the impact on the adjacent neighborhood, as well as to provide space for patient convalescence and recreation.

A considerable amount of the original SFVAMC budget was devoted to creating lawn areas and semi-formal landscaping around the principal buildings. Other, less ornamental expanses of grass were planted adjacent to most of the other original SFVAMC Fort Miley Campus buildings that were constructed in 1934 or shortly thereafter. These served as buffers between the buildings and the internal circulation system of roads and walkways. The lawns also performed the function of softening the impact of the rather large concrete buildings on the surrounding landscape. Lawns still exist adjacent to Buildings 2, 3, 5, 7, 8, 9, 10, 11, and 18.

The SFVAMC Historic District was determined eligible for listing in the NRHP under Criteria A and C in 1980 by the VA Historic Preservation Officer, which was corroborated by the Keeper of the National Register with a formal Determination of Eligibility Notification, signed in May of 1987. The Historic District was listed in the NRHP under Criteria A and C in April 2009. The 2009 listing states that the district "qualifies under Criteria [sic] C due to its integrity as a very early example of a federal building designed with seismic-resistant building technologies and for the design of its Mayan Art Deco ornamentation. It demonstrates integrity under Criteria [sic] A due to its significance as a site of one of the early standardized VA hospitals" (Bright and Bamburg 2009).

The Historic District contains 14 contributing buildings and structures (1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 18, 20, and the flag pole and base) and nine non-contributing buildings or structures (14, 25, 26, 31, 32, 33, 202, 210, and 212) set on 12 acres of the overall 29-acre SFVAMC Fort Miley

[4] National Park Service. "National Register of Historic Places Inventory – Nomination Form." Report prepared by the National Park Service (1980): 8-2.

[5] Ibid.

Campus (see Exhibit 6, "SFVAMC Historic District"). The nomination is not explicit about which physical or intangible qualities of the district compose the character-defining features of the district; however, extrapolating from the statement of significance, the three character-defining features of the Historic District are described in the following paragraphs.

- The Historic District's ongoing operations as a VA medical facility would be a key character-defining feature that conveys its significance as an early VA hospital.

- The structural system of each of the contributing buildings constructed during the 1934 building campaign would be a seldom seen but critically important quality that allows the Historic District to represent an early example of seismic-resistant building technologies.

- The architectural qualities that convey the Historic District's significance as an example of Mayan Art Deco design include the "play between horizontal and vertical [that] is balanced with bold, horizontal podiums and thick concrete walls playing off delicate terra cotta ornament and strong vertical lines" (NRHP Nomination Section 7, Page 1 of 13). Dramatic massing and proportions, centrally located entrances that are embellished with terra cotta design motifs, towers with stepped parapets projecting above rooflines, and molded and inscribed terra cotta ornamentation that is inspired by historic Mayan designs are all mentioned in the nomination's description of the architectural significance of the Historic District.

The nomination also recognizes that "Several major building campaigns since 1934 have dramatically altered the semi-pastoral character of the SFVAMC Fort Miley Campus by adding over a dozen buildings whose design and locations do not support the design plan of the original Campus. The large size of many of these new buildings, combined with their awkward siting and incompatible materials and design, have harmed the overall integrity of the original Campus. In addition, many of the original 1934 buildings have been unsympathetically altered, particularly those that have received large additions" (Bright and Bamburg 2009).

Some historic landscaping features were removed by the time that the Historic District was listed, including the large garden and horseshoe-shaped driveway for patient drop off located south of Building 2, which had served as the primary landscaped feature on the SFVAMC Fort Miley Campus (see Exhibits 7 A–D, "Historic Development").

A secondary landscaped area east of Building 1 was replaced by surface parking in 1964, and all that remains is the memorial flagpole structure. The triangular patch of lawn fronting Clement Street between 42nd and 43rd Avenues and the strips of lawn buffering Buildings 2, 3, 5, 7, 8, 9, 10, 11, and 18 (all of which are contributors to the Historic District) are all that remain from a once extensively landscaped campus.

There are also several sections of the current SFVAMC Fort Miley Campus that, while not landscaped, feature stands of trees and scrub. These areas are largely confined to the edges of the Campus, on steep slopes or other non-buildable sections. Following the SFVAMC hospital dedication in 1934, all sections of the Campus that were not developed or formally landscaped—including much of the western part of the Campus, the northern slope, and a patch near the water tower—were allowed to grow wild. Although this semi-wild vegetation was not formally planted

and does not contribute to the understanding of the historic uses of Fort Miley or the SFVAMC, it forms a green buffer between the institution, the Outer Richmond neighborhood, GGNRA, and Fort Miley Military Reservation Historic District.

The SFVAMC Historic District is most easily understood when viewed from the open area located between the east side of Building 1, the south side of Building 2, the west sides of Buildings 8 and 9, and from the picnic area and portion of Veterans Drive that borders the north slope between Building 10 and Building 18. From these locations, the viewer primarily sees the historic buildings and how they interrelate, which in turn conveys the facility's significance as a 1930s Veteran's hospital. When viewed from the entry to the SFVAMC Fort Miley Campus, or from the remainder of Veterans Drive (the western and southern segments), the buildings introduced during the 1964 construction campaign are visually dominant, to the point where the historic facility is completely obscured.

5. APPLICATION OF THE CRITERIA OF ADVERSE EFFECT

5.1 CRITERIA FOR ASSESSING PROJECT EFFECTS

5.1.1 Regulatory Framework

National Historic Preservation Act of 1966

The NHPA established the Advisory Council on Historic Preservation (ACHP), authorized the Secretary of the Interior to maintain the NRHP, directed the Secretary of the Interior to approve state historic preservation programs that provide for a SHPO, established a National Historic Preservation Fund program, and codified the National Historic Landmarks program.

Section 106 of the NHPA requires that federal agencies take into account the effects of their actions (referred to as "undertakings" under Section 106) on properties that may be eligible for or listed in the NRHP, and afford the ACHP a reasonable opportunity to comment.

Section 106 of the National Historic Preservation Act of 1966

Section 106 of the NHPA and its implementing regulations (36 CFR 800, as amended in 1999) requires federal agencies to consider the effects of their undertakings, or those they fund or permit, on properties that may be eligible for listing, or are listed in the NRHP.

The regulations implementing Section 106 call for considerable consultation with the SHPO, Indian tribes, and interested members of the public throughout the process. The four principle steps are as follows:

1. Initiate the Section 106 process, including a plan for public involvement (36 CFR 800.3)

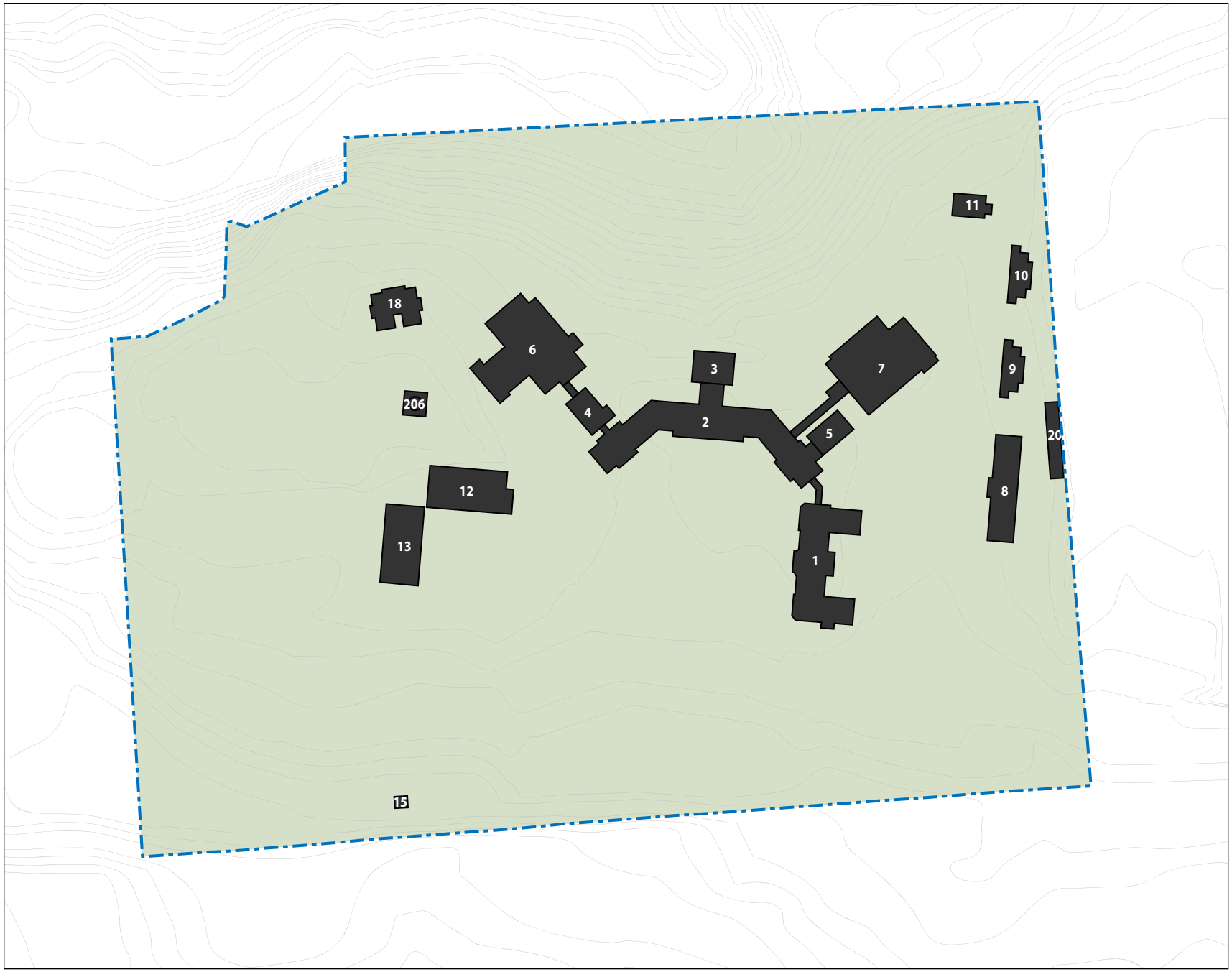
2. Identify historic properties, consisting of those resources within an APE that are eligible for inclusion in the NRHP (36 CFR 800.4)

3. Assess the effects of the undertaking to historic properties in the APE (36 CFR 800.5)

4. Resolve adverse effects (36 CFR 800.6)

Source: AECOM

SFVAMC Historic District **Exhibit 6**



San Francisco VA Medical Center

LEGEND

Site Boundary

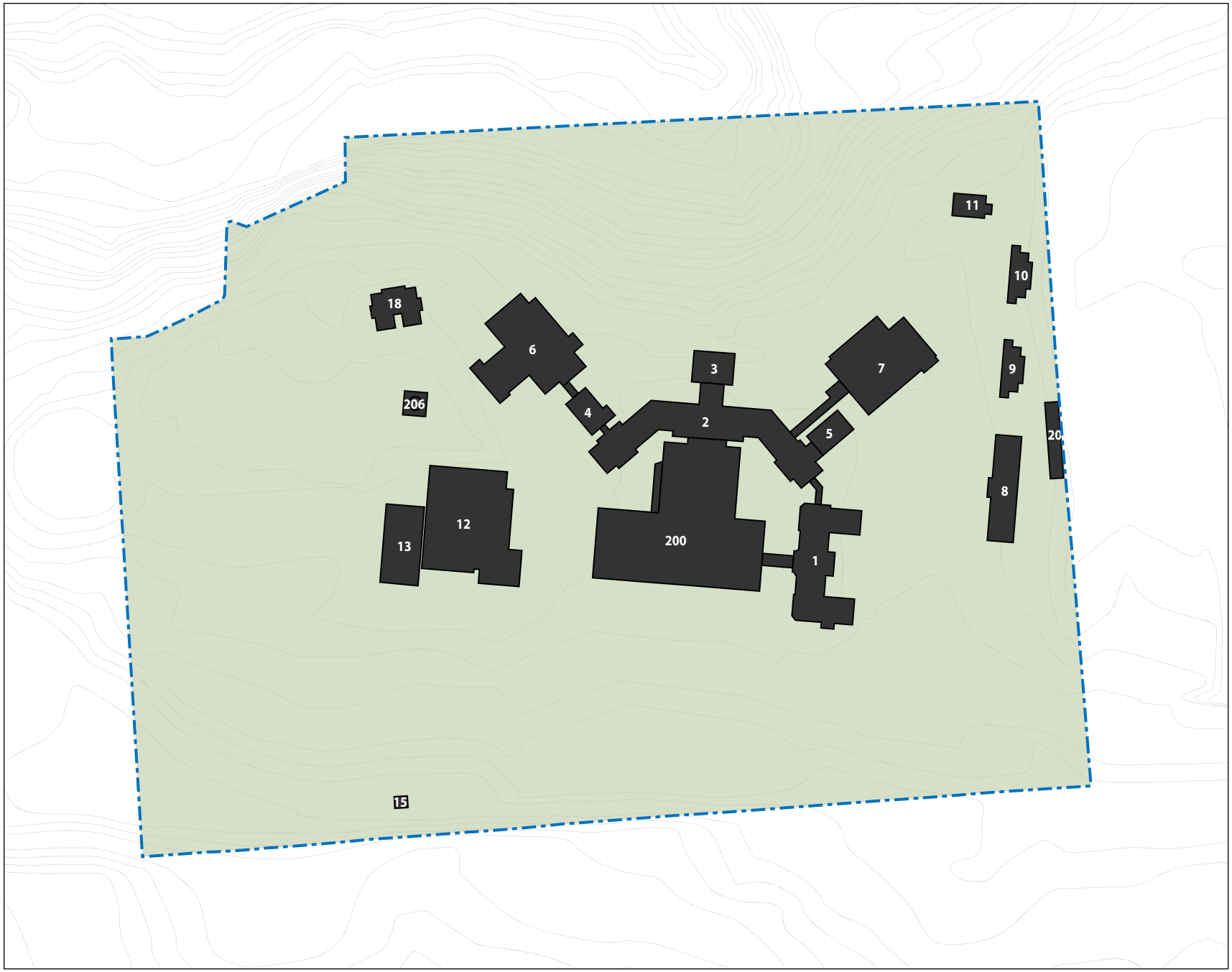
0 50′ 100′ 150′

N

AECOM

Historic Development - 1935

Exhibit 7A



San Francisco VA Medical Center

LEGEND

Site Boundary

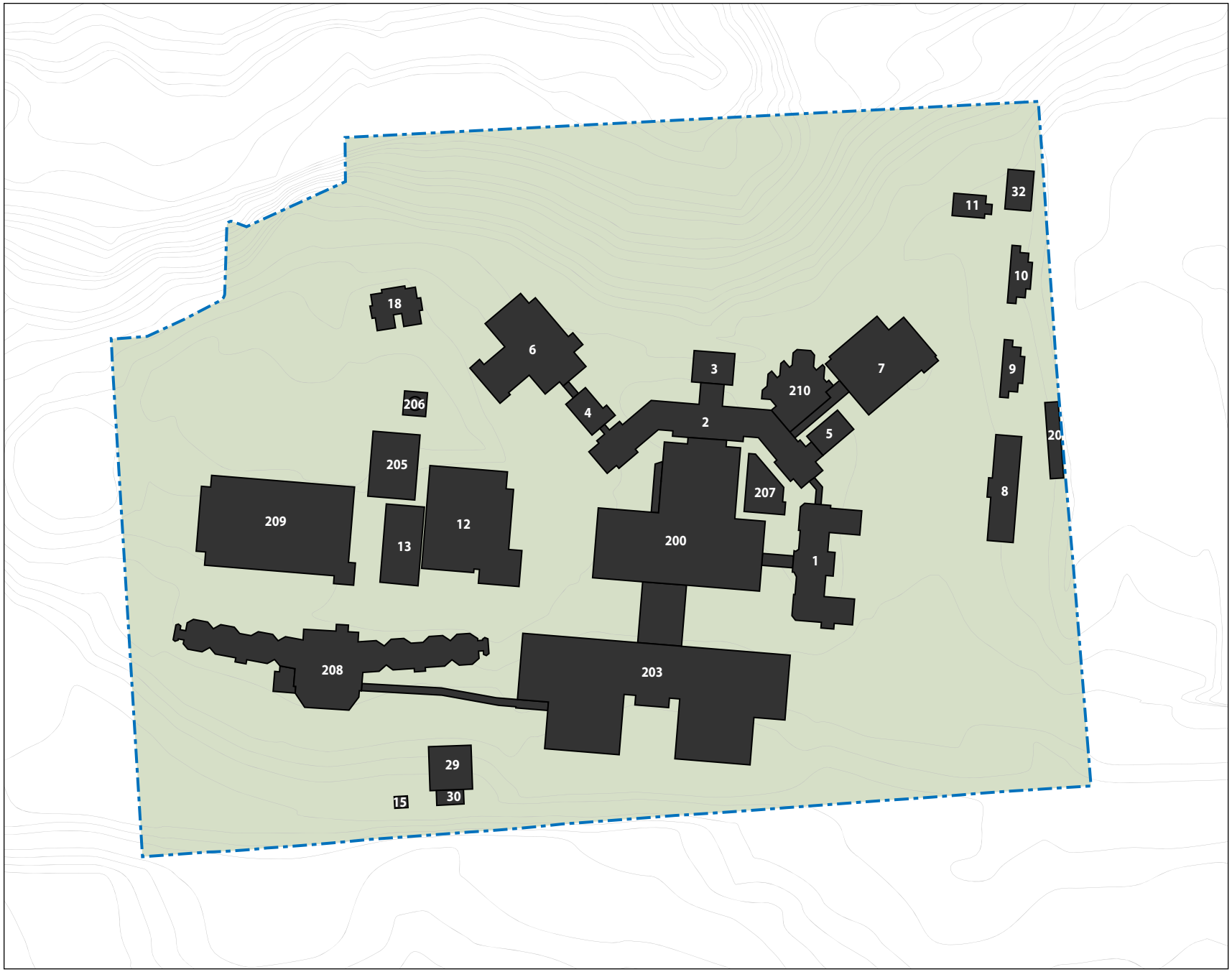
0 50′ 100′ 150′

N

AECOM

Historic Development - 1965

Exhibit 7B



Historic Development - 1995

Exhibit 7C

Historic Development - 2012

Exhibit 7D

Adverse effects on historic properties often are resolved through preparation of a memorandum of agreement (MOA) or a programmatic agreement developed in consultation between the lead federal agency, the SHPO, Indian tribes, and interested members of the public. The ACHP is also invited to participate.

The LRDP is an undertaking that is subject to Section 106 of the NHPA because implementation of this proposed undertaking would be a federal action with the potential to affect NRHP-eligible properties. VA is the lead federal agency responsible for compliance with Section 106 of the NHPA. Section 106 requirements are being met in accordance with the VA Cultural Resource Management Checklist, which outlines the regulatory requirements and documentation standards for project review (VA 2009).

Per the requirements of the NHPA, VA has initiated consultation under Section 106 of the NHPA with the SHPO to solicit comments on the proposed undertaking.

5.2 EFFECTS ASSESSMENT

5.2.1 Assessment Methods

The NHPA Section 106 criteria for assessing adverse effects provide the framework for assessing how projects affect the historic properties located within the APE. According to 36 CFR 800.5, undertakings would have an adverse effect on historic properties if the project impairs the characteristics that qualify a property for inclusion in the NRHP.

Thus, there is a direct relationship between understanding why a resource is eligible for listing in the NRHP, which physical characteristics are important in conveying that historical significance, and the assessment of project effects. This relationship is typically discussed in terms of historical integrity, which is a historic property's ability to convey its significance to a viewer by virtue of retaining those aspects of location, design, materials, workmanship, feeling, setting, and association that are necessary for the viewer to understand the property's historically significant role.

When considering a historic district, the integrity of the whole is considered paramount to the individual integrity of any one component (unless there are individually eligible buildings, structures, or objects present). Thus, in some cases, actions that would result in an impairment of the integrity of an individually eligible building may not be considered actions that would impair the integrity of a historic district, depending on the reasons that the district is eligible in the first place.

Although by no means comprehensive, the following is a list of actions that typically result in a finding of adverse effect on a historic property:

- Physical destruction of or damage to all or part of the property.
- Alteration of the property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation, and provision of handicapped access, that is not consistent with the Secretary of the Interior's Standards for the Treatment of Historic Properties (36 CFR 68) and applicable guidelines.

- Removal of the property from its historic location.
- Changing the character of the property's use or of physical features within the property's setting that contribute to its historic significance.
- Introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features.
- Neglect of the property that causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization.
- Transfer, lease, or sale of the property out of federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance.

5.2.2 Archaeology

Alternative 1: SFVAMC Fort Miley Campus Buildout Alternative

Near-Term Projects

Alternative 1 near-term projects would include the LRDP Phase 1 projects located at the SFVAMC Fort Miley Campus. The archaeological research conducted indicates that no prehistoric or historic-era archeological sites, features, artifacts, or human remains have been documented within the existing SFVAMC Fort Miley Campus and no archaeological resources are known within the Campus. Therefore, no archaeological historic properties would be affected. Although no documented archeological resources or human remains are known to be present within the existing Campus, buried or otherwise obscured and undocumented significant prehistoric and historic-era archeological resources or human burials may be present within the Campus, and thus, could be affected by construction activities.

Therefore, it is recommended that if an MOA is prepared to resolve adverse effects on non-archaeological properties, that stipulations should be included to specify procedures for the identification and treatment of archaeological resources and burials in the event that such resources are discovered during construction activities. An archaeological treatment plan that describes archaeological procedures, notification and consultation requirements, professional qualifications requirements, and procedures for the disposition of artifacts if any are discovered, should be appended to the MOA.

Long-Term Projects

Alternative 1 long-term projects would include the LRDP Phase 2 projects located at the SFVAMC Fort Miley Campus. Archaeological research conducted indicates that no prehistoric or historic-era archeological sites, features, artifacts, or human remains have been documented within the existing Campus, and no archaeological resources are known within the Campus. Therefore, no archaeological historic properties would be affected. Although no documented archeological resources or human remains are known to be present within the existing Campus, buried or otherwise obscured and undocumented significant prehistoric and historic-era

archeological resources or human burials may be present within the Campus, and thus, could be affected by construction activities.

The stipulations in an MOA (if prepared) and an archaeological treatment plan recommended for the near-term projects should also be applied to the long-term projects.

Alternative 2: SFVAMC Fort Miley Campus Plus Mission Bay Campus Alternative

Near-Term Projects

Alternative 2 near-term projects would be the same as Alternative 1 near-term projects. Therefore, the Alternative 2 near-term project effects are the same as those described under Alternative 1 near-term project effects.

Long-Term Projects

Alternative 2 long-term projects would include the LRDP Phase 2 projects located at the SFVAMC Fort Miley Campus (with the exception of the proposed ACC) as well as a new SFVAMC Mission Bay Campus. The Alternative 2 long-term project effects at the SFVAMC Fort Miley Campus would be similar to those described under Alternative 1 long-term project effects at the SFVAMC Fort Miley Campus, with the exception of those related to the proposed ACC. It is currently unknown if any archaeological historic properties are located within the area of the proposed new SFVAMC Mission Bay Campus. Given the highly developed nature of the Mission Bay area, it likely has low sensitivity for subsurface prehistoric resources, but this has not been demonstrated. No archaeological records search, pedestrian survey, or test excavations have been conducted in the area of Mission Bay, where a new campus would possibly be constructed. The Mission Bay area's sensitivity for historic-era archaeological resources is unknown. Project-related ground-disturbing activities could have an adverse effect on both prehistoric and historic-era archaeological properties; however, there is not enough evidence available to determine if specific properties would be affected. Therefore, no finding of effect is possible at this time.

5.2.3 Fort Miley Military Reservation Historic District

Alternative 1: SFVAMC Fort Miley Campus Buildout Alternative

Implementation of the proposed LRDP would not result in any physical changes to the Fort Miley Military Reservation Historic District. Although the LRDP proposes development along the border between East Fort Miley and the SFVAMC Fort Miley Campus, hospital facilities have been located along this border since 1934, and thus, the setting and association would not be substantively changed from current conditions. As such, implementation of the LRDP would result in no adverse effect on the Fort Miley Military Reservation Historic District.

Near-Term Projects

Alternative 1 near-term projects correspond to the LRDP Phase 1 projects. Construction activities would occur outside of and adjacent to the boundaries of the Fort Miley Military Reservation Historic District, including the construction of two new buildings during Phases 1.3 (Building 22 Hoptel) and 1.5 (Building 24 Mental Health Clinic Expansion). These projects would introduce atmospheric and visual changes; however, these changes would be somewhat obscured by the tree canopy (including thick Monterey cypress stands) along the western

boundary of the Fort Miley Military Reservation Historic District. The Fort Miley Military Reservation Historic District would retain its integrity of location, design, character, and setting, and would continue to convey its significance.

Section 6 discusses how individual LRDP phases would affect individual contributing features and other characteristics of the Historic District.

Long-Term Projects

Alternative 1 long-term projects would include the LRDP Phase 2 projects located at the SFVAMC Fort Miley Campus. Construction activities would occur outside of Fort Miley Military Reservation Historic District boundaries, including the construction of one new building during Phase 2.3 (Mental Health Research Expansion). This project would introduce atmospheric and visual changes; however, these changes would be somewhat obscured by the tree canopy (including thick Monterey cypress stands) along the western boundary of the Fort Miley Military Reservation Historic District. The proposed construction would be mostly shielded from view from Fort Miley by landscape and dense vegetation. The Fort Miley Military Reservation Historic District would retain its character-defining features and would continue to convey its significance. Therefore, there would be no adverse effect on the Fort Miley Military Reservation Historic District.

Alternative 2: SFVAMC Fort Miley Campus Plus Mission Bay Campus Alternative

Near-Term Projects

Alternative 2 near-term projects would be the same as Alternative 1 near-term projects. Therefore, the Alternative 2 near-term project effects are the same as those described under Alternative 1 near-term project effects. Alternative 2 near-term projects would have no adverse effect on the Fort Miley Military Reservation Historic District.

Long-Term Projects

The Alternative 2 long-term projects and associated effects at the SFVAMC Fort Miley Campus would be similar to the Alternative 1 long-term projects, except that the proposed ambulatory care center would not be constructed and construction activities would occur in the Mission Bay area, which is far removed from the Fort Miley Military Reservation Historic District. This alternative would have no adverse effect on the Fort Miley Military Reservation Historic District.

5.2.4 SFVAMC Historic District

The projects included in the LRDP are planned projects, and design details have not been developed. Section 106 review of planned projects necessarily focuses on how project activity types may affect historic properties based on an understanding of the type of project and the character of the historic property. As project details are developed, further Section 106 review will be necessary to determine whether adverse effects have been avoided through application of the *Secretary of the Interior's Standards for the Treatment of Historic Properties* or similar preservation treatment guidance.

Overall, projects that do not change the characteristics that qualified the SFVAMC Historic District for listing in 2009 will be assessed as having minimal or no effect on the integrity of the

Historic District. More specifically, projects that diminish a viewer's ability to understand the Historic District's significance as defined in the NRHP nomination—as a medical facility for American Veterans, as a 1930s seismically resistant structural design, or as an example of Mayan Art Deco stylistic influences—would be deemed as having a negative effect on the integrity of the Historic District.

Alternative 1: SFVAMC Fort Miley Campus Buildout Alternative

Implementation of the LRDP would result in an adverse effect on the SFVAMC Fort Miley Campus Historic District due to the cumulative impairment of the integrity of materials, design, feeling, and setting of the District. Although no single LRDP project would result in an adverse effect on its own, the future state of the Historic District will have been impaired by the combination of physical changes to individual contributing buildings, introduction of new facilities within the Historic District, and changes to the setting of the Historic District resulting from the densification of the Campus (see Exhibit 8, "Massing Comparison").

The LRDP includes seismic retrofit of Buildings 1, 5, 6, 7, 8, 9, 10, 11, and 13. With the exception of Building 13, the other eight buildings are SFVAMC Historic District contributors, and proposed activities would be within the SFVAMC Historic District. The seismic retrofit would physically alter the contributors and may require changes to the original design, materials, and workmanship of the buildings and affect their ability to convey their historical significance. Alteration or loss of character-defining elements of contributing buildings during seismic upgrade activities would contribute to the LRDP's adverse effect on the Historic District.

The LRDP also includes new construction within the SFVAMC Historic District, and new construction immediately adjacent to the Historic District. New construction has the potential to introduce design elements, building materials, and massing that would be out of character with the qualities that qualify the Historic District for listing in the NRHP. Disrupting the character of the Historic District with new, incompatible construction would impair the Historic District and contribute to the LRDP's adverse effect on the Historic District.

Two of the projects in the LRDP would require demolition of contributing buildings within the SFVAMC Historic District. The historical Campus has already endured the loss of many of the original buildings, making each of the remaining buildings critical to the Historic District's ability to convey its historical significance. Loss of contributing buildings would contribute to the LRDP's adverse effect on the Historic District.

Section 6 discusses how LRDP activities would result in impairment of individual contributing buildings and other characteristics of the Historic District.

Near-Term Projects

This section includes a description of the Alternative 1 near-term (Phase 1) project components that are proposed under the LRDP. A discussion of effects on individual contributors is provided in Section 6.

Phase 1.1 Building 41 Research

Phase 1.1 would construct a large two-story building adjacent to the SFVAMC Historic District, to the south and slightly west of Building 6. This would introduce a new visual element in close vicinity to the SFVAMC Historic District, but outside of the Historic District boundaries. This phase also includes the demolition of building T-17, a non-conributor to the Historic District.

Phase 1.2 Emergency Operations Center and Building 211 Parking Garage Expansion

Phase 1.2 would construct a five-story parking structure west of Building 18, a contributor. The Emergency Operations Center would be incorporated into the parking garage building. Construction would take place on the western end of the SFVAMC Fort Miley Campus, outside of and to the rear of the SFVAMC Historic District, which is oriented more to the north and facing the San Francisco Bay. The proposed development would occur outside of the Historic District and would introduce new visual elements to the district.

Phase 1.3 Building 22 Hoptel and Seismic Retrofit of Buildings 5, 7, 9, 10, 11, and 13

Phase 1.3 would construct a two-story building behind Buildings 9 and 10 (both contributors) as well as seismically retrofit Buildings 5, 7, 9, 10, 11, and 13. With the exception of Building 13, these buildings are contributors to the SFVAMC Historic District. Also with the exception of Building 13—which is outside of Historic District boundaries—all proposed activities would be conducted within the Historic District. (See Photographs 11–14 for views of Buildings 5, 7, 9, and 10.)

Phase 1.4 Patient Welcome Center and Drop-Off Area

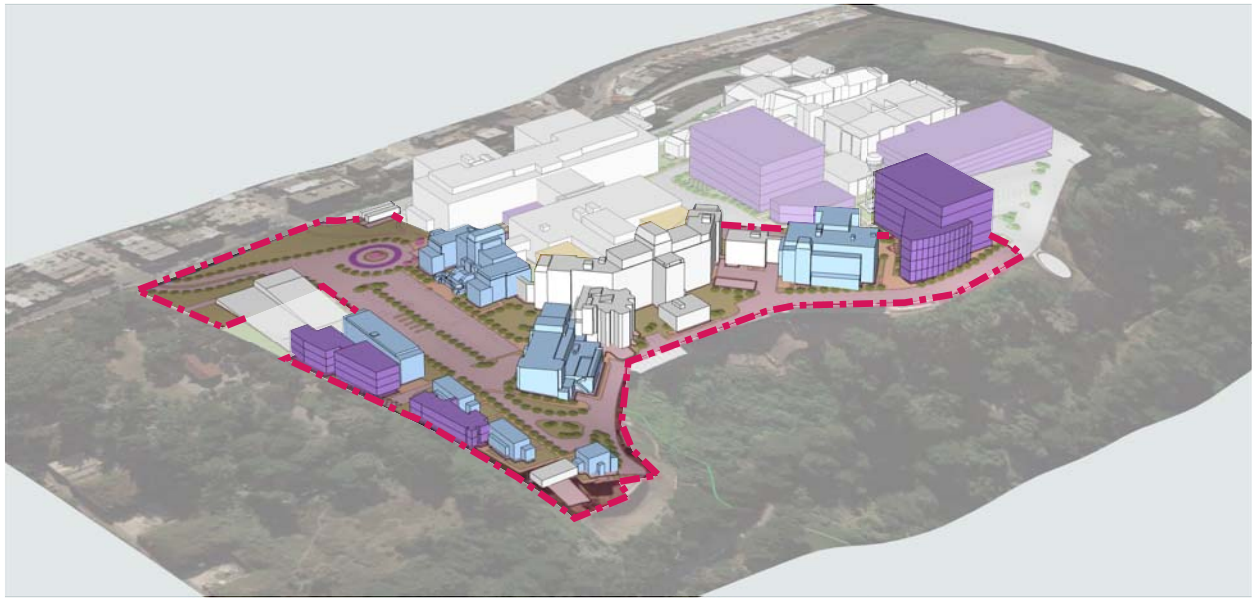
Phase 1.4 would introduce a traffic circle southwest of the south elevation of Building 1, and permanently close through traffic on Veterans Drive. A one-story pavilion would also be constructed on the ground level between Buildings 200 and 203, extending out towards Building 1. A traffic circle and drop-off area that would be introduced in the front would require taking out part of the roadway and replacing it with a garden.

The planned construction would take place inside the SFVAMC Historic District boundaries and would introduce new visual elements to the Historic District. The location of the planned construction within the Historic District has already been altered in recent years through the construction of Buildings 200 and 203, and the parking lot near Building 1. (See Photograph 15 for a view of Building 1.)

Phase 1.5 Building 24 Mental Health Clinic Expansion

Phase 1.5 would construct a three-story building behind Building 8 (a contributor). Building 20 (a contributor) would be demolished as part of this phase. All proposed construction would occur within the SFVAMC Historic District boundaries. The planned development would alter the look and feel of the Historic District by removing a contributing resource and introducing modern elements into a part of the Historic District that is mostly intact and features a high level of integrity of setting and design. (See Photographs 16–17 for views of Buildings 8 and 20.)

Existing Condition



LRDP Buildout

San Francisco VA Medical Center

LEGEND

- Site Boundary
- National Register Historic District Boundary
- New Construction
- Expansion
- Retrofit
- No Action

0 50′ 100′ 150′

N

AECOM

Massing Comparison

Exhibit 8

Photograph 11: Building 5, looking southwest from the East Entrance between Buildings 5 and 7. Building 5 will undergo a seismic upgrade during Phase 1.3 (AECOM 2011).

Photograph 12: Building 7, looking northeast from surface parking lot between Buildings 1 and 9. Building 7 will undergo a seismic upgrade during Phase 1.3 (AECOM 2011).

Photograph 13: Building 9, looking east from parking lot. Building 9 will undergo a seismic upgrade during Phase 1.3. Introduction of Building 22 to the east may impair the integrity of Building 9 (AECOM 2011).

Photograph 14: Building 10, looking north from sidewalk to the west of Building 9. Building 10 will undergo a seismic upgrade during Phase 1.3. Introduction of Building 22 to the southeast may impair the integrity of Building 10 (AECOM 2011).

Photograph 15: Building 1, looking east from the future location of the Welcome Center. During Phase 1.4, a traffic circle will be introduced southwest of Building 1. Building 1 will undergo a seismic upgrade during Phase 2.4 (AECOM 2010).

Photograph 16: Building 8, looking southeast from the parking lot. Building 8 will undergo a seismic upgrade during Phase 2.4. Introduction of Buildings 23 and 24 to the east may impair the integrity of Building 8 (AECOM 2011).

Photograph 17: Building 20, looking northeast from driveway behind (east of) Building 8. Building 20 will be demolished during Phase 1.5 (AECOM 2010).

Photograph 18: Building 18, looking southwest. Building 18 will be demolished during Phase 2.4 (AECOM 2010).

Landscaping and Open Space Areas

As part of this alternative, several trees would be removed and replaced with trees that are more adaptable to the climate. None of the individual trees within the Historic District are contributors.

The LRDP includes a Landscape Concept to provide guidance for future landscape improvements throughout the existing SFVAMC Fort Miley Campus, within and outside of the SFVAMC Historic District boundaries. The goals of the Landscape Concept are to:

- Reinstate a landscape character of dignity, quality, and professionalism that honors America's Veterans and communicates the excellent standards of the Campus.
- Create a landscape that supports health and healing.
- Promote good relations with Campus neighbors.
- Create a welcoming environment.
- Integrate sustainability.

According to the NRHP nomination, the SFVAMC Fort Miley Campus originally included extensive and semi-formal landscaping throughout the site. Major landscaping included a large garden and horseshoe-shaped patient drop-off driveway near the entry to Building 2, and landscaping east of Building 1 (Bright 2008). Most of the original Campus landscaping has been removed, and currently, only remnants of the original hardscape and vegetation remain in place, including patches of lawn and some individual trees that are not character-defining features. The removal of this formal landscaping has resulted in an overall loss of integrity to the SFVAMC Historic District's landscaping, and any sense of cohesion involving the original Campus landscaping has been lost.

The goals of the Landscape Concept are consistent with the design intent of the historical landscaping plan for the Campus, which included a formal layout that welcomed patients and visitors and that encouraged healing through enjoyment of the gardens and grounds. Future landscape treatments that adhere to these goals are likely to benefit the overall integrity of the Historic District by reintroducing a more cohesive and formal landscape plan that supports health and healing and establishes a welcoming environment.

Long-Term Projects

This section includes a discussion of the Alternative 1 long-term projects (Phase 2) that are proposed under the LRDP. A discussion of effects on individual contributors is provided in Section 6.

Phase 2.1 Operating Room Expansion (D-Wing)

This phase would include an addition of a D-wing on Building 200, which is located outside of the Historic District. The planned construction would occur outside and to the south of the SFVAMC Historic District boundaries. The proposed development would occur outside of the Historic District and would introduce new visual elements adjacent to the district; however, the

construction would not substantially alter the existing scale and character of the SFVAMC Fort Miley Campus.

Phase 2.2 IT Support Space Expansion (Building 207)

This phase would construct an addition on Building 207, located outside of the Historic District. The planned construction would occur outside and to the south of the SFVAMC Historic District boundaries.

Phase 2.3 Building 23 Mental Health Research Expansion

Phase 2.3 would construct a three-story building behind Building 8 (a contributor). The planned development would alter the look and feel of the SFVAMC Historic District by introducing modern elements into a part of the Historic District that is mostly intact and features a high level of integrity of setting and design. (See Photograph 16 for a view of Building 8.)

Phase 2.4 Building 40 Research

Phase 2.4 would construct a 5-story building and would involve the demolition of Buildings 12, 14, 18, 21, and T-23. With the exception of Building 18, these are all non-contributors to the SFVAMC Historic District. It would also include the seismic retrofit of Buildings 1, 6, and 8, which are contributors to the Historic District. The planned construction would take place on the west side of the existing SFVAMC Fort Miley Campus, both within and immediately outside of the SFVAMC Historic District boundaries. (See Photograph 18 for a view of Building 18.)

Phase 2.5 Ambulatory Care Center

This phase would include the construction of a five-story building, with a basement, in the northwestern part of the SFVAMC Fort Miley Campus. This would introduce a new visual element in close vicinity to the SFVAMC Historic District, but outside of the Historic District boundaries.

Swing Space (Temporary)

Phase 2 would entail bringing temporary, modular units into the northwest parking lot of the SFVAMC Fort Miley Campus, outside of and to the rear of the SFVAMC Historic District. No permanent changes would be made to the Historic District or to its setting.

Alternative 2: SFVAMC Fort Miley Campus Plus Mission Bay Campus Alternative

Near-Term Projects

Alternative 2 near-term projects would be the same as Alternative 1 near-term projects. Therefore, the Alternative 2 near-term project effects are the same as those described under Alternative 1 near-term project effects.

Long-Term Projects

The Alternative 2 long-term projects and associated effects at the SFVAMC Fort Miley Campus would be similar to the Alternative 1 long-term projects, except that the proposed ACC would not be constructed.

The Alternative 2 long-term projects would also involve the development of a new SFVAMC Mission Bay Campus at an as-yet unknown specific location. The eligibility status of buildings in the Mission Bay area is not currently known. Historic resources surveys for a new Mission Bay Campus site would be completed in conjunction with any future, project-level environmental review at the time a specific site or sites are identified.

Depending on where the project is located and the results of the historic resources surveys conducted for project-level review, proposed development associated with a new SFVAMC Mission Bay Campus could occur in close proximity to historic resources that are 50 years old or older. Given the age of these resources, it is possible they are historically significant and eligible for listing in the NRHP. Proposed development could lead to physical demolition, destruction, relocation, or alteration of potentially significant historic resources. Because the significance of historic resources and their eligibility for listing in the NRHP is not currently known, it is possible that this alternative may impair historic properties and result in an adverse effect.

To minimize adverse effects on significant historic properties, avoidance would be first attempted. However, appropriate mitigation measures for this alternative would need to be developed upon further consultation with SHPO and in conjunction with any future, project-level environmental review.

6. CONCLUSIONS

VA has determined that the proposed undertaking (LRDP) will have an adverse effect on the following historic properties:

- SFVAMC Historic District

See Table 2, “Historic Properties Affected,” for a detailed list of properties and associated effects.

Pursuant to 36 CFR 800.6(a) and 800.6(b)(1), VA will consult with SHPO and Section 106 signatory consulting parties to resolve adverse effects.

The LRDP FOE serves only to obtain SHPO concurrence that the proposed undertaking (LRDP) will have an adverse effect on historic properties. Mitigation measures will be discussed in a separate consultation document along with a draft agreement document. The agreement document will stipulate the terms under which the proposed undertaking will be implemented in order to take into account its effects on historic properties.

Table 2: Historic Properties Affected

Property	LRDP Planned Activities	Effect Analysis
Archeological Sites		No historic properties affected
No known archaeological sites present in the APE		The potential to encounter buried resources will be addressed through consultation with the SHPO.
Fort Miley Military Reservation Historic District		No adverse effect on the Historic District because its integrity of location, design, materials, workmanship, feeling, and association would not be impaired, and the changes in setting would be consistent with the current setting (adjacent hospital facilities).
West Fort Miley - Battery Chester (FI-1, FI-2)		New construction would not be visible.
West Fort Miley - Battery 243 (FI-4)		New construction would not be visible.
West Fort Miley - Searchlight Powerhouse (FI-3)		New construction would not be visible.
West Fort Miley - Fire Control Station (FI-350)		New construction would not be visible.
West Fort Miley - Fire Control Station (FI-351)		New construction would not be visible.
West Fort Miley - Fire Control Station (FI-352)		New construction would not be visible.
West Fort Miley - Unidentified earthworks		New construction would not be visible.
East Fort Miley - Battery Livingston (FI-329)	Phase 1.3 (Building 22) Phase 1.5 (Building 24 Mental Health Clinic Expansion)	New construction would not be visible.
East Fort Miley - Battery Springer (FI-330)	Phase 1.3 (Building 22) Phase 1.5 (Building 24 Mental Health Clinic Expansion)	New construction would not be visible.
East Fort Miley - Ordnance Storehouse (FI-304)	Phase 1.3 (Building 22) Phase 1.5 (Building 24 Mental Health Clinic Expansion)	Introduction of visual element consistent with current setting (hospital buildings) and screened by boundary line foliage.

Property	LRDP Planned Activities	Effect Analysis
SFVAMC Historic District		Adverse effects would occur due to the introduction of new visual elements, demolition of contributing elements of the District, and physical alteration of contributing elements (unless projects are designed in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties)*.
Building 1 (Administration, Research)	Phase 1.4 (Patient Welcome Center and Drop-Off Area) Phase 2.4 (Seismic Retrofit of Buildings 1, 6, 8)	Physical alteration of the building (seismic upgrade). The feeling and setting of Building 1 would be changed by the introduction of the patient drop-off and closure of Veterans Drive to through traffic. However, this is likely to result in an improvement to the historical integrity of setting and feeling by reintroducing a formal landscape element evocative of those that were lost with the 1965 building campaign.
Building 2 (Administration, Clinics, Research)	Phase 2.1 (Operating Room expansion D-wing) Phase 2.2 (IT Support Space expansion-Building 207)	Vertical expansion of the buildings currently located south of Building 2 would cause a minimal change to the integrity of setting and feeling in comparison with the introduction of massive Building 200 in the original landscaped entry to Building 2.
Building 3 (Engineering)	None	The LRDP does not include physical alterations of Building 3, or any project activities in the vicinity that would affect the setting, feeling, or association of Building 3.
Building 4 (Research)	Phase 1.1 (Building 41 Research) Phase 2.4 (Demolition of Buildings 12, 18, 21, T-23 and removal of Building 14) Phase 2.5 (Ambulatory Care Center)	The introduction of Building 41 and the replacement of Building 12 with the Ambulatory Care Center will alter the setting of Building 4 by introducing a concentration of building masses where currently, there is visual and pedestrian openness. This change in setting would not impair the architectural qualities of the Historic District, but would contribute to the overall impairment of the District's integrity of feeling and setting.
Building 5 (Clinic, Research)	Phase 1.3 (Seismic Retrofit of Buildings 5, 7, 9, 10, 11, and 13)	Physical alteration of the building (seismic upgrade).

Property	LRDP Planned Activities	Effect Analysis
Building 6 (Research, Library)	Phase 1.1 (Building 41 Research) Phase 1.1 (Removal of Building T-17) Phase 2.4 (Seismic Retrofit of Buildings 1, 6, 8) Phase 2.4 (Building 40 Research) Phase 2.4 (Removal of Buildings 14, 18, 21, T-23, and 12) Phase 2.5 (Ambulatory Care Center)	Physical alteration of the building (seismic upgrade). The integrity of feeling and setting would be improved through the removal of Buildings 14, T-17, 21, and 23. However, the integrity of feeling and setting would be impaired by the introduction of Buildings 40 and 41, which would introduce a concentration of building masses to an area that is less densely developed. Currently, Building 6 is the most prominent building at the western end of the Historic District. Buildings 40 and 41 would change the scale, massing, and site plan rhythm of the western end of the Historic District.
Building 7 (Various)	Phase 1.3 (Seismic Retrofit of Buildings 5, 7, 9, 10, 11, and 13)	Physical alteration of the building (seismic upgrade).
Building 8 (Mental Health Clinic)	Phase 1.5 (Building 24 Mental Health Clinic Expansion) Phase 1.5 (Removal of Building 20) Phase 2.3 (Building 23 Mental Health Research Expansion) Phase 2.4 (Seismic Retrofit of Buildings 1, 6, 8)	Physical alteration of the building (seismic upgrade). Demolition of Building 20, a contributor to the Historic District, would alter the setting and association of the building. Introduction of two buildings behind Building 8 may impair the design, workmanship, feeling, and setting of Building 8 if the new designs visually overpower the historic building or if connections between the buildings are not designed sensitively.
Building 9 (Hoptel)	Phase 1.3 (Seismic Retrofit of Buildings 5, 7, 9, 10, 11, and 13) Phase 1.3 (Building 22 Hoptel)	Physical alteration of the building (seismic upgrade). Building 22 would be built immediately adjacent to Buildings 9 and 10 and had the potential to affect the design, workmanship, feeling and setting of those two buildings or the Historic District. However, Building 22 has been designed in accordance with the Secretary of the Interior's treatment standards. Previous project-level Section 106 consultation concluded that Building 22 would have no adverse effect on the Historic District.

Property	LRDP Planned Activities	Effect Analysis
Building 10 (Hoptel)	Phase 1.3 (Seismic Retrofit of Buildings 5, 7, 9, 10, 11, and 13) Phase 1.3 (Building 22 Hoptel)	Physical alteration of the building (seismic upgrade). Building 22 would be built immediately adjacent to Buildings 9 and 10 and had the potential to affect the design, workmanship, feeling and setting of those two buildings or the Historic District. However, Building 22 has been designed in accordance with the Secretary of the Interior's treatment standards. Previous project-level Section 106 consultation concluded that Building 22 would have no adverse effect on the Historic District.
Building 11 (Research/Offices)	Phase 1.3 (Seismic Retrofit of Buildings 5, 7, 9, 10, 11, and 13) Phase 1.3 (Building 22 Hoptel)	Physical alteration of the building (seismic upgrade).
Building 18 (Office)	Phase 2.4 (Removal of Buildings 14, 18, 21, T-23, 12)	Demolition of the building, which is a contributor to the Historic District.
Building 20 (Storage)	Phase 1.5 (Removal of Building 20)	Demolition of the building, which is a contributor to the Historic District.
Flag Pole and Base	None	This object would remain in its original location and continue to be maintained and used.

7. REFERENCES

AECOM. 2011. *National Historic Preservation Act Baseline Documentation.* San Francisco, CA.

Bright, Douglas. 2008. *National Register of Historic Places Resubmitted Nomination for San Francisco Veterans Affairs Medical Center.* Submitted to San Francisco Veterans Affairs Medical Center by Urban Programmers, San Jose, CA.

Bright, D., and B. Bamburg. 2009. *National Register of Historic Places Registration Form for San Francisco Veterans Affairs Medical Center.* Submitted to San Francisco Veterans Affairs Medical Center by Urban Programmers, San Jose, CA. Executed by the Keeper of the National Register, National Park Service, on April 20, 2009.

Kyle, D. E., M. B. Hoover, H. E. Rensch, E. G. Rensch, and W. N. Abeloe. 1990. *Historic Spots in California.* Stanford, CA: Stanford University Press.

Treadwell & Rollo. 2010 (September). *Geotechnical Investigation, VMU Replacement and Expansion Project, San Francisco VA Medical Center (SFVAMC), San Francisco, California.*

U.S. Department of Veterans Affairs (VA). 2003. *National Register of Historic Places Registration Nomination, Veteran Affairs Medical Center, San Francisco, CA (662).* On file with the Keeper of the National Register of Historic Places, National Park Service, Washington, DC.

———. 2009 (December). VA Cultural Resources Management Checklist. Available: <https://www.historicpreservation.gov/web/guest/va106checklist>. Accessed July 26, 2011.

Winzler & Kelly. 2010a. *Finding of No Significant Impact: San Francisco VA Medical Center Mental Health Patient Parking Addition Project No. 662-CSI-612*. Santa Rosa, CA. Submitted to U.S. Department of Veterans Affairs.

———. 2010b. *Environmental Assessment: San Francisco VA Medical Center: North Slope Seismic/Geologic Stabilization Project No. 662-609.* Santa Rosa, CA. Submitted to U.S. Department of Veterans Affairs.

APPENDIX A: CONSULTING PARTIES CORRESPONDENCE

Correspondence with SHPO, Native Americans, and any other consulting parties or the public (e.g., local governments)

DEPARTMENT OF VETERANS AFFAIRS
Medical Center
4150 Clement Street
San Francisco, CA 94121

In Reply Refer To: 662/001

March 20, 2012

Milford Wayne Donaldson, FAIA
State Historic Preservation Officer
Office of Historic Preservation
Department of Parks & Recreation
1725 23rd Street, Suite 100
Sacramento, CA 95816

RE: Section 106 Initiation for the San Francisco Veterans Affairs Medical Center Long Range Development Plan

Dear Mr. Donaldson:

The U.S. Department of Veterans Affairs (VA) is preparing a Long Range Development Plan (LRDP) for the San Francisco Veterans Affairs Medical Center (SFVAMC) at Fort Miley in San Francisco, California. The SFVAMC is located on a 29-acre site in northwest San Francisco (see Exhibits 1 and 2) and is a major tertiary care facility that serves as a VA regional referral center for specialized medical and surgical programs. The SFVAMC serves Veterans of the San Francisco Bay Area and northern California's coastal counties. The 12-acre SFVAMC National Register Historic District lies within the boundaries of the SFVAMC Fort Miley Campus.

Per the requirements of the National Historic Preservation Act (NHPA), VA is contacting you to initiate consultation under Section 106 of the NHPA and to solicit your comments on the development of the LRDP. VA intends to seek concurrence with the Finding of Effect (FOE) on the LRDP following public input during the NEPA process.

Previous Coordination

VA contacted the California Office of Historic Preservation (OHP) on April 22, 2011 to initiate Section 106 consultation for the SFVAMC Institutional Master Plan (IMP). The OHP responded with a letter on June 16, 2011 requesting the following information: a map depicting recent, current, and future project areas and descriptions of each project; copies of the most recent master plan and National Register nomination for the SFVAMC Historic District; updated photographs of all contributing buildings; and an assessment addressing effects of recent, current, and future projects on the Historic District's contributors and overall integrity.

VA delivered copies of the IMP and the National Register nomination to the State Historic Preservation Officer (SHPO) in September 2011. In December 2011, VA hand delivered copies of baseline documentation for the SFVAMC, which included the rest of the information requested by the SHPO in June 2011. Also in December, VA met with OHP personnel at the SFVAMC to review the baseline documentation and tour the site. Following the meeting on site, VA submitted a summary of the December meeting to the SHPO and announced its intent to initiate Section 106 consultation for the LRDP. This letter fulfills the last of the requested items, which was to initiate formal consultation under Section 106 for the master plan, which is moving forward as the LRDP in place of the previous IMP.

Proposed Undertaking

The mission of the Veterans Health Administration (VHA) branch of VA is to "Honor America's Veterans by providing exceptional health care that improves their health and well-being." In fulfillment of this mission, VHA provides comprehensive, integrated healthcare services to Veterans and other eligible persons pursuant to the provisions of the Veteran's Health Care Eligibility Reform Act of 1996 (Public Law 104-262) and other related statutory authority and regulations. VA health care facilities provide a broad spectrum of medical, surgical, and rehabilitative care. The SFVAMC Campus carries out the mission of VHA by providing for care of military Veterans in the San Francisco Bay Area and Northern California by providing necessary medical center and research space.

Since 1930, the VA healthcare system has grown from 54 hospitals to include 152 medical centers, more than 1,400 outpatient clinics; 135 Community Living Centers (nursing home care units); and 48 domiciliaries.[1] The number of Veterans requiring VA health benefits has grown during the last decade. The upward trend in Veterans (both wounded and non-wounded) results in a corresponding increase in the demand for medical facilities, including research space, on VA medical center campuses.

VA constructed and continues to operate the SFVAMC, located at Fort Miley in San Francisco, California (see Exhibit 1). Fort Miley was established as a Coastal Defense Battery in the 1893. Approximately 29 acres of land were transferred from U.S. Army to VA in 1932 for construction of a new veterans hospital and diagnostic center to provide health care options to the San Francisco Bay Area Veteran population. This area became the SFVAMC in 1934.

SFVAMC is the only VA Medical Center in San Francisco County and also serves Veterans of the North Coast of California. The SFVAMC is currently a 1.2 million-square-foot facility that includes a 124-bed tertiary care hospital, Primary and Specialty Care services, and a 120-bed Community Living Center. The SFVAMC is considered an aged facility with the need for retrofitting and expansion. The most recent third party Facility Condition Assessment details needed physical and structural improvements. The SFVAMC is also severely deficient in space, according to standard VA Space Criteria. According to the VHA Space Calculator, the SFVAMC the current estimated need is for an additional 600,000 square feet of medical facility space in order to adequately serve San Francisco Bay Area and North Coast Veterans through the year 2030.

The San Francisco VA Medical Center serves a Veteran population of more than 179,000 Veterans in Marin, Napa, Sonoma, Lake, Mendocino, Humboldt, San Francisco and San Mateo Counties. In fiscal year 2011, the Medical Center treated over 37,000 unique patients with over 326,000 outpatient visits and 5,600 inpatient stays. The San Francisco VA Medical Center has a long history of conducting cutting edge research, establishing innovative medical programs, and providing compassionate care to Veterans. SFVAMC has National Centers of Excellence in the areas of Epilepsy Treatment; Cardiac Surgery; Post Traumatic Stress Disorder; HIV; and Renal Dialysis. It has many other nationally recognized programs including: the Parkinson's Disease Research, Education, and Clinical Center; the Hepatitis C Research and Education Center; the Mental Illness Research & Education Clinical Center; and the Western Pacemaker and AICD Surveillance Program. The Medical Center was selected to head the Southwest Regional Epilepsy Center of Excellence. This Center provides epilepsy care, supports the training and educational needs of the network, and manages a VA epilepsy registry. It has been designated as one of only five VA Centers of Excellence in Primary Care Education and selected as a Community Resource and Referral Center, one of only 12 locations designed to serve homeless and at-risk for homeless Veterans and their families.

The Medical Center has been affiliated with the University of California, San Francisco (UCSF), School of Medicine for over 50 years. All physicians are dually accredited by SFVAMC and UCSF School of Medicine. SFVAMC currently has 189.2 residency and fellow positions and 40 allied health care

[1] A domiciliary provides residential rehabilitation treatment programs for a wide range of problems including: medical, psychiatric, vocational, educational, and social.

professionals. Annually, more than 700 UCSF School of Medical School Students from 36 programs receives training at the Medical Center.

SFVAMC has the largest funded research program in the Veterans Health Administration with $79 million in research expenditures in fiscal year 2011. Areas of particular interest are: prostate cancer, aging, oncology, cardiovascular disease, Hepatitis C, breast cancer, PTSD, substance abuse, neurological diseases, health services research, and advanced medical imaging. The Medical Center is one of the few medical centers in the world equipped for studies using both whole-body magnetic resonance imaging (MRI) and spectroscopy, and is the site of VA's National Center for the Imaging of Neurodegenerative Diseases.

Summary of Proposed Undertaking

The proposed undertaking is an LRDP that supports the mission of SFVAMC and provides for the health care needs of Bay Area and North Coast Veterans. The LRDP includes new development as well as retrofitting existing buildings and structures that house patient care, research, administrative, and hoptel[2] functions, as well as parking. Implementation of the LRDP would occur in phases over a 20-year timeframe through the year 2030. For a more detailed description of the LRDP alternatives, including information regarding square footage and phasing, see enclosures.

Based on the extensive input from the public and interested agencies, we have determined that an LRDP is the more appropriate planning tool for our purposes. As such, we will supplant the previous Institutional Master Plan, and we are in the process of preparing the LRDP. The first public review of the LRDP is scheduled to take place at the same time as the public Draft EIS. Input from your office provided through the Section 106 consultation process will also be incorporated into the LRDP.

Purpose of and Need for the Undertaking

The purpose of the LRDP is to establish the road map for the facility development projects necessary to meet the mission of VHA. VHA has identified a need for retrofitting existing buildings to the most recent seismic safety requirements and for an additional currently estimated 600,000 square feet of medical facility space to meet the needs of all San Francisco Bay Area and North Coast Veterans over the next 20 years.

SFVAMC, the only VA medical center in San Francisco County, has major space and parking deficiencies at the Fort Miley Campus. The mission of the SFVAMC is to be a major primary and tertiary health care center providing cost-effective and high-quality care to eligible Veterans in the San Francisco Bay Area and North Coast. The SFVAMC strives to deliver needed care to Veterans while contributing to health care knowledge through research. In addition, the SFVAMC is designated as the Bay Area's Federal Coordinating Center (FCC) and a ready resource for Department of Defense (DOD) backup in the event of a national emergency. New major construction initiatives would transform the SFVAMC, providing seismic improvements and additional facility space over the next 20 years. The LRDP is needed in order for VA to adequately serve the greater San Francisco Bay Area and North Coast.

The overarching goals of the LRDP include:

- Enhance the SFVAMC Campus' function as a vital medical center for the Veterans in need;
- Construct a state-of-the-art medical facility to serve Veterans well into the future; and
- Provide appropriate space for research, clinical, administrative, and educational programs.

The specific objectives of the LRDP are to:

- Address the estimated 600,000 square foot space deficiency at the SFVAMC;

---

[2] A hoptel is an overnight, shared lodging facility for eligible Veterans receiving health care services. This temporary lodging is available to Veterans that need to travel 50 or more miles from their home to the SFVAMC Fort Miley Campus.

- Retrofit existing buildings to the most recent seismic safety requirements to meet current VA Seismic Design Requirements (VA Directive H-18-8), in compliance with Executive Order 12941;
- Provide appropriate space to conduct research;
- Expand clinical inpatient and outpatient primary & specialty care for San Francisco Bay Area and North Coast Veterans;
- Improve the efficiency of clinical and administrative space through renovation and reconstruction;
- Meet patient privacy standards and Americans with Disability Act (ADA) requirements;
- Expand parking to meet current and future demand;
- Improve internal and external Campus circulation, utilities, and infrastructure; and
- Maintain/improve public transit access to the SFVAMC Campus.

Project Alternatives

In parallel with coordination of Section 106 review, the VA is conducting review under the National Environmental Policy Act (NEPA) with preparation of an Environmental Impact Statement (EIS). NEPA regulations require that an EIS contain a description of a proposed action and the alternatives considered. Agencies are directed to use the NEPA process "to identify and assess the reasonable alternatives to proposed actions that will avoid or minimize adverse effects of these actions upon the quality of the environment" (40 Code of Federal Regulations [CFR] 1500.2[e]). Alternatives found to be unreasonable do not need to be evaluated in an EIS.

The proposed action assessed in the EIS for SFVAMC is the renovation, expansion, and operation of the SFVAMC Fort Miley Campus to serve Veterans in the San Francisco Bay Area and the North Coast. After consideration of a variety of alternatives through the planning process and eliminating alternatives determined to be infeasible, three alternatives were derived that would allow for continued operation of SFVAMC over the next 20 years:

- Alternative 1: SFVAMC Fort Miley Campus Buildout Alternative
- Alternative 2: SFVAMC Fort Miley Campus Plus Mission Bay Campus Alternative (see Exhibit 3)
- Alternative 3: No Action Alternative

At this time there is no preferred alternative. The VA will select a preferred alternative and finalize the LRDP once it has gained input from the public and coordinating agencies through the NEPA and Section 106 processes. The December 2011 Baseline Documentation provided an overview of recent, current, and future projects; those tables are enclosed with this letter for reference.

Area of Potential Effects

The LRDP will include planned improvements within and adjacent to the SFVAMC Historic District and adjacent to the Fort Miley Historic District, a listed NRHP district that is administered by the Golden Gate National Recreational Area (GGNRA). The proposed archaeological and architectural areas of potential effects (APEs) have been drawn to include the entire SFVAMC Fort Miley Campus, which encompasses the construction footprint and all construction areas and any buildings or structures adjacent to those areas where potential LRDP-related effects may occur (see Exhibit 4).

Due to the close proximity of the Fort Miley Historic District boundary, there is some potential to indirectly affect setting, feeling, or association of the Historic District through implementation of the LRDP at the SFVAMC. This potential is significantly reduced on the north and northwest sides of the SFVAMC Fort Miley Campus, due to a dramatic drop in topography that renders the Campus difficult to see from that

portion of the adjacent Fort Miley Military Reservation Historic District. Thus, the architectural APE extends into a portion of Fort Miley to the northeast and east of the SFVAMC Fort Miley Campus. The architectural APE also extends southwest of the Campus to include residential buildings immediately adjacent to the SFVAMC boundary to account for potential effects to setting, feeling, and association of these buildings.

Plan for Public Involvement

In accordance with our responsibilities under both Section 106 and NEPA, the VA has identified a process for soliciting public comments on the environmental review documents that will, in turn, facilitate the incorporation of comments into the LRDP and the LRDP EIS. This process includes coordination with agencies and organizations with a demonstrated interest in heritage resources or in the SFVAMC Fort Miley Campus. It also includes providing members of the public with similar interests an opportunity to comment on the identification of historic properties and finding of effect, and taking those comments into consideration during consultation with the SHPO under Section 106.

During the early stages of this project, the VA identified organizations that have a demonstrated interest in the treatment of historic properties in San Francisco. These early efforts included NEPA scoping meetings held in October 2010 and again in April 2011, and individual meetings held with the GGNRA and the City/County of San Francisco in late 2011. Based on these meetings, as well as input previously provided by your office and by our consultants, the following parties will be notified of their opportunity to participate in the Section 106 process. At a minimum, the following organizations will be notified:

- City and County of San Francisco (Certified Local Government)
- San Francisco Veterans Affairs Commission
- National Park Service, Western Regional Office
- Golden Gate National Recreational Area
- Planning Association for the Richmond
- Friends of Lands End
- California Preservation Foundation
- National Trust for Historic Preservation, Western Regional Office
- NCIRE (The Veterans Health Research Institute) Board of Directors
- UCSF Medical School
- California Palace of the Legion of Honor
- Presidio Trust
- San Francisco County Veterans Service Officers

The VA will solicit input from the general public through our standard NEPA public involvement process. Opportunities for public comment have already been provided through the posting a Notice of Intent to Prepare an EIS and the EIS public scoping meetings. We plan to circulate the public Draft EIS for a 60-day review period (longer than the standard 45 day period) and hold a draft EIS public meeting during that review period. During that period, the Section 106 Baseline Documentation package and draft Finding of Effect will be available via our website, and we will have copies available for review at the draft EIS public meeting. At the public meeting, members of the public will be invited to comment on the Section 106 documentation, and their comments will be compiled and provided to SHPO for consideration during your review the Finding of Effect report.

These activities may lead to the identification of consulting parties who would become signatories to the agreement document that may be developed during the resolution of adverse effects (if warranted). There are no known federally recognized tribes affiliated with the Fort Miley area, and so there are no Tribal Historic Preservation Officers to consult. The Native American Heritage Commission will be contacted to request a list of tribal representatives who may have an interest in this location; these representatives will be included in the notification of the NEPA draft EIS public meeting. At this time, we assume that the GGNRA would be a consulting/signatory party by virtue of their proximity to the Campus and their status as a federal agency.

Identification of Historic Properties

The SFVAMC Fort Miley Campus was originally part of U.S. Army, Fort Miley. Fort Miley was a coastal artillery battery that the U.S. Army constructed in the late 19th century to protect the City of San Francisco from potential naval attacks. In 1932, the VA acquired 29 acres of Fort Miley and began construction of the SFVAMC. When completed, the SFVAMC consisted of several Art Deco buildings primarily located in the northern and eastern part of the SFVAMC site. Few changes occurred at the site until the 1960s, when the VA undertook efforts to modernize the SFVAMC through the addition of several new buildings and parking lots and the modification of existing buildings.

Previous Studies
Several previous studies have been prepared for the SFVAMC Fort Miley Campus, including an initial determination of eligibility in 1981 and National Register of Historic Places (NRHP) nominations in 2005 and 2008. The SFVAMC Historic District was listed in the National Register in April 2009 as significant under NRHP Criterion A as a site of an early standardized VA hospital and under Criterion C as an early example of a federal building designed with seismic-resistant buildings technologies and for its Mayan Art Deco design. The period of significance for the updated district is 1934-1941. In December 2011, VA Consultants AECOM prepared NHPA baseline documentation for the SFVAMC, including descriptions of recent, current, and future projects and documentation of historic properties. (A baseline documentation report was provided to the SHPO in December 2011.)

A facilities-wide survey of archeological resources has not been conducted at the existing SFVAMC Fort Miley Campus, and, as such, the prehistoric nature of the specific Campus location is not known. The SFVAMC has conducted archeological surveys for project-level reviews and found no archeological resources within the project areas; the SHPO concurred with each of those findings. Archeological sites have been found in the immediate area of the SFVAMC Fort Miley Campus and reflect the character and nature of early Native American occupation of the Campus and surrounding region.

SFVAMC Historic District
Construction of the SFVAMC hospital and diagnostic center began in 1933, and the hospital was dedicated in November 1934. In 1934, the SFVAMC consisted of twenty-one concrete buildings designed in the Art Deco style with Mayan inspired ornamentation. The original campus was designed by VA architects and built by the Herbert M. Baruch Corporation. The buildings were clustered in the northern and eastern sections of the campus in order to lessen the impact on the adjacent neighborhood, as well as to provide space for patient convalescence and recreation. Several major building campaigns since 1934 have dramatically altered the semi-pastoral character of the campus by adding over a dozen buildings whose design and locations do not support the design plan of the original campus. The large size of many of these new buildings, combined with their awkward siting and incompatible materials and design, have affected the overall integrity of the original campus. In addition, many of the original 1934 buildings have been unsympathetically altered, particularly those that have received large additions. The boundaries of the Historic District do not include most of the latter non-significant buildings.

Projects proposed under the LRDP will affect buildings and structures within the SFVAMC Historic District. The Historic District contains 14 contributing buildings and structures (1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 18, 20 and 27) and 8 non-contributing buildings or structures (14, 25, 26, 31, 32, 33, 210, and 202) set on 12 acres of the overall 29-acre Campus.

Fort Miley Military Reservation Historic District
There is another historic district adjacent to the existing SFVAMC Fort Miley Campus that is considered part of the affected environment for historic resources. The Fort Miley Military Reservation Historic District surrounds the Campus to the east and the west. Fort Miley was listed on the National Register in 1980 as part of the Golden Gate National Recreation Area. The NRHP Historic District is divided into two parts as a result of the 1932 transfer of 25 acres (eventually 29 acres total) of land to VA for construction of the Campus. Despite being divided by the site of the former post of Fort Miley, the surviving batteries still

remain in a historic district located in two parts: East Fort Miley and West Fort Miley. A growth of thick vegetation obscures some views from both portions of the Historic District. Fort Miley is significant for its association with the early 20th century coastal defense system on the West Coast. Fort Miley Military Reservation retains a high level of integrity, particularly around its battery walls.

Finding of Effect

The VA has contracted with AECOM to assist with the preparation of Section 106 coordination materials and public involvement tasks for the undertaking (the LRDP). At this time, we anticipate that the Baseline Documentation previously provided to your office will serve as the technical studies supporting the identification of historic properties. Our next submittal to your office will be a Finding of Effect (FOE) report that discusses previous historic properties identification efforts at SFVAMC, and analyzes the effects of the LRDP on historic properties (both archeological and architectural). Section 106 criteria for adverse effect will be applied to determine whether the LRDP has adequately provided for the protection of historic properties as part of the LRDP's goals, guidelines, and phased development plans, or whether there are aspects of the LRDP that, if implemented, could impair the integrity of historic properties within the APE.

This analysis will be based on a thorough review of the LRDP. As mentioned previously, based on the extensive input from the public and interested agencies, we have determined that an LRDP is the more appropriate planning tool for our purposes. As such, we are shelving the previous Institutional Master Plan and are in the process of preparing the LRDP. The first public review of the LRDP is scheduled to be released at the same time as the public Draft EIS.

Recognizing that an historic district is more than just a sum of its buildings, the LRDP's proposed landscaping, traffic circulation, and construction plans will be assessed for their potential to adversely affect the SFVAMC Historic District or other historic properties in the APE. The FOE will also consider the potential for the proposed construction projects to disturb archaeological resources and the potential for visual impacts on adjacent historic properties such as the Fort Miley Military Reservation Historic District.

Summary

The VA would like to initiate consultation on the SFVAMC LRDP in accordance with Section 106 requirements of the NHPA. We request your comments and concurrence with the definition of the undertaking, proposed approach for Section 106 coordination documents (Finding of Effect), and the delineation of the APEs. We are also interested in streamlining the Section 106 public involvement process with the NEPA process, as afforded by the Section 106 regulations, and would appreciate the opportunity to discuss this approach described above.

Should you have any questions about this project, please contact Ken Carrico, AIA, Chief, Engineering Service at ken.carrico@va.gov or (415) 725-4470.

Sincerely,

Lawrence H. Carroll
Medical Center Director

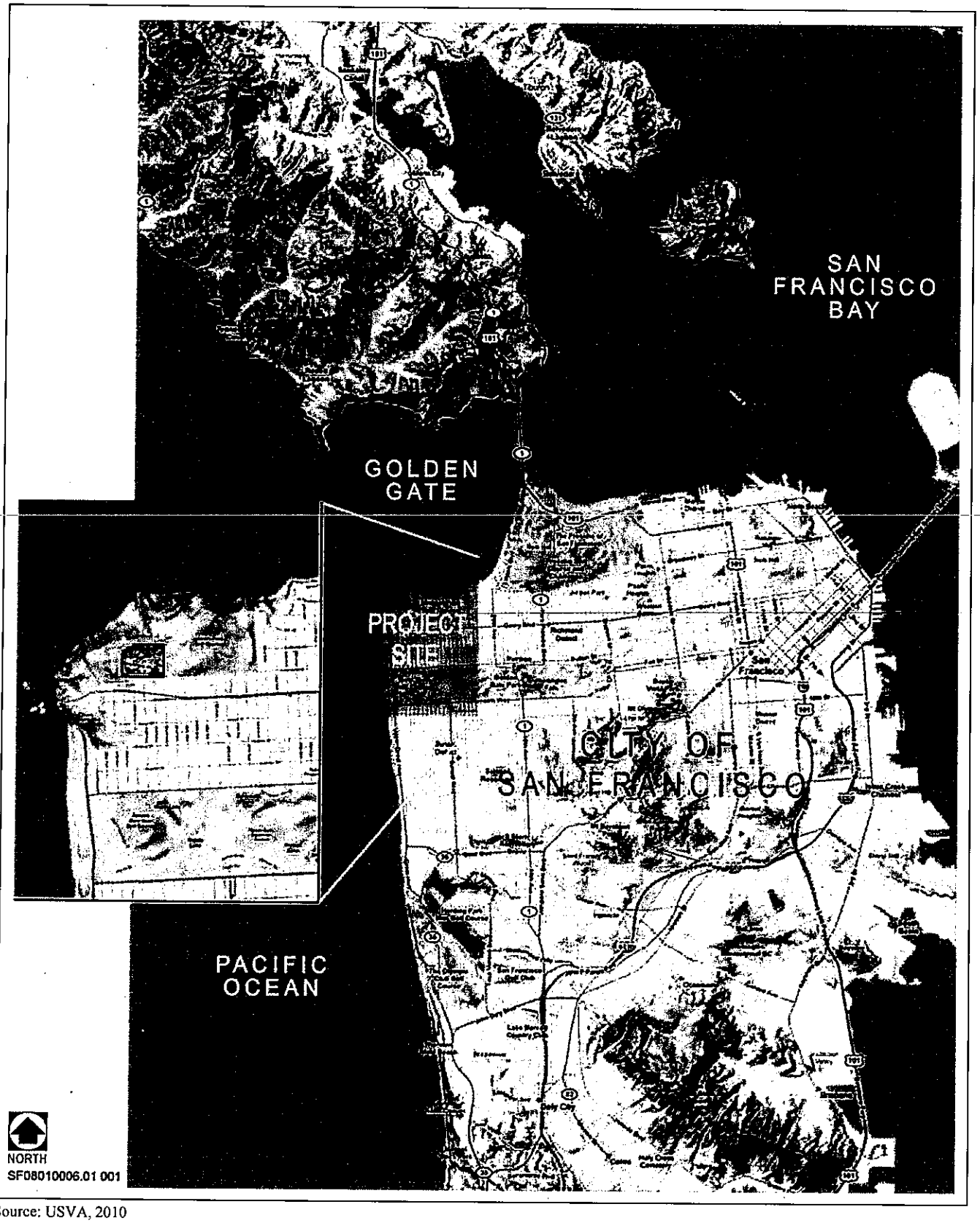
Enclosures: Exhibit 1 (Location of SFVAMC Fort Miley Campus within Urban Context of San Francisco)
Exhibit 2 (Existing SFVAMC Fort Miely Campus)
Exhibit 3 (Location of Off-site Portion of EIS Alternative 2)
Exhibit 4 (Archaeological and Architectural Areas of Potential Effect)
Exhibit 5 (SFVAMC Historic District)
Tables 2, 3, and 4 from the December 2012 Baseline Documentation

CC:

Doug Pulak
Deputy Federal Preservation Officer
Historic Preservation Office (00CFM1)
Office of Construction & Facilities Management
Department of Veterans Affairs
810 Vermont Avenue, NW
Washington, DC 20420

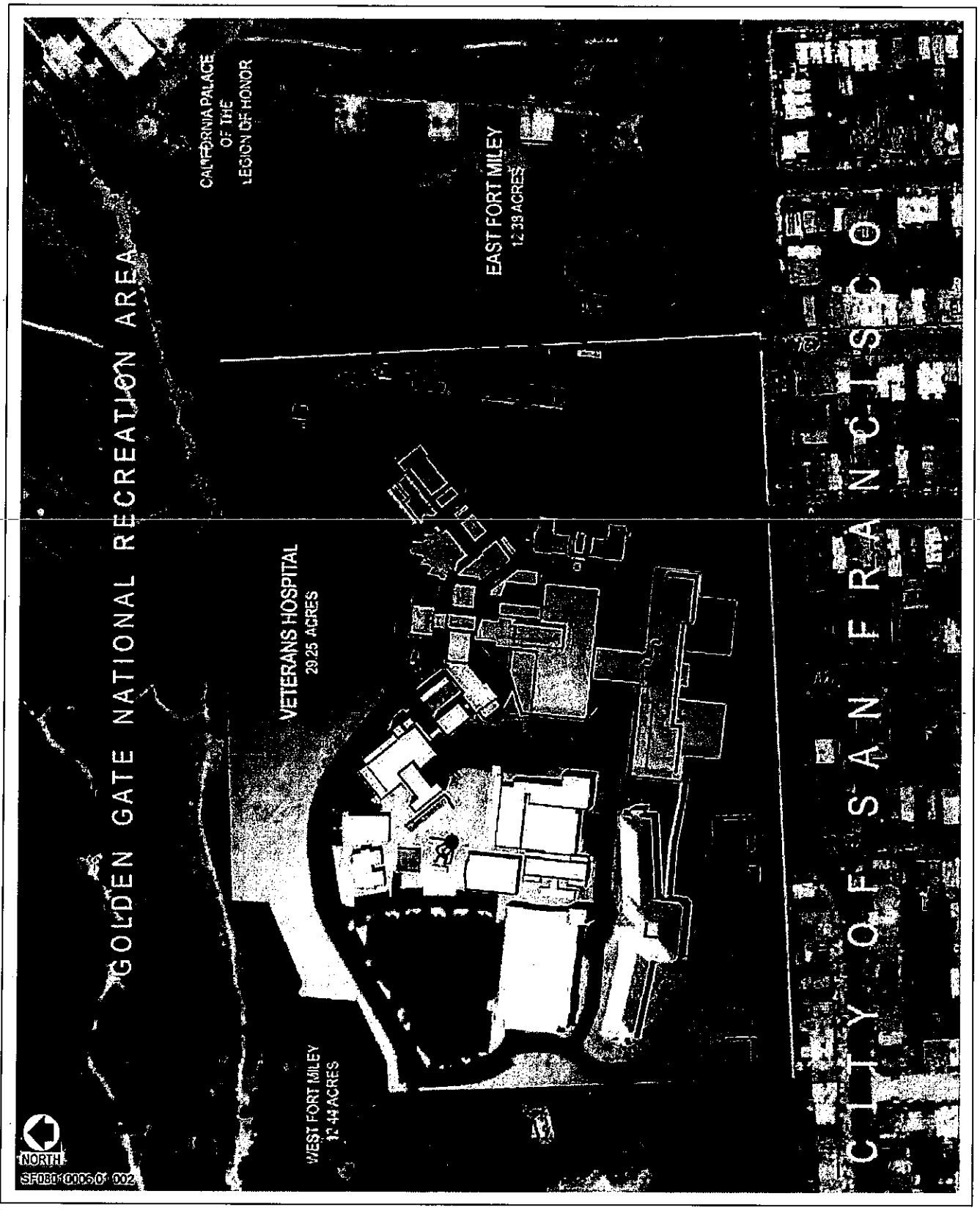
Brian Lusher
Advisory Council on Historic Preservation
Old Post Office Building
1100 Pennsylvania Avenue, NW, Suite 803
Washington, DC 20004

Paul Scolari, Ph.D., Historian and American Indian Liaison
National Park Service, Golden Gate National Recreation Area
Building 101, Fort Mason
San Francisco, CA 94123



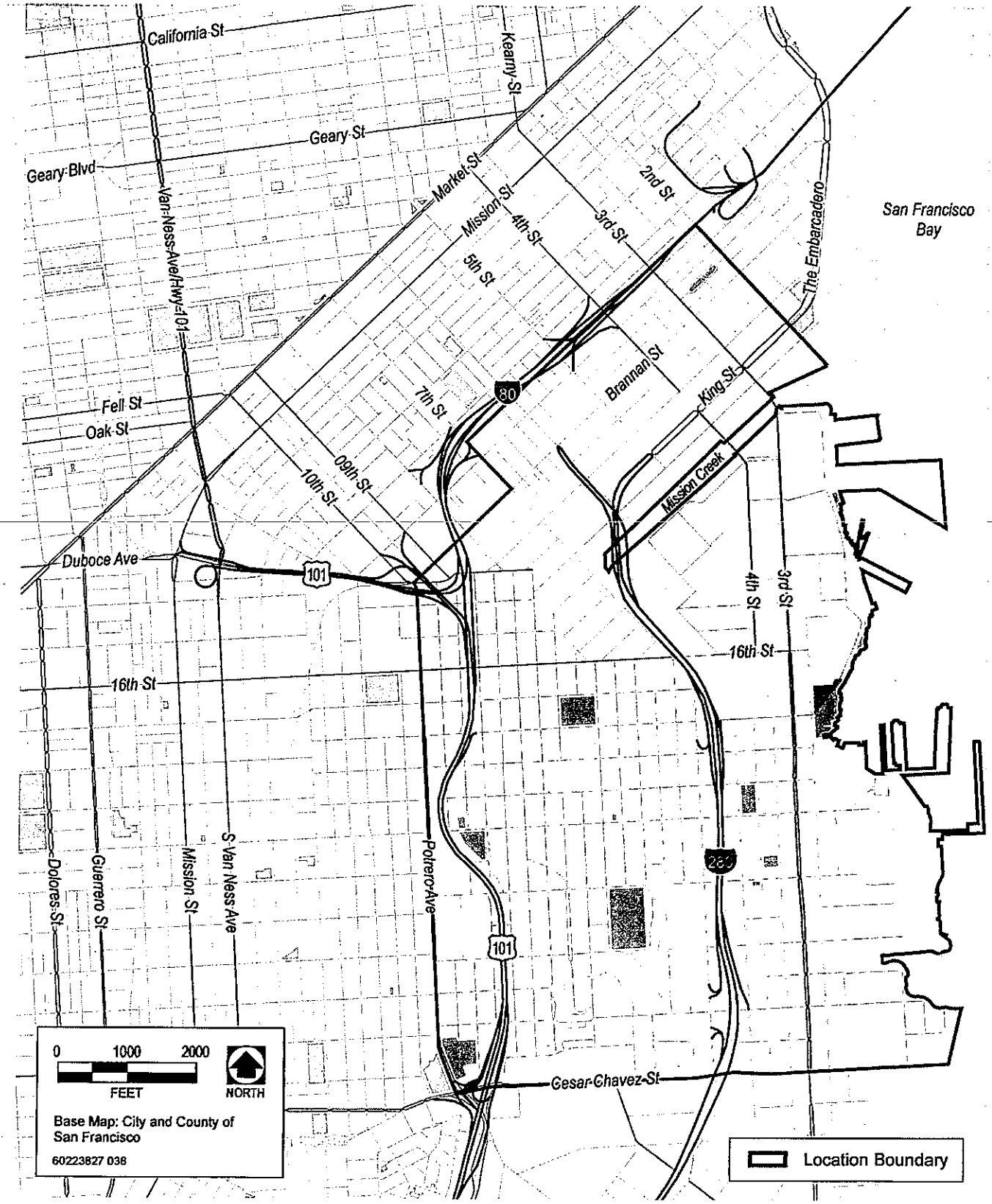
Source: USVA, 2010

Exhibit 1: **Location of SFVAMC Fort Miley Campus within Urban Context of San Francisco**



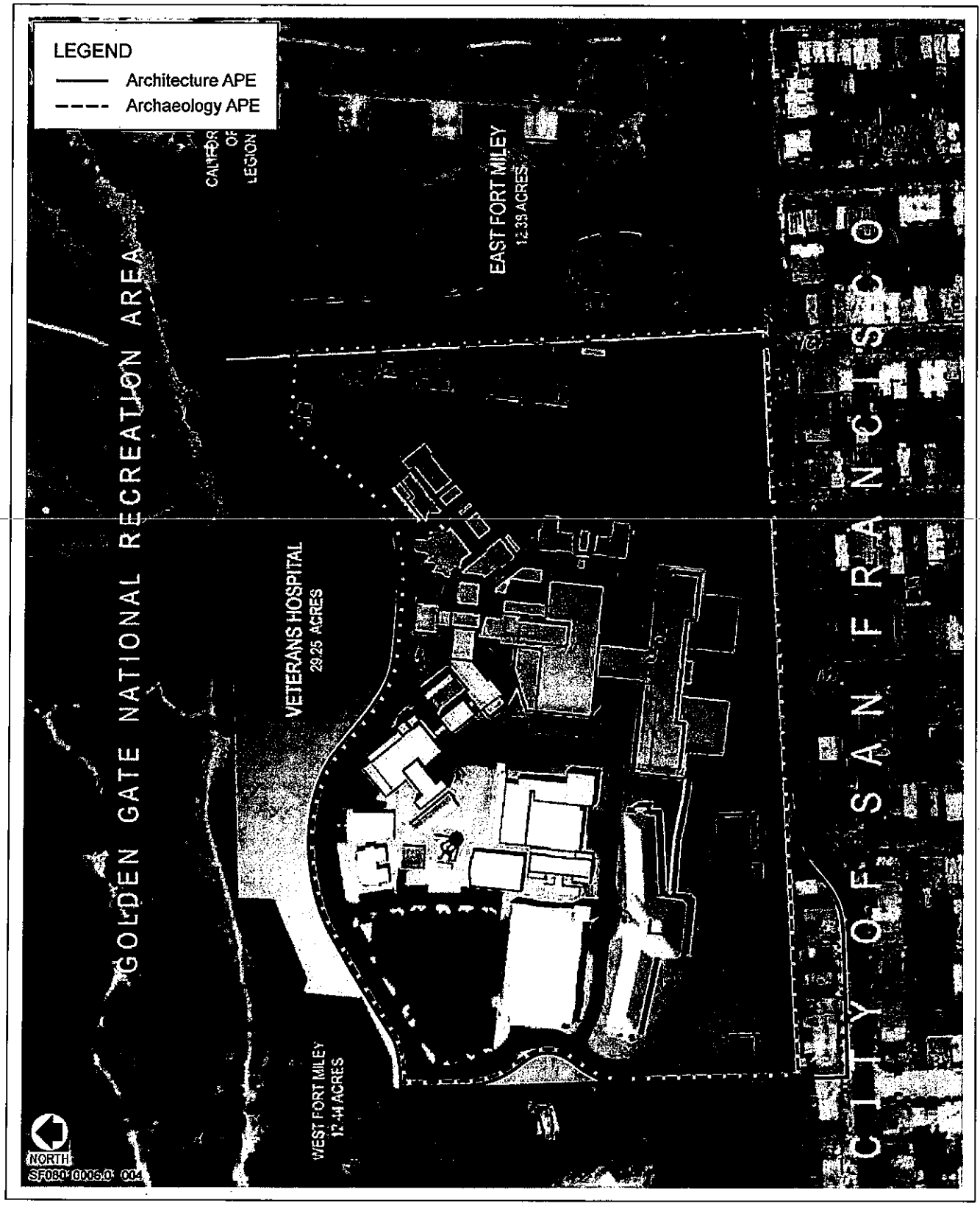
Source: USVA, 2010

Exhibit 2: **Existing SFVAMC Fort Miley Campus**



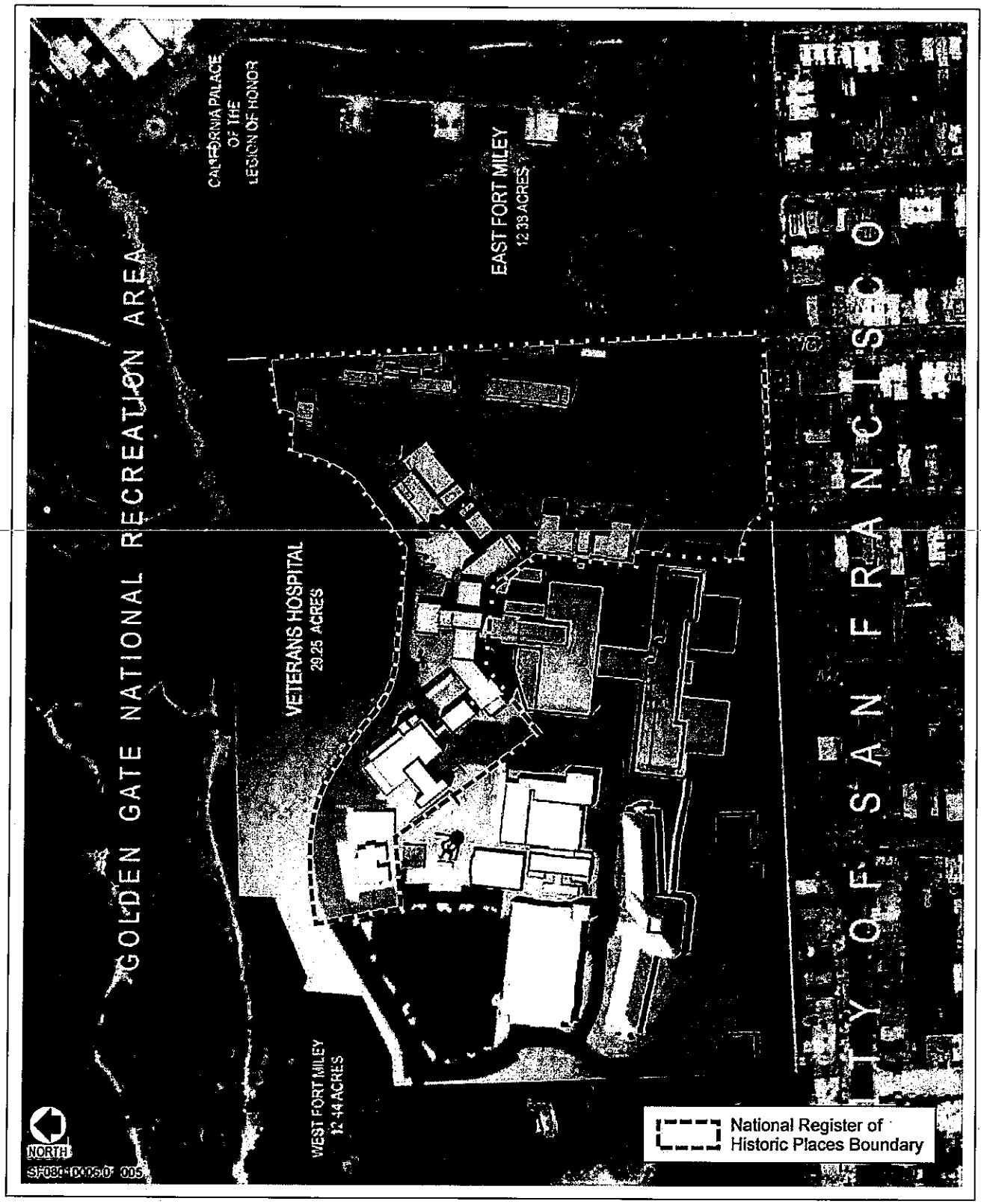
Source: AECOM, 2012

Exhibit 3: **Location of Off-Site Portion of EIS Alternative 2**



Source: SFVAMC Institutional Master Plan

Exhibit 4: **Archaeological and Architectural Areas of Potential Effect**



Source: SFVAMC Institutional Master Plan

Exhibit 5: **SFVAMC Historic District**

Table 1: Recent Projects

							NEPA				Section 106
n/a	662-323	Emergency Room/E&A Renovation	July 2010 ribbon cutting/completion		Construction of 3-story wing (D) on Building 200. Was designed to accommodate a 4th floor in the future, which is now in preliminary planning.	Adjacent to HD					
n/a	662-06-116	Building 1, 8, 9, 10, and 11 Window Replacement	Started with 2005 contract for design	Replacement of all windows with aluminum frame windows		In HD					
n/a	662-09-601	Building 8 Window Replacement	Completed 11/10/2010	Replacement of all windows on the building with aluminum frame windows.	Building 8	In HD					
n/a	662-08-215	Buildings 9 and 10 Window Replacement	Completed 11/19/2008	Replacement of all windows on the building with aluminum frame windows.	Buildings 9 and 10	In HD					
n/a	662-08-222	Replace Windows Building 1	Completed 1/6/2010	Replacement of all windows on the building with aluminum frame windows.	Building 1	In HD					
n/a	662-09-723	Water Tower (Building 206) Repainting and Minor Upgrades		Repainting, minor repair/upgrades	Building 206 (water tower)	Adjacent to HD					

Table 2: Current Projects

							NEPA				Section 106
1.1	662-401	Building 42 (Research/Lab Space)	Estimated buildout November 2011	9,450 BGSF, 2 stories.	Located in the southwest corner of the campus, this would not be visible from the HD.	No Proximity					
1.2	662-CSI-12	Mental Health Parking Garage	100% design, Construction completion estimate November 2011	Total 55,000 BGSF, 2 stories. Total 161 car spaces and 23 motorcycle spaces. Net 75 car spaces and 23 motorcycle spaces.	New construction of a 2-level, partially below grade parking structure. Realignment of Veterans Drive. Ground disturbance to a max of 20 feet below grade and 150 feet wide. South of Building 8, north of main entrance. Previously parking lot.	In HD	7/28/2010	EA/ FONSI	Historic Districts: No Significant Impact (project design incorporates measures to avoid/mitigate impacts) Archeo: No impacts to known sites; Mitigation for unanticipated discoveries	6/30/2010	Concur-No Adverse Effect
1.3	662-607	Building 24 Mental Health Clinical Expansion	At 35% design; originally estimated to go to construction fall 2012, being resubmitted for later finding pending Section 106 process	Construct new Mental Health Clinic building. 15,650 BGSF, 3 stories. Construct new Child Care Center to the north of Building 11.	Demolition of Buildings 20 and T-32. Building 20 is a contributor to the SFVAMC Historic District. Building 32 is a temporary modular building that is not a contributor to the Historic District. Construct new Building 24 behind (east of) Building 8. Introduce new T-32 east of Building 11. T-33 moves to parking area south of Building 11 for use as temporary construction trailer.	In HD	3/11/2011	Draft EA (public review)	Section 106 initiated for Building 20 demolition; based on SHPO conclusion of adverse effect for the demolition of Building 20, Draft EA incorporated a commitment to development of an MOA with mitigation measures including recordation and interpretive materials. Potential significant impacts associated with introduction of Building 24 were reduced to no significant impacts through the introduction of Project Measures to Minimize Effects to Historic District Resources	On-going	Section 106 initiated for Building 24 on August 27, 2010. SHPO responded with a letter requesting baseline documentation about past, present, and future projects in order to determine the collective effects of SFVAMC projects on the integrity of the Historic District. SFVAMC suspending project until the SHPO/Section 106 process is on track.
1.4	662-501	Seismic Upgrade of Buildings 9, 10, & 13 and Building 22 Construction	Estimated buildout December 2012	BGSF 8,743, 2 stories	Perform seismic upgrades to Buildings 9, 10, and 13. Construct new Building 22 to the east of (behind) Buildings 9 and 10.	In HD	May-09	EA	Potential adverse effects to historic district buildings mitigated to "a level below significant" through incorporation of SoI Standards in the design and construction of the modifications.	8/27/2009	Concur-No Adverse Effect

							NEPA				Section 106	
1.5	662-608	Veterinary Medical Unit Facility Replacement and Expansion Project (formerly called "Vivarium")	100% design, 0% construction. Project Construction *schedule* starts 12/1/2011 to 6/1/13 (likely March 2012 +14 months)	Proposed VMU facility is 9,638 BGSF distributed on 2 stories, plus 4,614 BGSF of mechanical penthouse (9,638+4,614 =14,252).	New construction of a 2-story building (Building 41). Adjacent to HD, between Buildings 6 and 12. Currently open space and Temporary Building 17, which would be removed as part of this project.	Adjacent to HD	6/3/2011	Final EA	Historic Districts: No significant impacts. Archeo: Low sensitivity for pre-historic. Sensitive for historic period and human remains. Construction monitoring recommended.	2/15/2011	Concur-No Adverse Effect (with conditions)
1.7	662-620 Phase 1	Patient Welcome Center-Phase 1	At 35% design; originally estimated to go to construction fall 2012, being resubmitted for later finding pending Section 106 process	1,350 BGSF	Introduction of a traffic circle to the southwest of the south elevation of Building 1. Permanently closes through traffic on Veterans Drive.	In HD			Design team under contract to do a NEPA document; could also be covered by the IMP EIS.		SFVAMC suspending project until SHPO/Section 106 process is on track
1.8	662-620 Phase 2	Patient Welcome Center-Phase 2	At 35% design; originally estimated to go to construction fall 2012, being resubmitted for later finding pending resolution of 106 process	13,500 BGSF	1-story pavilion on the ground level between Buildings 200 and 203 extending out towards Building 1 (east). Includes introducing a traffic circle and drop off area in front, and taking out roadway paving at rear and replace with garden.	In HD			Design team under contract to do a NEPA document; could also be covered by the IMP EIS.		SFVAMC suspending project until SHPO/Section 106 process is on track

							NEPA				Section 106
n/a		Ground Source Heat Pump Systems	Construction anticipated December 2011 through June 2012	To reduce fossil fuel-based energy consumption and to increase the use of renewable energy sources through the installation and operation of ground source heat pump systems.	New GSHP systems proposed for HD contributing Buildings 8, 9, and 10, as well as non-contributor Building 210 within the HD. Construction would include drilling to a depth of 200 to 400 feet for the borings/wells, installing piping, installing system components within and adjacent to each involved building, and restoring the construction site to pre-project conditions. VA anticipates only minor modifications to each involved structure, generally within each structure's mechanical room(s).	In HD	9/2/2011	Public Draft EA	Document concludes that "effects would be maintained at acceptable levels and would not be considered an adverse effect under Section 106 of the NHPA." Each proposed heat pump would be installed within a new, 4' x 8' structure adjacent to and designed to blend with the served VAMC building in terms of color and style to the extent possible. . . . "In addition, the majority of the 29-acre VAMC has been previously disturbed due to prior construction activities. As such, no . . . archeological resources are expected to be encountered or affected . . ."		
	662-611	Parking and Emergency Response Structure - Design Phase	100% design 0% construction. Construction *scheduled* to start July 2012 to May 2013	To provide additional parking garage capacity; car bridge from old to new structure. EOC Center to be built within the new garage space. Plan for the EOC parking Garage is currently to build 155,000 SF with a 32,000 SF footprint and 477 total spaces-295 net spaces.	New construction of a 5-level parking structure (Building 211). West of Buildings 18, 21, 205; north of existing parking structure 209. In northwest corner of campus. Currently parking lot J.	Visible from HD	1/25/2011	EA	MI (Minimal)	3/21/2011	Concur-No Adverse Effect (with conditions)
	662-609	North Slope Seismic/Geologic Stabilization	100 % design 60% construction. Construction scheduled to be completed by January 2012	Stabilize the North Slope	Construction of two retaining walls and structural improvements to Buildings 25 and 3. Grading, landscaping, and paving.	Adjacent to HD	11/10/2010	EA/ FONSI	M (Moderate) Historic Districts: no adverse effect on SFVAMC district; no effect on East Fort Miley HD Archeo: no impacts to known resources; potential for unanticipated impacts.	11/4/2010	Concur-No Adverse Effect (with conditions)

								NEPA			Section 106
	662-11-186	Seismic retrofit of Building 205 (Central Plant)	Design 2%		Building 205 is 1973	No Proximity		Plan to CatEx			
	662-11-507	Install cool roof on Building 200	Construction contract about to be let as of October 2011	Energy efficiency update per Agency goals per Executive Order.	Applying a white coating to Building 200, including its wings (D Wing already done as part of original construction).	Adjacent to HD		Plan to CatEx			

Table 3: Future Projects

									NEPA		Section 106
2.1		IT Support Space Expansion	Estimated buildout December 2016	7,000 BGSF	2nd floor addition to Building 207	Adjacent to HD					
2.2	662-11-111	Hybrid Operating Room Expansion	Planned as a design-build contract; estimated buildout June 2017	Cardiac procedures facility. 5,348 BGSF, 1 story	Adding a 4th floor of Building 200 in D Wing	Adjacent to HD					
2.3	OCFM 11-201	Buildings 1, 6, 8 Seismic Upgrade and Construction of Building 40 (Major) - managed by CFM (VA office of construction and facilities management)	0% design 0% construction	Seismic retrofit of three buildings (Historic District contributors) and construction of a 100,000 BGSF replacement research facility. These (1, 6, 8, and 12) are the VA's last 4 buildings that are on the VA's list of extremely high risk buildings.	First move Bldg 18 to as yet unknown location, then demolish Bldg 14, Building 21, and Temporary Building 23, then build Building 40 (100,000 BGSF research space) adjacent to HD, southwest of 2,4,6). Then demolition of Building 12 (outside of HD) introduction of temporary trailers for accommodating people in Buildings 1, 6, then 8 during seismic retrofit.	In HD and Adjacent to HD		TBD			Future
n/a	662-11-201	Ham Radio Room Renovation	No design; 0% construction		Building 1 renovation of the radio/communications center on the top floor. Need clarification about whether anything is being done to windows or on the roof.	In HD		none			
n/a	662-11-221	Building 8 Window Correction		Replacement windows were the type that tilt down to clean; the clips on top of the lower sash led to operator error; will be made un-tiltable by replacing spring-loaded clips with	Building 8	In HD		none			

							NEPA				Section 106
				rigid guides.							
n/a	662-661	(EOC) Emergency Preparedness/ Response Center - Construction Phase	99% design; 0% construction; up for FY12 funding groundbreaking scheduled for July 2012	To provide additional parking garage capacity; car bridge from old to new structure. EOC Center to be built within the new garage space.	Addition to existing parking garage building 209, taking the place of parking lot J	Visible from HD			Cleared during design with EA/FONSI - see 662-611		
n/a	662-11-167	Battle of the Bulge trail paving	Awaiting NCA award	To pave the existing trail from the campus picnic area down to Legion of Honor parking area.	No buildings directly affected.	Adjacent to HD					
n/a	662-511	Seismic Retrofit Building 5 and Building 7	USACE Solicitation is out			In HD					

OFFICE OF HISTORIC PRESERVATION
DEPARTMENT OF PARKS AND RECREATION
1725 23rd Street, Suite 100
SACRAMENTO, CA 95816-7100
(916) 445-7000 Fax: (916) 445-7053
calshpo@parks.ca.gov
www.ohp.parks.ca.gov

May 11, 2012

Reply in Reference To: VA120323A

Lawrence Carroll, Director
Department of Veterans Affairs Medical Center
4150 Clement Street
San Francisco, CA 94121

Re: Section 106 Consultation for San Francisco Department of Veterans Affairs Medical Center Draft Long Range Development Plan

Dear Director Carroll:

Thank you for initiating consultation regarding the Veterans Affairs (VA) efforts to comply with Section 106 of the National Historic Preservation Act of 1966 (16 U.S.C. 470f), as amended, and its implementing regulation found at 36 CFR Part 800.

The VA has identified the undertaking as the preparation of a Long Range Development Plan (LRDP) for the San Francisco Medical Center campus (SFVAMC). This document is being prepared to address and support future campus construction, expansion, and preservation planning. Based on information acquired through meetings between the VA and my staff and as provided in your 20 March 2012 submittal, the VA intends to create an additional 600,000 square feet at the SFVAMC campus over the next 20 years. It is my understanding that upon analyzing the potential impacts on historic properties posed by proposed undertakings the VA will submit a finding of effect to my office. Importantly, the VA will continue to consult with my office, the public and interested parties including the National Park Service to assist with their planning process.

In addition, I have the following comments:

1) I concur that the APE has been properly determined and documented pursuant to 36 CFR Parts 800.4 (a)(1) and 800.16(d).

2) I concur the VA has properly defined and established the undertaking pursuant to 36 CFR Part 800.3.

3) I agree with the VA's approach to the Section 106 process for this undertaking as described in your submittal and as discussed in meetings between my staff and the VA.

Thank you for seeking my comments and considering historic properties as part of your project planning. I look forward to working with the VA toward the effective management of their historic resources. If you have any questions or concerns, please contact Ed Carroll of my staff at (916) 445-7006 or at email at ecarroll@parks.ca.gov.

Sincerely,

Susan K Stratton for

Milford Wayne Donaldson, FAIA
State Historic Preservation Officer

CC:

Brian Lusher
Advisory Council on Historic Preservation
Old Post Office Building
1100 Pennsylvania Avenue, NW, Suite 803
Washington, DC 20004

Kathleen Schamel
Federal Preservation Officer
Historic Preservation Office (00CFM)
Office of Construction & Facilities Management
Department of Veterans Affairs
811 Vermont Avenue, NW
Washington, DC 20420

June 14, 2012

Tim Frye
Acting Preservation Coordinator
San Francisco Planning Department
1650 Mission Street, Suite 400
San Francisco, CA 94103

Subject: National Historic Preservation Act Section 106 Consultation on the San Francisco Veterans Affairs Medical Center, Long Range Development Plan

Dear Mr. Frye:

The U.S. Department of Veterans Affairs (VA) is preparing a Long Range Development Plan (LRDP) for the San Francisco Veterans Affairs Medical Center (SFVAMC) at Fort Miley in San Francisco, California. The SFVAMC is located on a 29-acre site in northwest San Francisco and is a major tertiary care facility that serves as a VA regional referral center for specialized medical and surgical programs. The SFVAMC serves Veterans of the San Francisco Bay Area and northern California coast counties.

The 12-acre SFVAMC National Register Historic District lies within the boundaries of the SFVAMC Fort Miley Campus. The purpose of the LRDP is to establish the road map for the facility development projects necessary to meet the mission of VHA. VHA has identified a need for retrofitting existing buildings to the most recent seismic safety requirements and for an additional currently estimated 600,000 square feet of medical facility space to meet the needs of all San Francisco Bay Area and North Coast Veterans over the next 20 years. Maps depicting the project location and vicinity are attached.

Introduction
The purpose of this letter is to invite you to participate in the Section 106 Process as a consulting party.

The Regulatory Process
Section 106 of the National Historic Preservation Act (NHPA) requires the VA to identify historically significant resources that are located within a proposed project's area of potential effects and show that project planners and engineers have "taken into account" project effects on properties listed in or eligible for listing in the National Register of Historic Places. The Section 106 process also requires consultation between the VA, SHPO, and the interested public.

The VA has compiled a preliminary list of preservation contacts in compliance with 36 CFR 800.2(c)(3-5). The regulation states that the following shall be considered consulting parties: SHPO, federally recognized Indian Tribes, representatives of local governments, and "certain individuals and organizations with a demonstrated interest in the undertaking... due to the nature of their legal or economic relation to the undertaking or affected properties, or their concern with the undertaking's effects on historic properties." The regulations also require that the VA "seek and consider the views of the public in a manner that reflects the nature and complexity of the undertaking and its effects on historic properties." The VA must provide the interested public with information about the undertaking and its effects on historic properties and seek public comment and input. Members of the public may also provide views on their own initiative for officials to consider in decision making.

In response to these federal regulations, the VA has developed the following criteria for generating the candidate list of consulting parties.

- Individuals or groups who have a demonstrated interest in historic preservation in San Francisco;
- Neighborhood groups or associations whose area or boundary of jurisdictional interest include area within the APE;
- Local, state, or federal government agencies whose boundaries of jurisdictional interest include area within the APE;
- Individuals or organizations that have specifically requested "consulting party" status and have demonstrated a preservation interest.

Participation in this review will ensure that your interests in historic properties within the Area of Potential Effect are considered in the Section 106 process. Whether through public meetings, materials posted on our website, or through direct mailings to consulting parties, the following opportunities for input will be provided:

- VA will provide consulting parties the opportunity to comment on the National Register eligibility of properties located within the APE.
- VA will provide consulting parties the opportunity to comment on the effects the proposed undertaking may have to properties/districts listed or determined eligible for listing in the National Register.
- VA will provide consulting parties the opportunity to comment on proposed measures to minimize harm or proposed mitigation options for NRHP properties/district that would be adversely affected by the proposed undertaking.

If you would like to participate as a designated consulting party, please sign and date this letter (attached) and return it as indicated.

If you or your organization have any concerns regarding specific historic resources within the project area, please contact Susan Lassell at AECOM at susan.lassell@aecom.com or telephone at 415.955.2963.

Sincerely,

Lawrence H. Carroll
Medical Center Director

Enclosure

Please add me to the list of designated consulting parties:

Tim Frye
Acting Preservation Coordinator
San Francisco Planning Department
1650 Mission Street, Suite 400
San Francisco, CA 94103

_____
Signature

_____
Date

Additional Contact Information (not required)

Telephone: _____

Email Address: _____

If any of this information needs updating, please make corrections to this page before returning the form to:

Susan Lassell
AECOM
150 Chestnut Street
San Francisco, CA 94111

Source: SFVAMC Institutional Master Plan

Project Location **Exhibit 1**

Source: SFVAMC Institutional Master Plan

Existing SFVAMC Campus **Exhibit 2**

June 14, 2012

Stephen S. Noetzel
San Francisco Veterans Affairs Commission
3440 25th St. #705
San Francisco, CA 94110

Subject: National Historic Preservation Act Section 106 Consultation on the San Francisco Veterans Affairs Medical Center, Long Range Development Plan

Dear Mr. Noetzel:

The U.S. Department of Veterans Affairs (VA) is preparing a Long Range Development Plan (LRDP) for the San Francisco Veterans Affairs Medical Center (SFVAMC) at Fort Miley in San Francisco, California. The SFVAMC is located on a 29-acre site in northwest San Francisco and is a major tertiary care facility that serves as a VA regional referral center for specialized medical and surgical programs. The SFVAMC serves Veterans of the San Francisco Bay Area and northern California coast counties.

The 12-acre SFVAMC National Register Historic District lies within the boundaries of the SFVAMC Fort Miley Campus. The purpose of the LRDP is to establish the road map for the facility development projects necessary to meet the mission of VHA. VHA has identified a need for retrofitting existing buildings to the most recent seismic safety requirements and for an additional currently estimated 600,000 square feet of medical facility space to meet the needs of all San Francisco Bay Area and North Coast Veterans over the next 20 years. Maps depicting the project location and vicinity are attached.

Introduction
The purpose of this letter is to invite you to participate in the Section 106 Process as a consulting party.

The Regulatory Process
Section 106 of the National Historic Preservation Act (NHPA) requires the VA to identify historically significant resources that are located within a proposed project's area of potential effects and show that project planners and engineers have "taken into account" project effects on properties listed in or eligible for listing in the National Register of Historic Places. The Section 106 process also requires consultation between the VA, SHPO, and the interested public.

The VA has compiled a preliminary list of preservation contacts in compliance with 36 CFR 800.2(c)(3-5). The regulation states that the following shall be considered consulting parties: SHPO, federally recognized Indian Tribes, representatives of local governments, and "certain individuals and organizations with a demonstrated interest in the undertaking... due to the nature of their legal or economic relation to the undertaking or affected properties, or their concern with the undertaking's effects on historic properties." The regulations also require that the VA "seek and consider the views of the public in a manner that reflects the nature and complexity of the undertaking and its effects on historic properties." The VA must provide the interested public with information about the undertaking and its effects on historic properties and seek public comment and input. Members of the public may also provide views on their own initiative for officials to consider in decision making.

In response to these federal regulations, the VA has developed the following criteria for generating the candidate list of consulting parties.

- Individuals or groups who have a demonstrated interest in historic preservation in San Francisco;
- Neighborhood groups or associations whose area or boundary of jurisdictional interest include area within the APE;
- Local, state, or federal government agencies whose boundaries of jurisdictional interest include area within the APE;
- Individuals or organizations that have specifically requested "consulting party" status and have demonstrated a preservation interest.

Participation in this review will ensure that your interests in historic properties within the Area of Potential Effect are considered in the Section 106 process. Whether through public meetings, materials posted on our website, or through direct mailings to consulting parties, the following opportunities for input will be provided:

- VA will provide consulting parties the opportunity to comment on the National Register eligibility of properties located within the APE.
- VA will provide consulting parties the opportunity to comment on the effects the proposed undertaking may have to properties/districts listed or determined eligible for listing in the National Register.
- VA will provide consulting parties the opportunity to comment on proposed measures to minimize harm or proposed mitigation options for NRHP properties/district that would be adversely affected by the proposed undertaking.

If you would like to participate as a designated consulting party, please sign and date this letter (attached) and return it as indicated.

If you or your organization have any concerns regarding specific historic resources within the project area, please contact Susan Lassell at AECOM at susan.lassell@aecom.com or telephone at 415.955.2963.

Sincerely,

Lawrence H. Carroll
Medical Center Director

Enclosure

Please add me to the list of designated consulting parties:

Stephen S. Noetzel
San Francisco Veterans Affairs Commission
3440 25th St. #705
San Francisco, CA 94110

_____
Signature

_____
Date

Additional Contact Information (not required)

Telephone: _____

Email Address: _____

If any of this information needs updating, please make corrections to this page before returning the form to:

Susan Lassell
AECOM
150 Chestnut Street
San Francisco, CA 94111

June 14, 2012

Christine S. Lehnertz, Regional Director
National Park Service
333 Bush Street, Suite 500
San Francisco, CA 94104-2828

Subject: National Historic Preservation Act Section 106 Consultation on the San Francisco Veterans Affairs Medical Center, Long Range Development Plan

Dear Ms. Lehnertz:

The U.S. Department of Veterans Affairs (VA) is preparing a Long Range Development Plan (LRDP) for the San Francisco Veterans Affairs Medical Center (SFVAMC) at Fort Miley in San Francisco, California. The SFVAMC is located on a 29-acre site in northwest San Francisco and is a major tertiary care facility that serves as a VA regional referral center for specialized medical and surgical programs. The SFVAMC serves Veterans of the San Francisco Bay Area and northern California coast counties.

The 12-acre SFVAMC National Register Historic District lies within the boundaries of the SFVAMC Fort Miley Campus. The purpose of the LRDP is to establish the road map for the facility development projects necessary to meet the mission of VHA. VHA has identified a need for retrofitting existing buildings to the most recent seismic safety requirements and for an additional currently estimated 600,000 square feet of medical facility space to meet the needs of all San Francisco Bay Area and North Coast Veterans over the next 20 years. Maps depicting the project location and vicinity are attached.

Introduction
The purpose of this letter is to invite you to participate in the Section 106 Process as a consulting party.

The Regulatory Process
Section 106 of the National Historic Preservation Act (NHPA) requires the VA to identify historically significant resources that are located within a proposed project's area of potential effects and show that project planners and engineers have "taken into account" project effects on properties listed in or eligible for listing in the National Register of Historic Places. The Section 106 process also requires consultation between the VA, SHPO, and the interested public.

The VA has compiled a preliminary list of preservation contacts in compliance with 36 CFR 800.2(c)(3-5). The regulation states that the following shall be considered consulting parties: SHPO, federally recognized Indian Tribes, representatives of local governments, and "certain individuals and organizations with a demonstrated interest in the undertaking... due to the nature of their legal or economic relation to the undertaking or affected properties, or their concern with the undertaking's effects on historic properties." The regulations also require that the VA "seek and consider the views of the public in a manner that reflects the nature and complexity of the undertaking and its effects on historic properties." The VA must provide the interested public with information about the undertaking and its effects on historic properties and seek public comment and input. Members of the public may also provide views on their own initiative for officials to consider in decision making.

In response to these federal regulations, the VA has developed the following criteria for generating the candidate list of consulting parties.

- Individuals or groups who have a demonstrated interest in historic preservation in San Francisco;
- Neighborhood groups or associations whose area or boundary of jurisdictional interest include area within the APE;
- Local, state, or federal government agencies whose boundaries of jurisdictional interest include area within the APE;
- Individuals or organizations that have specifically requested "consulting party" status and have demonstrated a preservation interest.

Participation in this review will ensure that your interests in historic properties within the Area of Potential Effect are considered in the Section 106 process. Whether through public meetings, materials posted on our website, or through direct mailings to consulting parties, the following opportunities for input will be provided:

- VA will provide consulting parties the opportunity to comment on the National Register eligibility of properties located within the APE.
- VA will provide consulting parties the opportunity to comment on the effects the proposed undertaking may have to properties/districts listed or determined eligible for listing in the National Register.
- VA will provide consulting parties the opportunity to comment on proposed measures to minimize harm or proposed mitigation options for NRHP properties/district that would be adversely affected by the proposed undertaking.

If you would like to participate as a designated consulting party, please sign and date this letter (attached) and return it as indicated.

If you or your organization have any concerns regarding specific historic resources within the project area, please contact Susan Lassell at AECOM at susan.lassell@aecom.com or telephone at 415.955.2963.

Sincerely,

Lawrence H. Carroll
Medical Center Director

Enclosure

Please add me to the list of designated consulting parties:

Christine S. Lehnertz, Regional Director
National Park Service
333 Bush Street, Suite 500
San Francisco, CA 94104-2828

_____
Signature

_____
Date

Additional Contact Information (not required)

Telephone: _____

Email Address: _____

If any of this information needs updating, please make corrections to this page before returning the form to:

Susan Lassell
AECOM
150 Chestnut Street
San Francisco, CA 94111

June 14, 2012

Paul Scolari
National Park Service
Golden Gate National Recreation Area
Building 101, Fort Mason
San Francisco, CA 94123

Subject: National Historic Preservation Act Section 106 Consultation on the San Francisco Veterans Affairs Medical Center, Long Range Development Plan

Dear Mr. Scolari:

The U.S. Department of Veterans Affairs (VA) is preparing a Long Range Development Plan (LRDP) for the San Francisco Veterans Affairs Medical Center (SFVAMC) at Fort Miley in San Francisco, California. The SFVAMC is located on a 29-acre site in northwest San Francisco and is a major tertiary care facility that serves as a VA regional referral center for specialized medical and surgical programs. The SFVAMC serves Veterans of the San Francisco Bay Area and northern California coast counties.

The 12-acre SFVAMC National Register Historic District lies within the boundaries of the SFVAMC Fort Miley Campus. The purpose of the LRDP is to establish the road map for the facility development projects necessary to meet the mission of VHA. VHA has identified a need for retrofitting existing buildings to the most recent seismic safety requirements and for an additional currently estimated 600,000 square feet of medical facility space to meet the needs of all San Francisco Bay Area and North Coast Veterans over the next 20 years. Maps depicting the project location and vicinity are attached.

Introduction
The purpose of this letter is to invite you to participate in the Section 106 Process as a consulting party.

The Regulatory Process
Section 106 of the National Historic Preservation Act (NHPA) requires the VA to identify historically significant resources that are located within a proposed project's area of potential effects and show that project planners and engineers have "taken into account" project effects on properties listed in or eligible for listing in the National Register of Historic Places. The Section 106 process also requires consultation between the VA, SHPO, and the interested public.

The VA has compiled a preliminary list of preservation contacts in compliance with 36 CFR 800.2(c)(3-5). The regulation states that the following shall be considered consulting parties: SHPO, federally recognized Indian Tribes, representatives of local governments, and "certain individuals and organizations with a demonstrated interest in the undertaking... due to the nature of their legal or economic relation to the undertaking or affected properties, or their concern with the undertaking's effects on historic properties." The regulations also require that the VA "seek and consider the views of the public in a manner that reflects the nature and complexity of the undertaking and its effects on historic properties." The VA must provide the interested public with information about the undertaking and its effects on historic properties and seek public comment and input. Members of the public may also provide views on their own initiative for officials to consider in decision making.

In response to these federal regulations, the VA has developed the following criteria for generating the candidate list of consulting parties.

- Individuals or groups who have a demonstrated interest in historic preservation in San Francisco;
- Neighborhood groups or associations whose area or boundary of jurisdictional interest include area within the APE;
- Local, state, or federal government agencies whose boundaries of jurisdictional interest include area within the APE;
- Individuals or organizations that have specifically requested "consulting party" status and have demonstrated a preservation interest.

Participation in this review will ensure that your interests in historic properties within the Area of Potential Effect are considered in the Section 106 process. Whether through public meetings, materials posted on our website, or through direct mailings to consulting parties, the following opportunities for input will be provided:

- VA will provide consulting parties the opportunity to comment on the National Register eligibility of properties located within the APE.
- VA will provide consulting parties the opportunity to comment on the effects the proposed undertaking may have to properties/districts listed or determined eligible for listing in the National Register.
- VA will provide consulting parties the opportunity to comment on proposed measures to minimize harm or proposed mitigation options for NRHP properties/district that would be adversely affected by the proposed undertaking.

If you would like to participate as a designated consulting party, please sign and date this letter (attached) and return it as indicated.

If you or your organization have any concerns regarding specific historic resources within the project area, please contact Susan Lassell at AECOM at susan.lassell@aecom.com or telephone at 415.955.2963.

Sincerely,

Lawrence H. Carroll
Medical Center Director

Enclosure

Please add me to the list of designated consulting parties:

Paul Scolari
National Park Service
Golden Gate National Recreation Area
Building 101, Fort Mason
San Francisco, CA 94123

_____
Signature

_____
Date

Additional Contact Information (not required)

Telephone: _____

Email Address: _____

If any of this information needs updating, please make corrections to this page before returning the form to:

Susan Lassell
AECOM
150 Chestnut Street
San Francisco, CA 94111

June 14, 2012

Ray Holland
President
Planning Association for the Richmond
5758 Geary Boulevard, Box #356
San Francisco, CA 94121-2112

Subject: National Historic Preservation Act Section 106 Consultation on the San Francisco Veterans Affairs Medical Center, Long Range Development Plan

Dear Mr. Holland:

The U.S. Department of Veterans Affairs (VA) is preparing a Long Range Development Plan (LRDP) for the San Francisco Veterans Affairs Medical Center (SFVAMC) at Fort Miley in San Francisco, California. The SFVAMC is located on a 29-acre site in northwest San Francisco and is a major tertiary care facility that serves as a VA regional referral center for specialized medical and surgical programs. The SFVAMC serves Veterans of the San Francisco Bay Area and northern California coast counties.

The 12-acre SFVAMC National Register Historic District lies within the boundaries of the SFVAMC Fort Miley Campus. The purpose of the LRDP is to establish the road map for the facility development projects necessary to meet the mission of VHA. VHA has identified a need for retrofitting existing buildings to the most recent seismic safety requirements and for an additional currently estimated 600,000 square feet of medical facility space to meet the needs of all San Francisco Bay Area and North Coast Veterans over the next 20 years. Maps depicting the project location and vicinity are attached.

Introduction
The purpose of this letter is to invite you to participate in the Section 106 Process as a consulting party.

The Regulatory Process
Section 106 of the National Historic Preservation Act (NHPA) requires the VA to identify historically significant resources that are located within a proposed project's area of potential effects and show that project planners and engineers have "taken into account" project effects on properties listed in or eligible for listing in the National Register of Historic Places. The Section 106 process also requires consultation between the VA, SHPO, and the interested public.

The VA has compiled a preliminary list of preservation contacts in compliance with 36 CFR 800.2(c)(3-5). The regulation states that the following shall be considered consulting parties: SHPO, federally recognized Indian Tribes, representatives of local governments, and "certain individuals and organizations with a demonstrated interest in the undertaking... due to the nature of their legal or economic relation to the undertaking or affected properties, or their concern with the undertaking's effects on historic properties." The regulations also require that the VA "seek and consider the views of the public in a manner that reflects the nature and complexity of the undertaking and its effects on historic properties." The VA must provide the interested public with information about the undertaking and its effects on historic properties and seek public comment and input. Members of the public may also provide views on their own initiative for officials to consider in decision making.

In response to these federal regulations, the VA has developed the following criteria for generating the candidate list of consulting parties.

- Individuals or groups who have a demonstrated interest in historic preservation in San Francisco;
- Neighborhood groups or associations whose area or boundary of jurisdictional interest include area within the APE;
- Local, state, or federal government agencies whose boundaries of jurisdictional interest include area within the APE;
- Individuals or organizations that have specifically requested "consulting party" status and have demonstrated a preservation interest.

Participation in this review will ensure that your interests in historic properties within the Area of Potential Effect are considered in the Section 106 process. Whether through public meetings, materials posted on our website, or through direct mailings to consulting parties, the following opportunities for input will be provided:

- VA will provide consulting parties the opportunity to comment on the National Register eligibility of properties located within the APE.
- VA will provide consulting parties the opportunity to comment on the effects the proposed undertaking may have to properties/districts listed or determined eligible for listing in the National Register.
- VA will provide consulting parties the opportunity to comment on proposed measures to minimize harm or proposed mitigation options for NRHP properties/district that would be adversely affected by the proposed undertaking.

If you would like to participate as a designated consulting party, please sign and date this letter (attached) and return it as indicated.

If you or your organization have any concerns regarding specific historic resources within the project area, please contact Susan Lassell at AECOM at susan.lassell@aecom.com or telephone at 415.955.2963.

Sincerely,

Lawrence H. Carroll
Medical Center Director

Enclosure

Please add me to the list of designated consulting parties:

Ray Holland
President
Planning Association for the Richmond
5758 Geary Boulevard, Box #356
San Francisco, CA 94121-2112

_____
Signature

_____
Date

Additional Contact Information (not required)

Telephone: _____

Email Address: _____

If any of this information needs updating, please make corrections to this page before returning the form to:

Susan Lassell
AECOM
150 Chestnut Street
San Francisco, CA 94111

June 14, 2012

Julie Burns
Friends of Lands End
3755 Balboa Street, #201
San Francisco, CA 94121

Subject: National Historic Preservation Act Section 106 Consultation on the San Francisco Veterans Affairs Medical Center, Long Range Development Plan

Dear Ms. Burns:

The U.S. Department of Veterans Affairs (VA) is preparing a Long Range Development Plan (LRDP) for the San Francisco Veterans Affairs Medical Center (SFVAMC) at Fort Miley in San Francisco, California. The SFVAMC is located on a 29-acre site in northwest San Francisco and is a major tertiary care facility that serves as a VA regional referral center for specialized medical and surgical programs. The SFVAMC serves Veterans of the San Francisco Bay Area and northern California coast counties.

The 12-acre SFVAMC National Register Historic District lies within the boundaries of the SFVAMC Fort Miley Campus. The purpose of the LRDP is to establish the road map for the facility development projects necessary to meet the mission of VHA. VHA has identified a need for retrofitting existing buildings to the most recent seismic safety requirements and for an additional currently estimated 600,000 square feet of medical facility space to meet the needs of all San Francisco Bay Area and North Coast Veterans over the next 20 years. Maps depicting the project location and vicinity are attached.

Introduction
The purpose of this letter is to invite you to participate in the Section 106 Process as a consulting party.

The Regulatory Process
Section 106 of the National Historic Preservation Act (NHPA) requires the VA to identify historically significant resources that are located within a proposed project's area of potential effects and show that project planners and engineers have "taken into account" project effects on properties listed in or eligible for listing in the National Register of Historic Places. The Section 106 process also requires consultation between the VA, SHPO, and the interested public.

The VA has compiled a preliminary list of preservation contacts in compliance with 36 CFR 800.2(c)(3-5). The regulation states that the following shall be considered consulting parties: SHPO, federally recognized Indian Tribes, representatives of local governments, and "certain individuals and organizations with a demonstrated interest in the undertaking... due to the nature of their legal or economic relation to the undertaking or affected properties, or their concern with the undertaking's effects on historic properties." The regulations also require that the VA "seek and consider the views of the public in a manner that reflects the nature and complexity of the undertaking and its effects on historic properties." The VA must provide the interested public with information about the undertaking and its effects on historic properties and seek public comment and input. Members of the public may also provide views on their own initiative for officials to consider in decision making.

In response to these federal regulations, the VA has developed the following criteria for generating the candidate list of consulting parties.

- Individuals or groups who have a demonstrated interest in historic preservation in San Francisco;
- Neighborhood groups or associations whose area or boundary of jurisdictional interest include area within the APE;
- Local, state, or federal government agencies whose boundaries of jurisdictional interest include area within the APE;
- Individuals or organizations that have specifically requested "consulting party" status and have demonstrated a preservation interest.

Participation in this review will ensure that your interests in historic properties within the Area of Potential Effect are considered in the Section 106 process. Whether through public meetings, materials posted on our website, or through direct mailings to consulting parties, the following opportunities for input will be provided:

- VA will provide consulting parties the opportunity to comment on the National Register eligibility of properties located within the APE.
- VA will provide consulting parties the opportunity to comment on the effects the proposed undertaking may have to properties/districts listed or determined eligible for listing in the National Register.
- VA will provide consulting parties the opportunity to comment on proposed measures to minimize harm or proposed mitigation options for NRHP properties/district that would be adversely affected by the proposed undertaking.

If you would like to participate as a designated consulting party, please sign and date this letter (attached) and return it as indicated.

If you or your organization have any concerns regarding specific historic resources within the project area, please contact Susan Lassell at AECOM at susan.lassell@aecom.com or telephone at 415.955.2963.

Sincerely,

Lawrence H. Carroll
Medical Center Director

Enclosure

Please add me to the list of designated consulting parties:

Julie Burns
Friends of Lands End
3755 Balboa Street, #201
San Francisco, CA 94121

_____
Signature

_____
Date

Additional Contact Information (not required)

Telephone: _____

Email Address: _____

If any of this information needs updating, please make corrections to this page before returning the form to:

Susan Lassell
AECOM
150 Chestnut Street
San Francisco, CA 94111

June 14, 2012

Cindy Heitzman, Executive Director
California Preservation Foundation
5 Third St., Ste 424
San Francisco, CA 94103

Subject: National Historic Preservation Act Section 106 Consultation on the San Francisco Veterans Affairs Medical Center, Long Range Development Plan

Dear Ms. Heitzman:

The U.S. Department of Veterans Affairs (VA) is preparing a Long Range Development Plan (LRDP) for the San Francisco Veterans Affairs Medical Center (SFVAMC) at Fort Miley in San Francisco, California. The SFVAMC is located on a 29-acre site in northwest San Francisco and is a major tertiary care facility that serves as a VA regional referral center for specialized medical and surgical programs. The SFVAMC serves Veterans of the San Francisco Bay Area and northern California coast counties.

The 12-acre SFVAMC National Register Historic District lies within the boundaries of the SFVAMC Fort Miley Campus. The purpose of the LRDP is to establish the road map for the facility development projects necessary to meet the mission of VHA. VHA has identified a need for retrofitting existing buildings to the most recent seismic safety requirements and for an additional currently estimated 600,000 square feet of medical facility space to meet the needs of all San Francisco Bay Area and North Coast Veterans over the next 20 years. Maps depicting the project location and vicinity are attached.

Introduction
The purpose of this letter is to invite you to participate in the Section 106 Process as a consulting party.

The Regulatory Process
Section 106 of the National Historic Preservation Act (NHPA) requires the VA to identify historically significant resources that are located within a proposed project's area of potential effects and show that project planners and engineers have "taken into account" project effects on properties listed in or eligible for listing in the National Register of Historic Places. The Section 106 process also requires consultation between the VA, SHPO, and the interested public.

The VA has compiled a preliminary list of preservation contacts in compliance with 36 CFR 800.2(c)(3-5). The regulation states that the following shall be considered consulting parties: SHPO, federally recognized Indian Tribes, representatives of local governments, and "certain individuals and organizations with a demonstrated interest in the undertaking... due to the nature of their legal or economic relation to the undertaking or affected properties, or their concern with the undertaking's effects on historic properties." The regulations also require that the VA "seek and consider the views of the public in a manner that reflects the nature and complexity of the undertaking and its effects on historic properties." The VA must provide the interested public with information about the undertaking and its effects on historic properties and seek public comment and input. Members of the public may also provide views on their own initiative for officials to consider in decision making.

In response to these federal regulations, the VA has developed the following criteria for generating the candidate list of consulting parties.

- Individuals or groups who have a demonstrated interest in historic preservation in San Francisco;
- Neighborhood groups or associations whose area or boundary of jurisdictional interest include area within the APE;
- Local, state, or federal government agencies whose boundaries of jurisdictional interest include area within the APE;
- Individuals or organizations that have specifically requested "consulting party" status and have demonstrated a preservation interest.

Participation in this review will ensure that your interests in historic properties within the Area of Potential Effect are considered in the Section 106 process. Whether through public meetings, materials posted on our website, or through direct mailings to consulting parties, the following opportunities for input will be provided:

- VA will provide consulting parties the opportunity to comment on the National Register eligibility of properties located within the APE.
- VA will provide consulting parties the opportunity to comment on the effects the proposed undertaking may have to properties/districts listed or determined eligible for listing in the National Register.
- VA will provide consulting parties the opportunity to comment on proposed measures to minimize harm or proposed mitigation options for NRHP properties/district that would be adversely affected by the proposed undertaking.

If you would like to participate as a designated consulting party, please sign and date this letter (attached) and return it as indicated.

If you or your organization have any concerns regarding specific historic resources within the project area, please contact Susan Lassell at AECOM at susan.lassell@aecom.com or telephone at 415.955.2963.

Sincerely,

Lawrence H. Carroll
Medical Center Director

Enclosure

Please add me to the list of designated consulting parties:

Cindy Heitzman, Executive Director
California Preservation Foundation
5 Third St., Ste 424
San Francisco, CA 94103

_____
Signature

_____
Date

Additional Contact Information (not required)

Telephone: _____

Email Address: _____

If any of this information needs updating, please make corrections to this page before returning the form to:

Susan Lassell
AECOM
150 Chestnut Street
San Francisco, CA 94111

June 14, 2012

Anthony Veerkamp
National Trust for Historic Preservation
5 Third Street, Suite 707
San Francisco, California 94103

Subject: National Historic Preservation Act Section 106 Consultation on the San Francisco Veterans Affairs Medical Center, Long Range Development Plan

Dear Mr. Veerkamp:

The U.S. Department of Veterans Affairs (VA) is preparing a Long Range Development Plan (LRDP) for the San Francisco Veterans Affairs Medical Center (SFVAMC) at Fort Miley in San Francisco, California. The SFVAMC is located on a 29-acre site in northwest San Francisco and is a major tertiary care facility that serves as a VA regional referral center for specialized medical and surgical programs. The SFVAMC serves Veterans of the San Francisco Bay Area and northern California coast counties.

The 12-acre SFVAMC National Register Historic District lies within the boundaries of the SFVAMC Fort Miley Campus. The purpose of the LRDP is to establish the road map for the facility development projects necessary to meet the mission of VHA. VHA has identified a need for retrofitting existing buildings to the most recent seismic safety requirements and for an additional currently estimated 600,000 square feet of medical facility space to meet the needs of all San Francisco Bay Area and North Coast Veterans over the next 20 years. Maps depicting the project location and vicinity are attached.

Introduction
The purpose of this letter is to invite you to participate in the Section 106 Process as a consulting party.

The Regulatory Process
Section 106 of the National Historic Preservation Act (NHPA) requires the VA to identify historically significant resources that are located within a proposed project's area of potential effects and show that project planners and engineers have "taken into account" project effects on properties listed in or eligible for listing in the National Register of Historic Places. The Section 106 process also requires consultation between the VA, SHPO, and the interested public.

The VA has compiled a preliminary list of preservation contacts in compliance with 36 CFR 800.2(c)(3-5). The regulation states that the following shall be considered consulting parties: SHPO, federally recognized Indian Tribes, representatives of local governments, and "certain individuals and organizations with a demonstrated interest in the undertaking... due to the nature of their legal or economic relation to the undertaking or affected properties, or their concern with the undertaking's effects on historic properties." The regulations also require that the VA "seek and consider the views of the public in a manner that reflects the nature and complexity of the undertaking and its effects on historic properties." The VA must provide the interested public with information about the undertaking and its effects on historic properties and seek public comment and input. Members of the public may also provide views on their own initiative for officials to consider in decision making.

In response to these federal regulations, the VA has developed the following criteria for generating the candidate list of consulting parties.

- Individuals or groups who have a demonstrated interest in historic preservation in San Francisco;
- Neighborhood groups or associations whose area or boundary of jurisdictional interest include area within the APE;
- Local, state, or federal government agencies whose boundaries of jurisdictional interest include area within the APE;
- Individuals or organizations that have specifically requested "consulting party" status and have demonstrated a preservation interest.

Participation in this review will ensure that your interests in historic properties within the Area of Potential Effect are considered in the Section 106 process. Whether through public meetings, materials posted on our website, or through direct mailings to consulting parties, the following opportunities for input will be provided:

- VA will provide consulting parties the opportunity to comment on the National Register eligibility of properties located within the APE.
- VA will provide consulting parties the opportunity to comment on the effects the proposed undertaking may have to properties/districts listed or determined eligible for listing in the National Register.
- VA will provide consulting parties the opportunity to comment on proposed measures to minimize harm or proposed mitigation options for NRHP properties/district that would be adversely affected by the proposed undertaking.

If you would like to participate as a designated consulting party, please sign and date this letter (attached) and return it as indicated.

If you or your organization have any concerns regarding specific historic resources within the project area, please contact Susan Lassell at AECOM at susan.lassell@aecom.com or telephone at 415.955.2963.

Sincerely,

for

Lawrence H. Carroll
Medical Center Director

Enclosure

Please add me to the list of designated consulting parties:

Anthony Veerkamp
National Trust for Historic Preservation
5 Third Street, Suite 707
San Francisco, California 94103

_____
Signature

_____
Date

Additional Contact Information (not required)

Telephone: _____

Email Address: _____

If any of this information needs updating, please make corrections to this page before returning the form to:

Susan Lassell
AECOM
150 Chestnut Street
San Francisco, CA 94111

June 14, 2012

Robert Obana
Executive Director
Northern California Institute for Research and Education
4150 Clement Street 151NC
San Francisco, CA 94121-1545

Subject: National Historic Preservation Act Section 106 Consultation on the San Francisco Veterans Affairs Medical Center, Long Range Development Plan

Dear Mr. Obana:

The U.S. Department of Veterans Affairs (VA) is preparing a Long Range Development Plan (LRDP) for the San Francisco Veterans Affairs Medical Center (SFVAMC) at Fort Miley in San Francisco, California. The SFVAMC is located on a 29-acre site in northwest San Francisco and is a major tertiary care facility that serves as a VA regional referral center for specialized medical and surgical programs. The SFVAMC serves Veterans of the San Francisco Bay Area and northern California coast counties.

The 12-acre SFVAMC National Register Historic District lies within the boundaries of the SFVAMC Fort Miley Campus. The purpose of the LRDP is to establish the road map for the facility development projects necessary to meet the mission of VHA. VHA has identified a need for retrofitting existing buildings to the most recent seismic safety requirements and for an additional currently estimated 600,000 square feet of medical facility space to meet the needs of all San Francisco Bay Area and North Coast Veterans over the next 20 years. Maps depicting the project location and vicinity are attached.

Introduction
The purpose of this letter is to invite you to participate in the Section 106 Process as a consulting party.

The Regulatory Process
Section 106 of the National Historic Preservation Act (NHPA) requires the VA to identify historically significant resources that are located within a proposed project's area of potential effects and show that project planners and engineers have "taken into account" project effects on properties listed in or eligible for listing in the National Register of Historic Places. The Section 106 process also requires consultation between the VA, SHPO, and the interested public.

The VA has compiled a preliminary list of preservation contacts in compliance with 36 CFR 800.2(c)(3-5). The regulation states that the following shall be considered consulting parties: SHPO, federally recognized Indian Tribes, representatives of local governments, and "certain individuals and organizations with a demonstrated interest in the undertaking... due to the nature of their legal or economic relation to the undertaking or affected properties, or their concern with the undertaking's effects on historic properties." The regulations also require that the VA "seek and consider the views of the public in a manner that reflects the nature and complexity of the undertaking and its effects on historic properties." The VA must provide the interested public with information about the undertaking and its effects on historic properties and seek public comment and input. Members of the public may also provide views on their own initiative for officials to consider in decision making.

In response to these federal regulations, the VA has developed the following criteria for generating the candidate list of consulting parties.

- Individuals or groups who have a demonstrated interest in historic preservation in San Francisco;
- Neighborhood groups or associations whose area or boundary of jurisdictional interest include area within the APE;
- Local, state, or federal government agencies whose boundaries of jurisdictional interest include area within the APE;
- Individuals or organizations that have specifically requested "consulting party" status and have demonstrated a preservation interest.

Participation in this review will ensure that your interests in historic properties within the Area of Potential Effect are considered in the Section 106 process. Whether through public meetings, materials posted on our website, or through direct mailings to consulting parties, the following opportunities for input will be provided:

- VA will provide consulting parties the opportunity to comment on the National Register eligibility of properties located within the APE.
- VA will provide consulting parties the opportunity to comment on the effects the proposed undertaking may have to properties/districts listed or determined eligible for listing in the National Register.
- VA will provide consulting parties the opportunity to comment on proposed measures to minimize harm or proposed mitigation options for NRHP properties/district that would be adversely affected by the proposed undertaking.

If you would like to participate as a designated consulting party, please sign and date this letter (attached) and return it as indicated.

If you or your organization have any concerns regarding specific historic resources within the project area, please contact Susan Lassell at AECOM at susan.lassell@aecom.com or telephone at 415.955.2963.

Sincerely,

Lawrence H. Carroll
Medical Center Director

Enclosure

Please add me to the list of designated consulting parties:

Robert Obana
Executive Director
Northern California Institute for Research and Education
4150 Clement Street 151NC
San Francisco, CA 94121-1545

_____
Signature

_____
Date

Additional Contact Information (not required)

Telephone: _____

Email Address: _____

If any of this information needs updating, please make corrections to this page before returning the form to:

Susan Lassell
AECOM
150 Chestnut Street
San Francisco, CA 94111

June 14, 2012

Sam Hawgood, MBBS
Dean, School of Medicine
Box 0410 , 513 Parnassus Ave, Med Sci S224
University of California, San Francisco
San Francisco, CA. 94143 - 0410

Subject: National Historic Preservation Act Section 106 Consultation on the San Francisco Veterans Affairs Medical Center, Long Range Development Plan

Dear Dr. Hawgood:

The U.S. Department of Veterans Affairs (VA) is preparing a Long Range Development Plan (LRDP) for the San Francisco Veterans Affairs Medical Center (SFVAMC) at Fort Miley in San Francisco, California. The SFVAMC is located on a 29-acre site in northwest San Francisco and is a major tertiary care facility that serves as a VA regional referral center for specialized medical and surgical programs. The SFVAMC serves Veterans of the San Francisco Bay Area and northern California coast counties.

The 12-acre SFVAMC National Register Historic District lies within the boundaries of the SFVAMC Fort Miley Campus. The purpose of the LRDP is to establish the road map for the facility development projects necessary to meet the mission of VHA. VHA has identified a need for retrofitting existing buildings to the most recent seismic safety requirements and for an additional currently estimated 600,000 square feet of medical facility space to meet the needs of all San Francisco Bay Area and North Coast Veterans over the next 20 years. Maps depicting the project location and vicinity are attached.

Introduction
The purpose of this letter is to invite you to participate in the Section 106 Process as a consulting party.

The Regulatory Process
Section 106 of the National Historic Preservation Act (NHPA) requires the VA to identify historically significant resources that are located within a proposed project's area of potential effects and show that project planners and engineers have "taken into account" project effects on properties listed in or eligible for listing in the National Register of Historic Places. The Section 106 process also requires consultation between the VA, SHPO, and the interested public.

The VA has compiled a preliminary list of preservation contacts in compliance with 36 CFR 800.2(c)(3-5). The regulation states that the following shall be considered consulting parties: SHPO, federally recognized Indian Tribes, representatives of local governments, and "certain individuals and organizations with a demonstrated interest in the undertaking... due to the nature of their legal or economic relation to the undertaking or affected properties, or their concern with the undertaking's effects on historic properties." The regulations also require that the VA "seek and consider the views of the public in a manner that reflects the nature and complexity of the undertaking and its effects on historic properties." The VA must provide the interested public with information about the undertaking and its effects on historic properties and seek public comment and input. Members of the public may also provide views on their own initiative for officials to consider in decision making.

In response to these federal regulations, the VA has developed the following criteria for generating the candidate list of consulting parties.

- Individuals or groups who have a demonstrated interest in historic preservation in San Francisco;
- Neighborhood groups or associations whose area or boundary of jurisdictional interest include area within the APE;
- Local, state, or federal government agencies whose boundaries of jurisdictional interest include area within the APE;
- Individuals or organizations that have specifically requested "consulting party" status and have demonstrated a preservation interest.

Participation in this review will ensure that your interests in historic properties within the Area of Potential Effect are considered in the Section 106 process. Whether through public meetings, materials posted on our website, or through direct mailings to consulting parties, the following opportunities for input will be provided:

- VA will provide consulting parties the opportunity to comment on the National Register eligibility of properties located within the APE.
- VA will provide consulting parties the opportunity to comment on the effects the proposed undertaking may have to properties/districts listed or determined eligible for listing in the National Register.
- VA will provide consulting parties the opportunity to comment on proposed measures to minimize harm or proposed mitigation options for NRHP properties/district that would be adversely affected by the proposed undertaking.

If you would like to participate as a designated consulting party, please sign and date this letter (attached) and return it as indicated.

If you or your organization have any concerns regarding specific historic resources within the project area, please contact Susan Lassell at AECOM at susan.lassell@aecom.com or telephone at 415.955.2963.

Sincerely,

Lawrence H. Carroll
Medical Center Director

Enclosure

Please add me to the list of designated consulting parties:

Sam Hawgood, MBBS
Dean, School of Medicine
Box 0410 , 513 Parnassus Ave, Med Sci S224
University of California, San Francisco
San Francisco, CA. 94143 - 0410

_____
Signature

_____
Date

Additional Contact Information (not required)

Telephone: _____

Email Address: _____

If any of this information needs updating, please make corrections to this page before returning the form to:

Susan Lassell
AECOM
150 Chestnut Street
San Francisco, CA 94111

June 14, 2012

Diane B. Wilsey
President, Board of Trustees
Legion of Honor
100 34th Avenue
San Francisco, CA 94121

Subject: National Historic Preservation Act Section 106 Consultation on the San Francisco Veterans Affairs Medical Center, Long Range Development Plan

Dear Ms. Wilsey:

The U.S. Department of Veterans Affairs (VA) is preparing a Long Range Development Plan (LRDP) for the San Francisco Veterans Affairs Medical Center (SFVAMC) at Fort Miley in San Francisco, California. The SFVAMC is located on a 29-acre site in northwest San Francisco and is a major tertiary care facility that serves as a VA regional referral center for specialized medical and surgical programs. The SFVAMC serves Veterans of the San Francisco Bay Area and northern California coast counties.

The 12-acre SFVAMC National Register Historic District lies within the boundaries of the SFVAMC Fort Miley Campus. The purpose of the LRDP is to establish the road map for the facility development projects necessary to meet the mission of VHA. VHA has identified a need for retrofitting existing buildings to the most recent seismic safety requirements and for an additional currently estimated 600,000 square feet of medical facility space to meet the needs of all San Francisco Bay Area and North Coast Veterans over the next 20 years. Maps depicting the project location and vicinity are attached.

Introduction
The purpose of this letter is to invite you to participate in the Section 106 Process as a consulting party.

The Regulatory Process
Section 106 of the National Historic Preservation Act (NHPA) requires the VA to identify historically significant resources that are located within a proposed project's area of potential effects and show that project planners and engineers have "taken into account" project effects on properties listed in or eligible for listing in the National Register of Historic Places. The Section 106 process also requires consultation between the VA, SHPO, and the interested public.

The VA has compiled a preliminary list of preservation contacts in compliance with 36 CFR 800.2(c)(3-5). The regulation states that the following shall be considered consulting parties: SHPO, federally recognized Indian Tribes, representatives of local governments, and "certain individuals and organizations with a demonstrated interest in the undertaking... due to the nature of their legal or economic relation to the undertaking or affected properties, or their concern with the undertaking's effects on historic properties." The regulations also require that the VA "seek and consider the views of the public in a manner that reflects the nature and complexity of the undertaking and its effects on historic properties." The VA must provide the interested public with information about the undertaking and its effects on historic properties and seek public comment and input. Members of the public may also provide views on their own initiative for officials to consider in decision making.

In response to these federal regulations, the VA has developed the following criteria for generating the candidate list of consulting parties.

- Individuals or groups who have a demonstrated interest in historic preservation in San Francisco;
- Neighborhood groups or associations whose area or boundary of jurisdictional interest include area within the APE;
- Local, state, or federal government agencies whose boundaries of jurisdictional interest include area within the APE;
- Individuals or organizations that have specifically requested "consulting party" status and have demonstrated a preservation interest.

Participation in this review will ensure that your interests in historic properties within the Area of Potential Effect are considered in the Section 106 process. Whether through public meetings, materials posted on our website, or through direct mailings to consulting parties, the following opportunities for input will be provided:

- VA will provide consulting parties the opportunity to comment on the National Register eligibility of properties located within the APE.
- VA will provide consulting parties the opportunity to comment on the effects the proposed undertaking may have to properties/districts listed or determined eligible for listing in the National Register.
- VA will provide consulting parties the opportunity to comment on proposed measures to minimize harm or proposed mitigation options for NRHP properties/district that would be adversely affected by the proposed undertaking.

If you would like to participate as a designated consulting party, please sign and date this letter (attached) and return it as indicated.

If you or your organization have any concerns regarding specific historic resources within the project area, please contact Susan Lassell at AECOM at susan.lassell@aecom.com or telephone at 415.955.2963.

Sincerely,

Lawrence H. Carroll
Medical Center Director

Enclosure

Please add me to the list of designated consulting parties:

Diane B. Wilsey
President, Board of Trustees
Legion of Honor
100 34th Avenue
San Francisco, CA 94121

_____
Signature

_____
Date

Additional Contact Information (not required)

Telephone: _____

Email Address: _____

If any of this information needs updating, please make corrections to this page before returning the form to:

Susan Lassell
AECOM
150 Chestnut Street
San Francisco, CA 94111

June 14, 2012

Craig Middleton
Executive Director
Presidio Trust
34 Graham Street, PO Box 29052
San Francisco, CA 94129

Subject: National Historic Preservation Act Section 106 Consultation on the San Francisco Veterans Affairs Medical Center, Long Range Development Plan

Dear Mr. Middleton:

The U.S. Department of Veterans Affairs (VA) is preparing a Long Range Development Plan (LRDP) for the San Francisco Veterans Affairs Medical Center (SFVAMC) at Fort Miley in San Francisco, California. The SFVAMC is located on a 29-acre site in northwest San Francisco and is a major tertiary care facility that serves as a VA regional referral center for specialized medical and surgical programs. The SFVAMC serves Veterans of the San Francisco Bay Area and northern California coast counties.

The 12-acre SFVAMC National Register Historic District lies within the boundaries of the SFVAMC Fort Miley Campus. The purpose of the LRDP is to establish the road map for the facility development projects necessary to meet the mission of VHA. VHA has identified a need for retrofitting existing buildings to the most recent seismic safety requirements and for an additional currently estimated 600,000 square feet of medical facility space to meet the needs of all San Francisco Bay Area and North Coast Veterans over the next 20 years. Maps depicting the project location and vicinity are attached.

Introduction
The purpose of this letter is to invite you to participate in the Section 106 Process as a consulting party.

The Regulatory Process
Section 106 of the National Historic Preservation Act (NHPA) requires the VA to identify historically significant resources that are located within a proposed project's area of potential effects and show that project planners and engineers have "taken into account" project effects on properties listed in or eligible for listing in the National Register of Historic Places. The Section 106 process also requires consultation between the VA, SHPO, and the interested public.

The VA has compiled a preliminary list of preservation contacts in compliance with 36 CFR 800.2(c)(3-5). The regulation states that the following shall be considered consulting parties: SHPO, federally recognized Indian Tribes, representatives of local governments, and "certain individuals and organizations with a demonstrated interest in the undertaking... due to the nature of their legal or economic relation to the undertaking or affected properties, or their concern with the undertaking's effects on historic properties." The regulations also require that the VA "seek and consider the views of the public in a manner that reflects the nature and complexity of the undertaking and its effects on historic properties." The VA must provide the interested public with information about the undertaking and its effects on historic properties and seek public comment and input. Members of the public may also provide views on their own initiative for officials to consider in decision making.

In response to these federal regulations, the VA has developed the following criteria for generating the candidate list of consulting parties.

- Individuals or groups who have a demonstrated interest in historic preservation in San Francisco;
- Neighborhood groups or associations whose area or boundary of jurisdictional interest include area within the APE;
- Local, state, or federal government agencies whose boundaries of jurisdictional interest include area within the APE;
- Individuals or organizations that have specifically requested "consulting party" status and have demonstrated a preservation interest.

Participation in this review will ensure that your interests in historic properties within the Area of Potential Effect are considered in the Section 106 process. Whether through public meetings, materials posted on our website, or through direct mailings to consulting parties, the following opportunities for input will be provided:

- VA will provide consulting parties the opportunity to comment on the National Register eligibility of properties located within the APE.
- VA will provide consulting parties the opportunity to comment on the effects the proposed undertaking may have to properties/districts listed or determined eligible for listing in the National Register.
- VA will provide consulting parties the opportunity to comment on proposed measures to minimize harm or proposed mitigation options for NRHP properties/district that would be adversely affected by the proposed undertaking.

If you would like to participate as a designated consulting party, please sign and date this letter (attached) and return it as indicated.

If you or your organization have any concerns regarding specific historic resources within the project area, please contact Susan Lassell at AECOM at susan.lassell@aecom.com or telephone at 415.955.2963.

Sincerely,

Lawrence H. Carroll
Medical Center Director

Enclosure

Please add me to the list of designated consulting parties:

Craig Middleton
Executive Director
Presidio Trust
34 Graham Street, PO Box 29052
San Francisco, CA 94129

_____
Signature

_____
Date

Additional Contact Information (not required)

Telephone: _____

Email Address: _____

If any of this information needs updating, please make corrections to this page before returning the form to:

Susan Lassell
AECOM
150 Chestnut Street
San Francisco, CA 94111

June 14, 2012

Cheryl Cook
County Veterans Service Office
27 B Van Ness Avenue
San Francisco, CA 94102

Subject: National Historic Preservation Act Section 106 Consultation on the San Francisco Veterans Affairs Medical Center, Long Range Development Plan

Dear Ms. Cook:

The U.S. Department of Veterans Affairs (VA) is preparing a Long Range Development Plan (LRDP) for the San Francisco Veterans Affairs Medical Center (SFVAMC) at Fort Miley in San Francisco, California. The SFVAMC is located on a 29-acre site in northwest San Francisco and is a major tertiary care facility that serves as a VA regional referral center for specialized medical and surgical programs. The SFVAMC serves Veterans of the San Francisco Bay Area and northern California coast counties.

The 12-acre SFVAMC National Register Historic District lies within the boundaries of the SFVAMC Fort Miley Campus. The purpose of the LRDP is to establish the road map for the facility development projects necessary to meet the mission of VHA. VHA has identified a need for retrofitting existing buildings to the most recent seismic safety requirements and for an additional currently estimated 600,000 square feet of medical facility space to meet the needs of all San Francisco Bay Area and North Coast Veterans over the next 20 years. Maps depicting the project location and vicinity are attached.

Introduction
The purpose of this letter is to invite you to participate in the Section 106 Process as a consulting party.

The Regulatory Process
Section 106 of the National Historic Preservation Act (NHPA) requires the VA to identify historically significant resources that are located within a proposed project's area of potential effects and show that project planners and engineers have "taken into account" project effects on properties listed in or eligible for listing in the National Register of Historic Places. The Section 106 process also requires consultation between the VA, SHPO, and the interested public.

The VA has compiled a preliminary list of preservation contacts in compliance with 36 CFR 800.2(c)(3-5). The regulation states that the following shall be considered consulting parties: SHPO, federally recognized Indian Tribes, representatives of local governments, and "certain individuals and organizations with a demonstrated interest in the undertaking... due to the nature of their legal or economic relation to the undertaking or affected properties, or their concern with the undertaking's effects on historic properties." The regulations also require that the VA "seek and consider the views of the public in a manner that reflects the nature and complexity of the undertaking and its effects on historic properties." The VA must provide the interested public with information about the undertaking and its effects on historic properties and seek public comment and input. Members of the public may also provide views on their own initiative for officials to consider in decision making.

In response to these federal regulations, the VA has developed the following criteria for generating the candidate list of consulting parties.

- Individuals or groups who have a demonstrated interest in historic preservation in San Francisco;
- Neighborhood groups or associations whose area or boundary of jurisdictional interest include area within the APE;
- Local, state, or federal government agencies whose boundaries of jurisdictional interest include area within the APE;
- Individuals or organizations that have specifically requested "consulting party" status and have demonstrated a preservation interest.

Participation in this review will ensure that your interests in historic properties within the Area of Potential Effect are considered in the Section 106 process. Whether through public meetings, materials posted on our website, or through direct mailings to consulting parties, the following opportunities for input will be provided:

- VA will provide consulting parties the opportunity to comment on the National Register eligibility of properties located within the APE.
- VA will provide consulting parties the opportunity to comment on the effects the proposed undertaking may have to properties/districts listed or determined eligible for listing in the National Register.
- VA will provide consulting parties the opportunity to comment on proposed measures to minimize harm or proposed mitigation options for NRHP properties/district that would be adversely affected by the proposed undertaking.

If you would like to participate as a designated consulting party, please sign and date this letter (attached) and return it as indicated.

If you or your organization have any concerns regarding specific historic resources within the project area, please contact Susan Lassell at AECOM at susan.lassell@aecom.com or telephone at 415.955.2963.

Sincerely,

Lawrence H. Carroll
Medical Center Director

Enclosure

Please add me to the list of designated consulting parties:

Cheryl Cook
County Veterans Service Office
27 B Van Ness Avenue
San Francisco, CA 94102

_____
Signature

_____
Date

Additional Contact Information (not required)

Telephone: _____

Email Address: _____

If any of this information needs updating, please make corrections to this page before returning the form to:

Susan Lassell
AECOM
150 Chestnut Street
San Francisco, CA 94111

June 14, 2012

Brian Lusher
Advisory Council on Historic Preservation
Old Post Office Building
1100 Pennsylvania Avenue, NW, Ste. 803
Washington, DC 20004

Subject: National Historic Preservation Act Section 106 Consultation on the San Francisco Veterans Affairs Medical Center, Long Range Development Plan

Dear Mr. Lusher:

The U.S. Department of Veterans Affairs (VA) is preparing a Long Range Development Plan (LRDP) for the San Francisco Veterans Affairs Medical Center (SFVAMC) at Fort Miley in San Francisco, California. The SFVAMC is located on a 29-acre site in northwest San Francisco and is a major tertiary care facility that serves as a VA regional referral center for specialized medical and surgical programs. The SFVAMC serves Veterans of the San Francisco Bay Area and northern California coast counties.

The 12-acre SFVAMC National Register Historic District lies within the boundaries of the SFVAMC Fort Miley Campus. The purpose of the LRDP is to establish the road map for the facility development projects necessary to meet the mission of VHA. VHA has identified a need for retrofitting existing buildings to the most recent seismic safety requirements and for an additional currently estimated 600,000 square feet of medical facility space to meet the needs of all San Francisco Bay Area and North Coast Veterans over the next 20 years. Maps depicting the project location and vicinity are attached.

Introduction
The purpose of this letter is to invite you to participate in the Section 106 Process as a consulting party.

The Regulatory Process
Section 106 of the National Historic Preservation Act (NHPA) requires the VA to identify historically significant resources that are located within a proposed project's area of potential effects and show that project planners and engineers have "taken into account" project effects on properties listed in or eligible for listing in the National Register of Historic Places. The Section 106 process also requires consultation between the VA, SHPO, and the interested public.

The VA has compiled a preliminary list of preservation contacts in compliance with 36 CFR 800.2(c)(3-5). The regulation states that the following shall be considered consulting parties: SHPO, federally recognized Indian Tribes, representatives of local governments, and "certain individuals and organizations with a demonstrated interest in the undertaking... due to the nature of their legal or economic relation to the undertaking or affected properties, or their concern with the undertaking's effects on historic properties." The regulations also require that the VA "seek and consider the views of the public in a manner that reflects the nature and complexity of the undertaking and its effects on historic properties." The VA must provide the interested public with information about the undertaking and its effects on historic properties and seek public comment and input. Members of the public may also provide views on their own initiative for officials to consider in decision making.

In response to these federal regulations, the VA has developed the following criteria for generating the candidate list of consulting parties.

- Individuals or groups who have a demonstrated interest in historic preservation in San Francisco;
- Neighborhood groups or associations whose area or boundary of jurisdictional interest include area within the APE;
- Local, state, or federal government agencies whose boundaries of jurisdictional interest include area within the APE;
- Individuals or organizations that have specifically requested "consulting party" status and have demonstrated a preservation interest.

Participation in this review will ensure that your interests in historic properties within the Area of Potential Effect are considered in the Section 106 process. Whether through public meetings, materials posted on our website, or through direct mailings to consulting parties, the following opportunities for input will be provided:

- VA will provide consulting parties the opportunity to comment on the National Register eligibility of properties located within the APE.
- VA will provide consulting parties the opportunity to comment on the effects the proposed undertaking may have to properties/districts listed or determined eligible for listing in the National Register.
- VA will provide consulting parties the opportunity to comment on proposed measures to minimize harm or proposed mitigation options for NRHP properties/district that would be adversely affected by the proposed undertaking.

If you would like to participate as a designated consulting party, please sign and date this letter (attached) and return it as indicated.

If you or your organization have any concerns regarding specific historic resources within the project area, please contact Susan Lassell at AECOM at susan.lassell@aecom.com or telephone at 415.955.2963.

Sincerely,

Lawrence H. Carroll
Medical Center Director

Enclosure

Please add me to the list of designated consulting parties:

Brian Lusher
Advisory Council on Historic Preservation
Old Post Office Building
1100 Pennsylvania Avenue, NW, Ste. 803
Washington, DC 20004

_____
Signature

_____
Date

Additional Contact Information (not required)

Telephone: _____

Email Address: _____

If any of this information needs updating, please make corrections to this page before returning the form to:

Susan Lassell
AECOM
150 Chestnut Street
San Francisco, CA 94111

APPENDIX B: LRDP DEVELOPMENT PROGRAM BY PHASE

SFVAMC LRDP – Development Program by Phase (Revised June 2012)

Phase	Building	Building Gross Square Feet (GSF)	Stories	Construction Start	Construction End
Phase 1: 2013-2015					
1.1	Building 41 (Research)	14,200	2	January 2013	December 2013
1.1	Building T-17	-1,700		January 2013	December 2013
1.2	Emergency Operations Center and Building 211 Parking Garage Expansion (477 spaces; 295 net new)	5,000 gsf *(2,000 for EOC, 3,000 for storage space)*[6] plus 150,000 square feet of new parking garage	5	January 2013	May 2014
1.3	Building 22 (Hoptel)	8,700	2	January 2013	January 2014
1.3	Seismic Retrofit Buildings 5, 7, 9, 10, 11, and 13	n/a		January 2013	January 2014
1.4	Patient Welcome Center and Drop Off Area	14,800 *(1,350 is drop off area)*	1	August 2013	August 2015
1.5	Building 24 (Mental Health Clinic Expansion)	15,600	3	May 2014	June 2015
1.5	Building 20	-2,300		May 2014	June 2015
Phase 1 Total New Construction		***58,300 (208,300 with parking garage)***			
Phase 1 Total Demolition		***-4,000***			
Phase 1 Net New Construction		***54,300 (204,300 with parking garage)***			

[6] The Emergency Operations Center and Building 211 Parking Garage square footage in this table reflects both the habitable (center and storage area) and the nonhabitable (parking garage) space planned for construction. Although the SFVAMC Long Range Development Plan discusses habitable square footage, the FOE evaluates the impacts associated with construction of the entire square footage, including nonhabitable space.

Phase	Building	Building Gross Square Feet (GSF)	Stories	Construction Start	Construction End
Phase 2: 2015-2023					
2.1	Operating Room Expansion (D-Wing)	5,300	1	October 2015	October 2016
2.2	IT Support Space Expansion	7,000	2	April 2016	October 2017
2.3	Building 23 (Mental Health Research Expansion)	15,000	3 (+basement)	June 2016	July 2017
2.4	Building 40 (Research)	100,000	5 (+basement)	October 2016	April 2023
2.4	Seismic Retrofit Buildings 1, 6, 8	n/a		October 2016	April 2023
2.4	Building 14 (Removal)	-9,700		October 2016	April 2023
2.4	Building 18	-6,400		October 2016	April 2023
2.4	Building 21	-1,700		October 2016	April 2023
2.4	Building T-23	-900		October 2016	April 2023
2.4	Building 12	-38,900		October 2016	April 2023
2.5	Ambulatory Care Center (ACC)	120,000	5 (+basement)	June 2021	January 2023
Phase 2 Total New Construction		***247,300***			
Phase 2 Total Demolition		***-57,600***			
Phase 2 Net New Construction		***189,700***			
Temporary Construction[7]					
	Swing Space (Temporary)	24,000	1	June 2015	June 2016

[7] Not included in total GSF, as it is temporary space

CALIFORNIA
HISTORICAL
RESOURCES
INFORMATION
SYSTEM

ALAMEDA
COLUSA
CONTRA COSTA
LAKE
MARIN
MENDOCINO
MONTEREY
NAPA
SAN BENITO
SAN FRANCISCO
SAN MATEO
SANTA CLARA
SANTA CRUZ
SOLANO
SONOMA
YOLO

Northwest Information Center
Sonoma State University
150 Professional Center Drive, Suite E
Rohnert Park, California 94928-3609
Tel: 707.588.8455
Email: leigh.jordan@sonoma.edu
http://www.sonoma.edu/nwic

Date: October 25, 2011
NWIC File No.: 11-0457
To: Jesse Martinez
From: Frank Gravante
Re: SFVAMC Section 106 Services RAPID RESPONSE

Summary of Search

Resource sites within project area:
38-000089

Resource sites within ½ mi. radius:
38-000005 38-000020 38-000021 38-004466 38-004656

Study Reports within project area:
S-003238 S-038114

S-028384 *This report is a Collections Catalog from The Presidio Trust. The Listing is over 1000 pages and is NOT included in this Record Search due to its size. If you would like a copy of the report please contact the NWIC. The cost is 15 cents per page, and 1 hour labor charge of 40 dollars, pdf copy is an additional 25 dollars.*

Study Reports within ½ mi. radius:
S-003221 S-012505 S-017662 S-018330 S-018335 S-018341 S-018631
S-019261 S-019262 S-022657 S-023344 S-028384 S-036940 S-038114

Other Reports*:
S-000848 S-009462 S-011332 S-026045 S-033600
S-003214 S-009580 S-015529 S-032596 S-038113
S-006160 S-009583 S-018217 S-033041

Other reports are reports with little or no field work and/or missing maps or inadequate locational information. **You have NOT been charged the "digitized shape fee" for these reports. Copies available on request.*

OHP HPD:	City of San Francisco (relevant streets)	pdf on disc
OHP ADOE:	City of San Francisco	pdf on disc
California Inventory of Historical Resources (1976):	none found	
PLAT	General Land Office Plat Map T2sR6w MDB&M Year 1864	included at no charge

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for San Mateo County, Eastern Part, and San Francisco County, California

SFVAMC

January 17, 2012

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://soils.usda.gov/sqi/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (http://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://soils.usda.gov/contact/state_offices/).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Soil Data Mart Web site or the NRCS Web Soil Survey. The Soil Data Mart is the data storage site for the official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means

for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the

individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map (SFVAMC)

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Units

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other

Special Line Features
- Gully
- Short Steep Slope
- Other

Political Features
- Cities

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

MAP INFORMATION

Map Scale: 1:3,010 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 10N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: San Mateo County, Eastern Part, and San Francisco County, California
Survey Area Data: Version 9, Jul 11, 2011

Date(s) aerial images were photographed: 6/12/2005

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend (SFVAMC)

San Mateo County, Eastern Part, and San Francisco County, California (CA689)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
129	Sirdrak sand, 5 to 50 percent slopes	10.1	29.0%
136	Urban land-Sirdrak complex, 2 to 50 percent slopes	24.7	71.0%
Totals for Area of Interest		**34.8**	**100.0%**

Map Unit Descriptions (SFVAMC)

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

San Mateo County, Eastern Part, and San Francisco County, California

129—Sirdrak sand, 5 to 50 percent slopes

Map Unit Setting

Elevation: 20 to 700 feet
Mean annual precipitation: 20 to 25 inches
Mean annual air temperature: 54 to 57 degrees F
Frost-free period: 300 to 350 days

Map Unit Composition

Sirdrak and similar soils: 85 percent
Minor components: 8 percent

Description of Sirdrak

Setting

Landform: Dunes
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Concave
Parent material: Eolian sands

Properties and qualities

Slope: 5 to 50 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 3.6 inches)

Interpretive groups

Land capability (nonirrigated): 6e

Typical profile

0 to 17 inches: Sand
17 to 60 inches: Sand

Minor Components

Beaches

Percent of map unit: 3 percent
Landform: Beaches

Unnamed

Percent of map unit: 1 percent
Landform: Tidal flats

Duneland

Percent of map unit: 1 percent

Typic argiustolls

Percent of map unit: 1 percent

Urban land
Percent of map unit: 1 percent

Unnamed
Percent of map unit: 1 percent

136—Urban land-Sirdrak complex, 2 to 50 percent slopes

Map Unit Setting
Elevation: 10 to 800 feet
Mean annual precipitation: 15 to 25 inches
Mean annual air temperature: 52 to 55 degrees F
Frost-free period: 300 to 350 days

Map Unit Composition
Urban land: 45 percent
Sirdrak and similar soils: 35 percent
Minor components: 20 percent

Description of Urban Land

Setting
Landform: Beach terraces, dunes

Interpretive groups
Land capability (nonirrigated): 7e

Description of Sirdrak

Setting
Landform: Beach terraces, dunes
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear

Properties and qualities
Slope: 2 to 50 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Available water capacity: Low (about 3.6 inches)

Interpretive groups
Land capability (nonirrigated): 6e

Typical profile
0 to 17 inches: Sand

17 to 60 inches: Sand

Minor Components

Unnamed
Percent of map unit: 10 percent

Unnamed
Percent of map unit: 10 percent

References

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

National Research Council. 1995. Wetlands: Characteristics and boundaries.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://soils.usda.gov/

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://soils.usda.gov/

Soil Survey Staff. 2006. Keys to soil taxonomy. 10th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://soils.usda.gov/

Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.

United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://soils.usda.gov/

United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. http://www.glti.nrcs.usda.gov/

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://soils.usda.gov/

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://soils.usda.gov/

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210.

Glossary

Many of the terms relating to landforms, geology, and geomorphology are defined in more detail in the "National Soil Survey Handbook."

ABC soil

A soil having an A, a B, and a C horizon.

Ablation till

Loose, relatively permeable earthy material deposited during the downwasting of nearly static glacial ice, either contained within or accumulated on the surface of the glacier.

AC soil

A soil having only an A and a C horizon. Commonly, such soil formed in recent alluvium or on steep, rocky slopes.

Aeration, soil

The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

Aggregate, soil

Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alkali (sodic) soil

A soil having so high a degree of alkalinity (pH 8.5 or higher) or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.

Alluvial cone

A semiconical type of alluvial fan having very steep slopes. It is higher, narrower, and steeper than a fan and is composed of coarser and thicker layers of material deposited by a combination of alluvial episodes and (to a much lesser degree) landslides (debris flow). The coarsest materials tend to be concentrated at the apex of the cone.

Alluvial fan

A low, outspread mass of loose materials and/or rock material, commonly with gentle slopes. It is shaped like an open fan or a segment of a cone. The material was deposited by a stream at the place where it issues from a narrow mountain valley or upland valley or where a tributary stream is near or at its junction with the main stream. The fan is steepest near its apex, which points upstream, and slopes gently and convexly outward (downstream) with a gradual decrease in gradient.

Alluvium

Unconsolidated material, such as gravel, sand, silt, clay, and various mixtures of these, deposited on land by running water.

Alpha,alpha-dipyridyl

A compound that when dissolved in ammonium acetate is used to detect the presence of reduced iron (Fe II) in the soil. A positive reaction implies reducing conditions and the likely presence of redoximorphic features.

Animal unit month (AUM)

The amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.

Aquic conditions

Current soil wetness characterized by saturation, reduction, and redoximorphic features.

Argillic horizon

A subsoil horizon characterized by an accumulation of illuvial clay.

Arroyo

The flat-floored channel of an ephemeral stream, commonly with very steep to vertical banks cut in unconsolidated material. It is usually dry but can be transformed into a temporary watercourse or short-lived torrent after heavy rain within the watershed.

Aspect

The direction toward which a slope faces. Also called slope aspect.

Association, soil

A group of soils or miscellaneous areas geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.

Available water capacity (available moisture capacity)

The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as:

Very low: 0 to 3
Low: 3 to 6
Moderate: 6 to 9
High: 9 to 12
Very high: More than 12

Backslope

The position that forms the steepest and generally linear, middle portion of a hillslope. In profile, backslopes are commonly bounded by a convex shoulder above and a concave footslope below.

Backswamp

A flood-plain landform. Extensive, marshy or swampy, depressed areas of flood plains between natural levees and valley sides or terraces.

Badland

A landscape that is intricately dissected and characterized by a very fine drainage network with high drainage densities and short, steep slopes and narrow interfluves. Badlands develop on surfaces that have little or no vegetative cover overlying unconsolidated or poorly cemented materials (clays, silts, or sandstones) with, in some cases, soluble minerals, such as gypsum or halite.

Bajada

A broad, gently inclined alluvial piedmont slope extending from the base of a mountain range out into a basin and formed by the lateral coalescence of a series of alluvial fans. Typically, it has a broadly undulating transverse profile, parallel to the mountain front, resulting from the convexities of component fans. The term is generally restricted to constructional slopes of intermontane basins.

Basal area

The area of a cross section of a tree, generally referring to the section at breast height and measured outside the bark. It is a measure of stand density, commonly expressed in square feet.

Base saturation

The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, and K), expressed as a percentage of the total cation-exchange capacity.

Base slope (geomorphology)

A geomorphic component of hills consisting of the concave to linear (perpendicular to the contour) slope that, regardless of the lateral shape, forms an apron or wedge at the bottom of a hillside dominated by colluvium and slope-wash sediments (for example, slope alluvium).

Bedding plane

A planar or nearly planar bedding surface that visibly separates each successive layer of stratified sediment or rock (of the same or different lithology) from the preceding or following layer; a plane of deposition. It commonly marks a change

in the circumstances of deposition and may show a parting, a color difference, a change in particle size, or various combinations of these. The term is commonly applied to any bedding surface, even one that is conspicuously bent or deformed by folding.

Bedding system

A drainage system made by plowing, grading, or otherwise shaping the surface of a flat field. It consists of a series of low ridges separated by shallow, parallel dead furrows.

Bedrock

The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Bedrock-controlled topography

A landscape where the configuration and relief of the landforms are determined or strongly influenced by the underlying bedrock.

Bench terrace

A raised, level or nearly level strip of earth constructed on or nearly on a contour, supported by a barrier of rocks or similar material, and designed to make the soil suitable for tillage and to prevent accelerated erosion.

Bisequum

Two sequences of soil horizons, each of which consists of an illuvial horizon and the overlying eluvial horizons.

Blowout (map symbol)

A saucer-, cup-, or trough-shaped depression formed by wind erosion on a preexisting dune or other sand deposit, especially in an area of shifting sand or loose soil or where protective vegetation is disturbed or destroyed. The adjoining accumulation of sand derived from the depression, where recognizable, is commonly included. Blowouts are commonly small.

Borrow pit (map symbol)

An open excavation from which soil and underlying material have been removed, usually for construction purposes.

Bottom land

An informal term loosely applied to various portions of a flood plain.

Boulders

Rock fragments larger than 2 feet (60 centimeters) in diameter.

Breaks

A landscape or tract of steep, rough or broken land dissected by ravines and gullies and marking a sudden change in topography.

Breast height

An average height of 4.5 feet above the ground surface; the point on a tree where diameter measurements are ordinarily taken.

Brush management

Use of mechanical, chemical, or biological methods to make conditions favorable for reseeding or to reduce or eliminate competition from woody vegetation and thus allow understory grasses and forbs to recover. Brush management increases forage production and thus reduces the hazard of erosion. It can improve the habitat for some species of wildlife.

Butte

An isolated, generally flat-topped hill or mountain with relatively steep slopes and talus or precipitous cliffs and characterized by summit width that is less than the height of bounding escarpments; commonly topped by a caprock of resistant material and representing an erosion remnant carved from flat-lying rocks.

Cable yarding

A method of moving felled trees to a nearby central area for transport to a processing facility. Most cable yarding systems involve use of a drum, a pole, and wire cables in an arrangement similar to that of a rod and reel used for fishing. To reduce friction and soil disturbance, felled trees generally are reeled in while one end is lifted or the entire log is suspended.

Calcareous soil

A soil containing enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.

Caliche

A general term for a prominent zone of secondary carbonate accumulation in surficial materials in warm, subhumid to arid areas. Caliche is formed by both geologic and pedologic processes. Finely crystalline calcium carbonate forms a nearly continuous surface-coating and void-filling medium in geologic (parent) materials. Cementation ranges from weak in nonindurated forms to very strong in indurated forms. Other minerals (e.g., carbonates, silicate, and sulfate) may occur as accessory cements. Most petrocalcic horizons and some calcic horizons are caliche.

California bearing ratio (CBR)

The load-supporting capacity of a soil as compared to that of standard crushed limestone, expressed as a ratio. First standardized in California. A soil having a CBR of 16 supports 16 percent of the load that would be supported by standard crushed limestone, per unit area, with the same degree of distortion.

Canopy

The leafy crown of trees or shrubs. (See Crown.)

Canyon

A long, deep, narrow valley with high, precipitous walls in an area of high local relief.

Capillary water

Water held as a film around soil particles and in tiny spaces between particles. Surface tension is the adhesive force that holds capillary water in the soil.

Catena

A sequence, or “chain,” of soils on a landscape that formed in similar kinds of parent material and under similar climatic conditions but that have different characteristics as a result of differences in relief and drainage.

Cation

An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

Cation-exchange capacity

The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity but is more precise in meaning.

Catsteps

See Terracettes.

Cement rock

Shaly limestone used in the manufacture of cement.

Channery soil material

Soil material that has, by volume, 15 to 35 percent thin, flat fragments of sandstone, shale, slate, limestone, or schist as much as 6 inches (15 centimeters) along the longest axis. A single piece is called a channer.

Chemical treatment

Control of unwanted vegetation through the use of chemicals.

Chiseling

Tillage with an implement having one or more soil-penetrating points that shatter or loosen hard, compacted layers to a depth below normal plow depth.

Cirque

A steep-walled, semicircular or crescent-shaped, half-bowl-like recess or hollow, commonly situated at the head of a glaciated mountain valley or high on the side of a mountain. It was produced by the erosive activity of a mountain glacier. It commonly contains a small round lake (tarn).

Clay

As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay depletions

See Redoximorphic features.

Clay film

A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Clay spot (map symbol)

A spot where the surface texture is silty clay or clay in areas where the surface layer of the soils in the surrounding map unit is sandy loam, loam, silt loam, or coarser.

Claypan

A dense, compact subsoil layer that contains much more clay than the overlying materials, from which it is separated by a sharply defined boundary. The layer restricts the downward movement of water through the soil. A claypan is commonly hard when dry and plastic and sticky when wet.

Climax plant community

The stabilized plant community on a particular site. The plant cover reproduces itself and does not change so long as the environment remains the same.

Coarse textured soil

Sand or loamy sand.

Cobble (or cobblestone)

A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.

Cobbly soil material

Material that has 15 to 35 percent, by volume, rounded or partially rounded rock fragments 3 to 10 inches (7.6 to 25 centimeters) in diameter. Very cobbly soil material has 35 to 60 percent of these rock fragments, and extremely cobbly soil material has more than 60 percent.

COLE (coefficient of linear extensibility)

See Linear extensibility.

Colluvium

Unconsolidated, unsorted earth material being transported or deposited on side slopes and/or at the base of slopes by mass movement (e.g., direct gravitational action) and by local, unconcentrated runoff.

Complex slope

Irregular or variable slope. Planning or establishing terraces, diversions, and other water-control structures on a complex slope is difficult.

Complex, soil

A map unit of two or more kinds of soil or miscellaneous areas in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.

Concretions

See Redoximorphic features.

Conglomerate

A coarse grained, clastic sedimentary rock composed of rounded or subangular rock fragments more than 2 millimeters in diameter. It commonly has a matrix of sand and finer textured material. Conglomerate is the consolidated equivalent of gravel.

Conservation cropping system

Growing crops in combination with needed cultural and management practices. In a good conservation cropping system, the soil-improving crops and practices more than offset the effects of the soil-depleting crops and practices. Cropping systems are needed on all tilled soils. Soil-improving practices in a conservation cropping system include the use of rotations that contain grasses and legumes and the return of crop residue to the soil. Other practices include the use of green manure crops of grasses and legumes, proper tillage, adequate fertilization, and weed and pest control.

Conservation tillage

A tillage system that does not invert the soil and that leaves a protective amount of crop residue on the surface throughout the year.

Consistence, soil

Refers to the degree of cohesion and adhesion of soil material and its resistance to deformation when ruptured. Consistence includes resistance of soil material to rupture and to penetration; plasticity, toughness, and stickiness of puddled soil material; and the manner in which the soil material behaves when subject to compression. Terms describing consistence are defined in the “Soil Survey Manual.”

Contour stripcropping

Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Control section

The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Coprogenous earth (sedimentary peat)

A type of limnic layer composed predominantly of fecal material derived from aquatic animals.

Corrosion (geomorphology)

A process of erosion whereby rocks and soil are removed or worn away by natural chemical processes, especially by the solvent action of running water, but also by other reactions, such as hydrolysis, hydration, carbonation, and oxidation.

Corrosion (soil survey interpretations)

Soil-induced electrochemical or chemical action that dissolves or weakens concrete or uncoated steel.

Cover crop

A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Crop residue management

Returning crop residue to the soil, which helps to maintain soil structure, organic matter content, and fertility and helps to control erosion.

Cropping system

Growing crops according to a planned system of rotation and management practices.

Cross-slope farming

Deliberately conducting farming operations on sloping farmland in such a way that tillage is across the general slope.

Crown

The upper part of a tree or shrub, including the living branches and their foliage.

Cryoturbate

A mass of soil or other unconsolidated earthy material moved or disturbed by frost action. It is typically coarser than the underlying material.

Cuesta

An asymmetric ridge capped by resistant rock layers of slight or moderate dip (commonly less than 15 percent slopes); a type of homocline produced by differential erosion of interbedded resistant and weak rocks. A cuesta has a long, gentle slope on one side (dip slope) that roughly parallels the inclined beds; on the other side, it has a relatively short and steep or clifflike slope (scarp) that cuts through the tilted rocks.

Culmination of the mean annual increment (CMAI)

The average annual increase per acre in the volume of a stand. Computed by dividing the total volume of the stand by its age. As the stand increases in age,

the mean annual increment continues to increase until mortality begins to reduce the rate of increase. The point where the stand reaches its maximum annual rate of growth is called the culmination of the mean annual increment.

Cutbanks cave

The walls of excavations tend to cave in or slough.

Decreasers

The most heavily grazed climax range plants. Because they are the most palatable, they are the first to be destroyed by overgrazing.

Deferred grazing

Postponing grazing or resting grazing land for a prescribed period.

Delta

A body of alluvium having a surface that is fan shaped and nearly flat; deposited at or near the mouth of a river or stream where it enters a body of relatively quiet water, generally a sea or lake.

Dense layer

A very firm, massive layer that has a bulk density of more than 1.8 grams per cubic centimeter. Such a layer affects the ease of digging and can affect filling and compacting.

Depression, closed (map symbol)

A shallow, saucer-shaped area that is slightly lower on the landscape than the surrounding area and that does not have a natural outlet for surface drainage.

Depth, soil

Generally, the thickness of the soil over bedrock. Very deep soils are more than 60 inches deep over bedrock; deep soils, 40 to 60 inches; moderately deep, 20 to 40 inches; shallow, 10 to 20 inches; and very shallow, less than 10 inches.

Desert pavement

A natural, residual concentration or layer of wind-polished, closely packed gravel, boulders, and other rock fragments mantling a desert surface. It forms where wind action and sheetwash have removed all smaller particles or where rock fragments have migrated upward through sediments to the surface. It typically protects the finer grained underlying material from further erosion.

Diatomaceous earth

A geologic deposit of fine, grayish siliceous material composed chiefly or entirely of the remains of diatoms.

Dip slope

A slope of the land surface, roughly determined by and approximately conforming to the dip of the underlying bedrock.

Diversion (or diversion terrace)

A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Divided-slope farming

A form of field stripcropping in which crops are grown in a systematic arrangement of two strips, or bands, across the slope to reduce the hazard of water erosion. One strip is in a close-growing crop that provides protection from erosion, and the other strip is in a crop that provides less protection from erosion. This practice is used where slopes are not long enough to permit a full stripcropping pattern to be used.

Drainage class (natural)

Refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized—*excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained,* and *very poorly drained*. These classes are defined in the “Soil Survey Manual.”

Drainage, surface

Runoff, or surface flow of water, from an area.

Drainageway

A general term for a course or channel along which water moves in draining an area. A term restricted to relatively small, linear depressions that at some time move concentrated water and either do not have a defined channel or have only a small defined channel.

Draw

A small stream valley that generally is shallower and more open than a ravine or gulch and that has a broader bottom. The present stream channel may appear inadequate to have cut the drainageway that it occupies.

Drift

A general term applied to all mineral material (clay, silt, sand, gravel, and boulders) transported by a glacier and deposited directly by or from the ice or transported by running water emanating from a glacier. Drift includes unstratified material (till) that forms moraines and stratified deposits that form outwash plains, eskers, kames, varves, and glaciofluvial sediments. The term is generally applied to Pleistocene glacial deposits in areas that no longer contain glaciers.

Drumlin

A low, smooth, elongated oval hill, mound, or ridge of compact till that has a core of bedrock or drift. It commonly has a blunt nose facing the direction from which the ice approached and a gentler slope tapering in the other direction. The longer axis is parallel to the general direction of glacier flow. Drumlins are products of

streamline (laminar) flow of glaciers, which molded the subglacial floor through a combination of erosion and deposition.

Duff

A generally firm organic layer on the surface of mineral soils. It consists of fallen plant material that is in the process of decomposition and includes everything from the litter on the surface to underlying pure humus.

Dune

A low mound, ridge, bank, or hill of loose, windblown granular material (generally sand), either barren and capable of movement from place to place or covered and stabilized with vegetation but retaining its characteristic shape.

Earthy fill

See Mine spoil.

Ecological site

An area where climate, soil, and relief are sufficiently uniform to produce a distinct natural plant community. An ecological site is the product of all the environmental factors responsible for its development. It is typified by an association of species that differ from those on other ecological sites in kind and/or proportion of species or in total production.

Eluviation

The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

Endosaturation

A type of saturation of the soil in which all horizons between the upper boundary of saturation and a depth of 2 meters are saturated.

Eolian deposit

Sand-, silt-, or clay-sized clastic material transported and deposited primarily by wind, commonly in the form of a dune or a sheet of sand or loess.

Ephemeral stream

A stream, or reach of a stream, that flows only in direct response to precipitation. It receives no long-continued supply from melting snow or other source, and its channel is above the water table at all times.

Episaturation

A type of saturation indicating a perched water table in a soil in which saturated layers are underlain by one or more unsaturated layers within 2 meters of the surface.

Erosion

The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (accelerated)

Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, such as a fire, that exposes the surface.

Erosion (geologic)

Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion pavement

A surficial lag concentration or layer of gravel and other rock fragments that remains on the soil surface after sheet or rill erosion or wind has removed the finer soil particles and that tends to protect the underlying soil from further erosion.

Erosion surface

A land surface shaped by the action of erosion, especially by running water.

Escarpment

A relatively continuous and steep slope or cliff breaking the general continuity of more gently sloping land surfaces and resulting from erosion or faulting. Most commonly applied to cliffs produced by differential erosion. Synonym: scarp.

Escarpment, bedrock (map symbol)

A relatively continuous and steep slope or cliff, produced by erosion or faulting, that breaks the general continuity of more gently sloping land surfaces. Exposed material is hard or soft bedrock.

Escarpment, nonbedrock (map symbol)

A relatively continuous and steep slope or cliff, generally produced by erosion but in some places produced by faulting, that breaks the continuity of more gently sloping land surfaces. Exposed earthy material is nonsoil or very shallow soil.

Esker

A long, narrow, sinuous, steep-sided ridge of stratified sand and gravel deposited as the bed of a stream flowing in an ice tunnel within or below the ice (subglacial) or between ice walls on top of the ice of a wasting glacier and left behind as high ground when the ice melted. Eskers range in length from less than a kilometer to more than 160 kilometers and in height from 3 to 30 meters.

Extrusive rock

Igneous rock derived from deep-seated molten matter (magma) deposited and cooled on the earth’s surface.

Fallow

Cropland left idle in order to restore productivity through accumulation of moisture. Summer fallow is common in regions of limited rainfall where cereal grain is grown.

The soil is tilled for at least one growing season for weed control and decomposition of plant residue.

Fan remnant

A general term for landforms that are the remaining parts of older fan landforms, such as alluvial fans, that have been either dissected or partially buried.

Fertility, soil

The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Fibric soil material (peat)

The least decomposed of all organic soil material. Peat contains a large amount of well preserved fiber that is readily identifiable according to botanical origin. Peat has the lowest bulk density and the highest water content at saturation of all organic soil material.

Field moisture capacity

The moisture content of a soil, expressed as a percentage of the ovendry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity, normal moisture capacity,* or *capillary capacity*.

Fill slope

A sloping surface consisting of excavated soil material from a road cut. It commonly is on the downhill side of the road.

Fine textured soil

Sandy clay, silty clay, or clay.

Firebreak

An area cleared of flammable material to stop or help control creeping or running fires. It also serves as a line from which to work and to facilitate the movement of firefighters and equipment. Designated roads also serve as firebreaks.

First bottom

An obsolete, informal term loosely applied to the lowest flood-plain steps that are subject to regular flooding.

Flaggy soil material

Material that has, by volume, 15 to 35 percent flagstones. Very flaggy soil material has 35 to 60 percent flagstones, and extremely flaggy soil material has more than 60 percent flagstones.

Flagstone

A thin fragment of sandstone, limestone, slate, shale, or (rarely) schist 6 to 15 inches (15 to 38 centimeters) long.

Flood plain

The nearly level plain that borders a stream and is subject to flooding unless protected artificially.

Flood-plain landforms

A variety of constructional and erosional features produced by stream channel migration and flooding. Examples include backswamps, flood-plain splays, meanders, meander belts, meander scrolls, oxbow lakes, and natural levees.

Flood-plain splay

A fan-shaped deposit or other outspread deposit formed where an overloaded stream breaks through a levee (natural or artificial) and deposits its material (commonly coarse grained) on the flood plain.

Flood-plain step

An essentially flat, terrace-like alluvial surface within a valley that is frequently covered by floodwater from the present stream; any approximately horizontal surface still actively modified by fluvial scour and/or deposition. May occur individually or as a series of steps.

Fluvial

Of or pertaining to rivers or streams; produced by stream or river action.

Foothills

A region of steeply sloping hills that fringes a mountain range or high-plateau escarpment. The hills have relief of as much as 1,000 feet (300 meters).

Footslope

The concave surface at the base of a hillslope. A footslope is a transition zone between upslope sites of erosion and transport (shoulders and backslopes) and downslope sites of deposition (toeslopes).

Forb

Any herbaceous plant not a grass or a sedge.

Forest cover

All trees and other woody plants (underbrush) covering the ground in a forest.

Forest type

A stand of trees similar in composition and development because of given physical and biological factors by which it may be differentiated from other stands.

Fragipan

A loamy, brittle subsurface horizon low in porosity and content of organic matter and low or moderate in clay but high in silt or very fine sand. A fragipan appears cemented and restricts roots. When dry, it is hard or very hard and has a higher bulk density than the horizon or horizons above. When moist, it tends to rupture suddenly under pressure rather than to deform slowly.

Genesis, soil

The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Gilgai

Commonly, a succession of microbasins and microknolls in nearly level areas or of microvalleys and microridges parallel with the slope. Typically, the microrelief of clayey soils that shrink and swell considerably with changes in moisture content.

Glaciofluvial deposits

Material moved by glaciers and subsequently sorted and deposited by streams flowing from the melting ice. The deposits are stratified and occur in the form of outwash plains, valley trains, deltas, kames, eskers, and kame terraces.

Glaciolacustrine deposits

Material ranging from fine clay to sand derived from glaciers and deposited in glacial lakes mainly by glacial meltwater. Many deposits are bedded or laminated.

Gleyed soil

Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors.

Graded stripcropping

Growing crops in strips that grade toward a protected waterway.

Grassed waterway

A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel

Rounded or angular fragments of rock as much as 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

Gravel pit (map symbol)

An open excavation from which soil and underlying material have been removed and used, without crushing, as a source of sand or gravel.

Gravelly soil material

Material that has 15 to 35 percent, by volume, rounded or angular rock fragments, not prominently flattened, as much as 3 inches (7.6 centimeters) in diameter.

Gravelly spot (map symbol)

A spot where the surface layer has more than 35 percent, by volume, rock fragments that are mostly less than 3 inches in diameter in an area that has less than 15 percent rock fragments.

Green manure crop (agronomy)

A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

Ground water

Water filling all the unblocked pores of the material below the water table.

Gully (map symbol)

A small, steep-sided channel caused by erosion and cut in unconsolidated materials by concentrated but intermittent flow of water. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage whereas a rill is of lesser depth and can be smoothed over by ordinary tillage.

Hard bedrock

Bedrock that cannot be excavated except by blasting or by the use of special equipment that is not commonly used in construction.

Hard to reclaim

Reclamation is difficult after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Hardpan

A hardened or cemented soil horizon, or layer. The soil material is sandy, loamy, or clayey and is cemented by iron oxide, silica, calcium carbonate, or other substance.

Head slope (geomorphology)

A geomorphic component of hills consisting of a laterally concave area of a hillside, especially at the head of a drainageway. The overland waterflow is converging.

Hemic soil material (mucky peat)

Organic soil material intermediate in degree of decomposition between the less decomposed fibric material and the more decomposed sapric material.

High-residue crops

Such crops as small grain and corn used for grain. If properly managed, residue from these crops can be used to control erosion until the next crop in the rotation is established. These crops return large amounts of organic matter to the soil.

Hill

A generic term for an elevated area of the land surface, rising as much as 1,000 feet above surrounding lowlands, commonly of limited summit area and having a well defined outline. Slopes are generally more than 15 percent. The distinction between a hill and a mountain is arbitrary and may depend on local usage.

Hillslope

A generic term for the steeper part of a hill between its summit and the drainage line, valley flat, or depression floor at the base of a hill.

Horizon, soil

A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the “Soil Survey Manual.” The major horizons of mineral soil are as follows:

O horizon: An organic layer of fresh and decaying plant residue.

L horizon: A layer of organic and mineral limnic materials, including coprogenous earth (sedimentary peat), diatomaceous earth, and marl.

A horizon: The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

E horizon: The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

B horizon: The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

C horizon: The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the overlying soil material. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.

Cr horizon: Soft, consolidated bedrock beneath the soil.

R layer: Consolidated bedrock beneath the soil. The bedrock commonly underlies a C horizon, but it can be directly below an A or a B horizon.

M layer: A root-limiting subsoil layer consisting of nearly continuous, horizontally oriented, human-manufactured materials.

W layer: A layer of water within or beneath the soil.

Humus

The well decomposed, more or less stable part of the organic matter in mineral soils.

Hydrologic soil groups

Refers to soils grouped according to their runoff potential. The soil properties that influence this potential are those that affect the minimum rate of water infiltration on a bare soil during periods after prolonged wetting when the soil is not frozen. These properties include depth to a seasonal high water table, the infiltration rate, and depth to a layer that significantly restricts the downward movement of water. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff.

Igneous rock

Rock that was formed by cooling and solidification of magma and that has not been changed appreciably by weathering since its formation. Major varieties include plutonic and volcanic rock (e.g., andesite, basalt, and granite).

Illuviation

The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

Impervious soil

A soil through which water, air, or roots penetrate slowly or not at all. No soil is absolutely impervious to air and water all the time.

Increasers

Species in the climax vegetation that increase in amount as the more desirable plants are reduced by close grazing. Increasers commonly are the shorter plants and the less palatable to livestock.

Infiltration

The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Infiltration capacity

The maximum rate at which water can infiltrate into a soil under a given set of conditions.

Infiltration rate

The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

Intake rate

The average rate of water entering the soil under irrigation. Most soils have a fast initial rate; the rate decreases with application time. Therefore, intake rate for design purposes is not a constant but is a variable depending on the net irrigation application. The rate of water intake, in inches per hour, is expressed as follows:

Very low: Less than 0.2
Low: 0.2 to 0.4
Moderately low: 0.4 to 0.75
Moderate: 0.75 to 1.25
Moderately high: 1.25 to 1.75
High: 1.75 to 2.5
Very high: More than 2.5

Interfluve

A landform composed of the relatively undissected upland or ridge between two adjacent valleys containing streams flowing in the same general direction. An elevated area between two drainageways that sheds water to those drainageways.

Interfluve (geomorphology)

A geomorphic component of hills consisting of the uppermost, comparatively level or gently sloping area of a hill; shoulders of backwearing hillslopes can narrow the upland or can merge, resulting in a strongly convex shape.

Intermittent stream

A stream, or reach of a stream, that does not flow year-round but that is commonly dry for 3 or more months out of 12 and whose channel is generally below the local water table. It flows only during wet periods or when it receives ground-water discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources.

Invaders

On range, plants that encroach into an area and grow after the climax vegetation has been reduced by grazing. Generally, plants invade following disturbance of the surface.

Iron depletions

See Redoximorphic features.

Irrigation

Application of water to soils to assist in production of crops. Methods of irrigation are:

Basin: Water is applied rapidly to nearly level plains surrounded by levees or dikes.

Border: Water is applied at the upper end of a strip in which the lateral flow of water is controlled by small earth ridges called border dikes, or borders.

Controlled flooding: Water is released at intervals from closely spaced field ditches and distributed uniformly over the field.

Corrugation: Water is applied to small, closely spaced furrows or ditches in fields of close-growing crops or in orchards so that it flows in only one direction.

Drip (or trickle): Water is applied slowly and under low pressure to the surface of the soil or into the soil through such applicators as emitters, porous tubing, or perforated pipe.

Furrow: Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.

Sprinkler: Water is sprayed over the soil surface through pipes or nozzles from a pressure system.

Subirrigation: Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.

Wild flooding: Water, released at high points, is allowed to flow onto an area without controlled distribution.

Kame

A low mound, knob, hummock, or short irregular ridge composed of stratified sand and gravel deposited by a subglacial stream as a fan or delta at the margin of a melting glacier; by a supraglacial stream in a low place or hole on the surface of the glacier; or as a ponded deposit on the surface or at the margin of stagnant ice.

Karst (topography)

A kind of topography that formed in limestone, gypsum, or other soluble rocks by dissolution and that is characterized by closed depressions, sinkholes, caves, and underground drainage.

Knoll

A small, low, rounded hill rising above adjacent landforms.

Ksat

See Saturated hydraulic conductivity.

Lacustrine deposit

Material deposited in lake water and exposed when the water level is lowered or the elevation of the land is raised.

Lake plain

A nearly level surface marking the floor of an extinct lake filled by well sorted, generally fine textured, stratified deposits, commonly containing varves.

Lake terrace

A narrow shelf, partly cut and partly built, produced along a lakeshore in front of a scarp line of low cliffs and later exposed when the water level falls.

Landfill (map symbol)

An area of accumulated waste products of human habitation, either above or below natural ground level.

Landslide

A general, encompassing term for most types of mass movement landforms and processes involving the downslope transport and outward deposition of soil and rock materials caused by gravitational forces; the movement may or may not involve saturated materials. The speed and distance of movement, as well as the amount of soil and rock material, vary greatly.

Large stones

Rock fragments 3 inches (7.6 centimeters) or more across. Large stones adversely affect the specified use of the soil.

Lava flow (map symbol)

A solidified, commonly lobate body of rock formed through lateral, surface outpouring of molten lava from a vent or fissure.

Leaching

The removal of soluble material from soil or other material by percolating water.

Levee (map symbol)

An embankment that confines or controls water, especially one built along the banks of a river to prevent overflow onto lowlands.

Linear extensibility

Refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. Linear extensibility is used to determine the shrink-swell potential of soils. It is an expression of the volume change between the water content of the clod at $^{1}/_{3}$- or $^{1}/_{10}$-bar tension (33kPa or 10kPa tension) and oven dryness. Volume change is influenced by the amount and type of clay minerals in the soil. The volume change is the percent change for the whole soil. If it is expressed as a fraction, the resulting value is COLE, coefficient of linear extensibility.

Liquid limit

The moisture content at which the soil passes from a plastic to a liquid state.

Loam

Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Loess

Material transported and deposited by wind and consisting dominantly of silt-sized particles.

Low strength

The soil is not strong enough to support loads.

Low-residue crops

Such crops as corn used for silage, peas, beans, and potatoes. Residue from these crops is not adequate to control erosion until the next crop in the rotation is established. These crops return little organic matter to the soil.

Marl

An earthy, unconsolidated deposit consisting chiefly of calcium carbonate mixed with clay in approximately equal proportions; formed primarily under freshwater lacustrine conditions but also formed in more saline environments.

Marsh or swamp (map symbol)

A water-saturated, very poorly drained area that is intermittently or permanently covered by water. Sedges, cattails, and rushes are the dominant vegetation in marshes, and trees or shrubs are the dominant vegetation in swamps. Not used in map units where the named soils are poorly drained or very poorly drained.

Mass movement

A generic term for the dislodgment and downslope transport of soil and rock material as a unit under direct gravitational stress.

Masses

See Redoximorphic features.

Meander belt

The zone within which migration of a meandering channel occurs; the flood-plain area included between two imaginary lines drawn tangential to the outer bends of active channel loops.

Meander scar

A crescent-shaped, concave or linear mark on the face of a bluff or valley wall, produced by the lateral erosion of a meandering stream that impinged upon and undercut the bluff.

Meander scroll

One of a series of long, parallel, close-fitting, crescent-shaped ridges and troughs formed along the inner bank of a stream meander as the channel migrated laterally down-valley and toward the outer bank.

Mechanical treatment

Use of mechanical equipment for seeding, brush management, and other management practices.

Medium textured soil

Very fine sandy loam, loam, silt loam, or silt.

Mesa

A broad, nearly flat topped and commonly isolated landmass bounded by steep slopes or precipitous cliffs and capped by layers of resistant, nearly horizontal rocky material. The summit width is characteristically greater than the height of the bounding escarpments.

Metamorphic rock

Rock of any origin altered in mineralogical composition, chemical composition, or structure by heat, pressure, and movement at depth in the earth’s crust. Nearly all such rocks are crystalline.

Mine or quarry (map symbol)

An open excavation from which soil and underlying material have been removed and in which bedrock is exposed. Also denotes surface openings to underground mines.

Mine spoil

An accumulation of displaced earthy material, rock, or other waste material removed during mining or excavation. Also called earthy fill.

Mineral soil

Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Minimum tillage

Only the tillage essential to crop production and prevention of soil damage.

Miscellaneous area

A kind of map unit that has little or no natural soil and supports little or no vegetation.

Miscellaneous water (map symbol)

Small, constructed bodies of water that are used for industrial, sanitary, or mining applications and that contain water most of the year.

Moderately coarse textured soil

Coarse sandy loam, sandy loam, or fine sandy loam.

Moderately fine textured soil

Clay loam, sandy clay loam, or silty clay loam.

Mollic epipedon

A thick, dark, humus-rich surface horizon (or horizons) that has high base saturation and pedogenic soil structure. It may include the upper part of the subsoil.

Moraine

In terms of glacial geology, a mound, ridge, or other topographically distinct accumulation of unsorted, unstratified drift, predominantly till, deposited primarily by the direct action of glacial ice in a variety of landforms. Also, a general term for a landform composed mainly of till (except for kame moraines, which are composed mainly of stratified outwash) that has been deposited by a glacier. Some types of moraines are disintegration, end, ground, kame, lateral, recessional, and terminal.

Morphology, soil

The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil

Irregular spots of different colors that vary in number and size. Descriptive terms are as follows: abundance—*few, common,* and *many;* size—*fine, medium,* and *coarse;* and contrast—*faint, distinct,* and *prominent*. The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium,* from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse,* more than 15 millimeters (about 0.6 inch).

Mountain

A generic term for an elevated area of the land surface, rising more than 1,000 feet (300 meters) above surrounding lowlands, commonly of restricted summit area (relative to a plateau) and generally having steep sides. A mountain can occur as a single, isolated mass or in a group forming a chain or range. Mountains are formed primarily by tectonic activity and/or volcanic action but can also be formed by differential erosion.

Muck

Dark, finely divided, well decomposed organic soil material. (See Sapric soil material.)

Mucky peat

See Hemic soil material.

Mudstone

A blocky or massive, fine grained sedimentary rock in which the proportions of clay and silt are approximately equal. Also, a general term for such material as clay, silt, claystone, siltstone, shale, and argillite and that should be used only when the amounts of clay and silt are not known or cannot be precisely identified.

Munsell notation

A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

Natric horizon

A special kind of argillic horizon that contains enough exchangeable sodium to have an adverse effect on the physical condition of the subsoil.

Neutral soil

A soil having a pH value of 6.6 to 7.3. (See Reaction, soil.)

Nodules

See Redoximorphic features.

Nose slope (geomorphology)

A geomorphic component of hills consisting of the projecting end (laterally convex area) of a hillside. The overland waterflow is predominantly divergent. Nose slopes consist dominantly of colluvium and slope-wash sediments (for example, slope alluvium).

Nutrient, plant

Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Organic matter

Plant and animal residue in the soil in various stages of decomposition. The content of organic matter in the surface layer is described as follows:

Very low: Less than 0.5 percent
Low: 0.5 to 1.0 percent
Moderately low: 1.0 to 2.0 percent
Moderate: 2.0 to 4.0 percent
High: 4.0 to 8.0 percent
Very high: More than 8.0 percent

Outwash

Stratified and sorted sediments (chiefly sand and gravel) removed or “washed out” from a glacier by meltwater streams and deposited in front of or beyond the end moraine or the margin of a glacier. The coarser material is deposited nearer to the ice.

Outwash plain

An extensive lowland area of coarse textured glaciofluvial material. An outwash plain is commonly smooth; where pitted, it generally is low in relief.

Paleoterrace

An erosional remnant of a terrace that retains the surface form and alluvial deposits of its origin but was not emplaced by, and commonly does not grade to, a present-day stream or drainage network.

Pan

A compact, dense layer in a soil that impedes the movement of water and the growth of roots. For example, *hardpan, fragipan, claypan, plowpan,* and *traffic pan*.

Parent material

The unconsolidated organic and mineral material in which soil forms.

Peat

Unconsolidated material, largely undecomposed organic matter, that has accumulated under excess moisture. (See Fibric soil material.)

Ped

An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedisediment

A layer of sediment, eroded from the shoulder and backslope of an erosional slope, that lies on and is being (or was) transported across a gently sloping erosional surface at the foot of a receding hill or mountain slope.

Pedon

The smallest volume that can be called “a soil.” A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation

The movement of water through the soil.

Perennial water (map symbol)

Small, natural or constructed lakes, ponds, or pits that contain water most of the year.

Permafrost

Ground, soil, or rock that remains at or below 0 degrees C for at least 2 years. It is defined on the basis of temperature and is not necessarily frozen.

pH value

A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Phase, soil

A subdivision of a soil series based on features that affect its use and management, such as slope, stoniness, and flooding.

Piping

Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

Pitting

Pits caused by melting around ice. They form on the soil after plant cover is removed.

Plastic limit

The moisture content at which a soil changes from semisolid to plastic.

Plasticity index

The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plateau (geomorphology)

A comparatively flat area of great extent and elevation; specifically, an extensive land region that is considerably elevated (more than 100 meters) above the adjacent lower lying terrain, is commonly limited on at least one side by an abrupt descent, and has a flat or nearly level surface. A comparatively large part of a plateau surface is near summit level.

Playa

The generally dry and nearly level lake plain that occupies the lowest parts of closed depressions, such as those on intermontane basin floors. Temporary flooding occurs primarily in response to precipitation and runoff. Playa deposits are fine grained and may or may not have a high water table and saline conditions.

Plinthite

The sesquioxide-rich, humus-poor, highly weathered mixture of clay with quartz and other diluents. It commonly appears as red mottles, usually in platy, polygonal, or reticulate patterns. Plinthite changes irreversibly to an ironstone hardpan or to irregular aggregates on repeated wetting and drying, especially if it is exposed also to heat from the sun. In a moist soil, plinthite can be cut with a spade. It is a form of laterite.

Plowpan

A compacted layer formed in the soil directly below the plowed layer.

Ponding

Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Poorly graded

Refers to a coarse grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

Pore linings

See Redoximorphic features.

Potential native plant community

See Climax plant community.

Potential rooting depth (effective rooting depth)

Depth to which roots could penetrate if the content of moisture in the soil were adequate. The soil has no properties restricting the penetration of roots to this depth.

Prescribed burning

Deliberately burning an area for specific management purposes, under the appropriate conditions of weather and soil moisture and at the proper time of day.

Productivity, soil

The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil

A vertical section of the soil extending through all its horizons and into the parent material.

Proper grazing use

Grazing at an intensity that maintains enough cover to protect the soil and maintain or improve the quantity and quality of the desirable vegetation. This practice increases the vigor and reproduction capacity of the key plants and promotes the accumulation of litter and mulch necessary to conserve soil and water.

Rangeland

Land on which the potential natural vegetation is predominantly grasses, grasslike plants, forbs, or shrubs suitable for grazing or browsing. It includes natural grasslands, savannas, many wetlands, some deserts, tundras, and areas that support certain forb and shrub communities.

Reaction, soil

A measure of acidity or alkalinity of a soil, expressed as pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are:

Ultra acid: Less than 3.5
Extremely acid: 3.5 to 4.4
Very strongly acid: 4.5 to 5.0
Strongly acid: 5.1 to 5.5
Moderately acid: 5.6 to 6.0
Slightly acid: 6.1 to 6.5
Neutral: 6.6 to 7.3
Slightly alkaline: 7.4 to 7.8
Moderately alkaline: 7.9 to 8.4
Strongly alkaline: 8.5 to 9.0
Very strongly alkaline: 9.1 and higher

Red beds

Sedimentary strata that are mainly red and are made up largely of sandstone and shale.

Redoximorphic concentrations

See Redoximorphic features.

Redoximorphic depletions

See Redoximorphic features.

Redoximorphic features

Redoximorphic features are associated with wetness and result from alternating periods of reduction and oxidation of iron and manganese compounds in the soil. Reduction occurs during saturation with water, and oxidation occurs when the soil is not saturated. Characteristic color patterns are created by these processes. The reduced iron and manganese ions may be removed from a soil if vertical or lateral fluxes of water occur, in which case there is no iron or manganese precipitation in that soil. Wherever the iron and manganese are oxidized and precipitated, they

form either soft masses or hard concretions or nodules. Movement of iron and manganese as a result of redoximorphic processes in a soil may result in redoximorphic features that are defined as follows:

1. Redoximorphic concentrations.—These are zones of apparent accumulation of iron-manganese oxides, including:
   A. Nodules and concretions, which are cemented bodies that can be removed from the soil intact. Concretions are distinguished from nodules on the basis of internal organization. A concretion typically has concentric layers that are visible to the naked eye. Nodules do not have visible organized internal structure; *and*
   B. Masses, which are noncemented concentrations of substances within the soil matrix; *and*
   C. Pore linings, i.e., zones of accumulation along pores that may be either coatings on pore surfaces or impregnations from the matrix adjacent to the pores.
2. Redoximorphic depletions.—These are zones of low chroma (chromas less than those in the matrix) where either iron-manganese oxides alone or both iron-manganese oxides and clay have been stripped out, including:
   A. Iron depletions, i.e., zones that contain low amounts of iron and manganese oxides but have a clay content similar to that of the adjacent matrix; *and*
   B. Clay depletions, i.e., zones that contain low amounts of iron, manganese, and clay (often referred to as silt coatings or skeletans).
3. Reduced matrix.—This is a soil matrix that has low chroma *in situ* but undergoes a change in hue or chroma within 30 minutes after the soil material has been exposed to air.

Reduced matrix

See Redoximorphic features.

Regolith

All unconsolidated earth materials above the solid bedrock. It includes material weathered in place from all kinds of bedrock and alluvial, glacial, eolian, lacustrine, and pyroclastic deposits.

Relief

The relative difference in elevation between the upland summits and the lowlands or valleys of a given region.

Residuum (residual soil material)

Unconsolidated, weathered or partly weathered mineral material that accumulated as bedrock disintegrated in place.

Rill

A very small, steep-sided channel resulting from erosion and cut in unconsolidated materials by concentrated but intermittent flow of water. A rill generally is not an obstacle to wheeled vehicles and is shallow enough to be smoothed over by ordinary tillage.

Riser

The vertical or steep side slope (e.g., escarpment) of terraces, flood-plain steps, or other stepped landforms; commonly a recurring part of a series of natural, steplike landforms, such as successive stream terraces.

Road cut

A sloping surface produced by mechanical means during road construction. It is commonly on the uphill side of the road.

Rock fragments

Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Rock outcrop (map symbol)

An exposure of bedrock at the surface of the earth. Not used where the named soils of the surrounding map unit are shallow over bedrock or where “Rock outcrop” is a named component of the map unit.

Root zone

The part of the soil that can be penetrated by plant roots.

Runoff

The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Saline soil

A soil containing soluble salts in an amount that impairs growth of plants. A saline soil does not contain excess exchangeable sodium.

Saline spot (map symbol)

An area where the surface layer has an electrical conductivity of 8 mmhos/cm more than the surface layer of the named soils in the surrounding map unit. The surface layer of the surrounding soils has an electrical conductivity of 2 mmhos/cm or less.

Sand

As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sandstone

Sedimentary rock containing dominantly sand-sized particles.

Sandy spot (map symbol)

A spot where the surface layer is loamy fine sand or coarser in areas where the surface layer of the named soils in the surrounding map unit is very fine sandy loam or finer.

Sapric soil material (muck)

The most highly decomposed of all organic soil material. Muck has the least amount of plant fiber, the highest bulk density, and the lowest water content at saturation of all organic soil material.

Saturated hydraulic conductivity (Ksat)

The ease with which pores of a saturated soil transmit water. Formally, the proportionality coefficient that expresses the relationship of the rate of water movement to hydraulic gradient in Darcy's Law, a law that describes the rate of water movement through porous media. Commonly abbreviated as "Ksat." Terms describing saturated hydraulic conductivity are:

Very high: 100 or more micrometers per second (14.17 or more inches per hour)

High: 10 to 100 micrometers per second (1.417 to 14.17 inches per hour)

Moderately high: 1 to 10 micrometers per second (0.1417 inch to 1.417 inches per hour)

Moderately low: 0.1 to 1 micrometer per second (0.01417 to 0.1417 inch per hour)

Low: 0.01 to 0.1 micrometer per second (0.001417 to 0.01417 inch per hour)

Very low: Less than 0.01 micrometer per second (less than 0.001417 inch per hour).

To convert inches per hour to micrometers per second, multiply inches per hour by 7.0572. To convert micrometers per second to inches per hour, multiply micrometers per second by 0.1417.

Saturation

Wetness characterized by zero or positive pressure of the soil water. Under conditions of saturation, the water will flow from the soil matrix into an unlined auger hole.

Scarification

The act of abrading, scratching, loosening, crushing, or modifying the surface to increase water absorption or to provide a more tillable soil.

Sedimentary rock

A consolidated deposit of clastic particles, chemical precipitates, or organic remains accumulated at or near the surface of the earth under normal low temperature and pressure conditions. Sedimentary rocks include consolidated equivalents of alluvium, colluvium, drift, and eolian, lacustrine, and marine deposits. Examples are sandstone, siltstone, mudstone, claystone, shale, conglomerate, limestone, dolomite, and coal.

Sequum

A sequence consisting of an illuvial horizon and the overlying eluvial horizon. (See Eluviation.)

Series, soil

A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Severely eroded spot (map symbol)

An area where, on the average, 75 percent or more of the original surface layer has been lost because of accelerated erosion. Not used in map units in which “severely eroded,”“very severely eroded,” or “gullied” is part of the map unit name.

Shale

Sedimentary rock that formed by the hardening of a deposit of clay, silty clay, or silty clay loam and that has a tendency to split into thin layers.

Sheet erosion

The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.

Short, steep slope (map symbol)

A narrow area of soil having slopes that are at least two slope classes steeper than the slope class of the surrounding map unit.

Shoulder

The convex, erosional surface near the top of a hillslope. A shoulder is a transition from summit to backslope.

Shrink-swell

The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Shrub-coppice dune

A small, streamlined dune that forms around brush and clump vegetation.

Side slope (geomorphology)

A geomorphic component of hills consisting of a laterally planar area of a hillside. The overland waterflow is predominantly parallel. Side slopes are dominantly colluvium and slope-wash sediments.

Silica

A combination of silicon and oxygen. The mineral form is called quartz.

Silica-sesquioxide ratio

The ratio of the number of molecules of silica to the number of molecules of alumina and iron oxide. The more highly weathered soils or their clay fractions in warm-temperate, humid regions, and especially those in the tropics, generally have a low ratio.

Silt

As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Siltstone

An indurated silt having the texture and composition of shale but lacking its fine lamination or fissility; a massive mudstone in which silt predominates over clay.

Similar soils

Soils that share limits of diagnostic criteria, behave and perform in a similar manner, and have similar conservation needs or management requirements for the major land uses in the survey area.

Sinkhole (map symbol)

A closed, circular or elliptical depression, commonly funnel shaped, characterized by subsurface drainage and formed either by dissolution of the surface of underlying bedrock (e.g., limestone, gypsum, or salt) or by collapse of underlying caves within bedrock. Complexes of sinkholes in carbonate-rock terrain are the main components of karst topography.

Site index

A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75.

Slickensides (pedogenic)

Grooved, striated, and/or glossy (shiny) slip faces on structural peds, such as wedges; produced by shrink-swell processes, most commonly in soils that have a high content of expansive clays.

Slide or slip (map symbol)

A prominent landform scar or ridge caused by fairly recent mass movement or descent of earthy material resulting from failure of earth or rock under shear stress along one or several surfaces.

Slope

The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance.

Slope alluvium

Sediment gradually transported down the slopes of mountains or hills primarily by nonchannel alluvial processes (i.e., slope-wash processes) and characterized by particle sorting. Lateral particle sorting is evident on long slopes. In a profile sequence, sediments may be distinguished by differences in size and/or specific gravity of rock fragments and may be separated by stone lines. Burnished peds

and sorting of rounded or subrounded pebbles or cobbles distinguish these materials from unsorted colluvial deposits.

Slow refill

The slow filling of ponds, resulting from restricted water transmission in the soil.

Slow water movement

Restricted downward movement of water through the soil. See Saturated hydraulic conductivity.

Sodic (alkali) soil

A soil having so high a degree of alkalinity (pH 8.5 or higher) or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.

Sodic spot (map symbol)

An area where the surface layer has a sodium adsorption ratio that is at least 10 more than that of the surface layer of the named soils in the surrounding map unit. The surface layer of the surrounding soils has a sodium adsorption ratio of 5 or less.

Sodicity

The degree to which a soil is affected by exchangeable sodium. Sodicity is expressed as a sodium adsorption ratio (SAR) of a saturation extract, or the ratio of Na^{+} to Ca^{++} + Mg^{++}. The degrees of sodicity and their respective ratios are:

Slight: Less than 13:1

Moderate: 13-30:1

Strong: More than 30:1

Sodium adsorption ratio (SAR)

A measure of the amount of sodium (Na) relative to calcium (Ca) and magnesium (Mg) in the water extract from saturated soil paste. It is the ratio of the Na concentration divided by the square root of one-half of the Ca + Mg concentration.

Soft bedrock

Bedrock that can be excavated with trenching machines, backhoes, small rippers, and other equipment commonly used in construction.

Soil

A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief and by the passage of time.

Soil separates

Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand: 2.0 to 1.0
Coarse sand: 1.0 to 0.5
Medium sand: 0.5 to 0.25
Fine sand: 0.25 to 0.10
Very fine sand: 0.10 to 0.05
Silt: 0.05 to 0.002
Clay: Less than 0.002

Solum

The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the material below the solum. The living roots and plant and animal activities are largely confined to the solum.

Spoil area (map symbol)

A pile of earthy materials, either smoothed or uneven, resulting from human activity.

Stone line

In a vertical cross section, a line formed by scattered fragments or a discrete layer of angular and subangular rock fragments (commonly a gravel- or cobble-sized lag concentration) that formerly was draped across a topographic surface and was later buried by additional sediments. A stone line generally caps material that was subject to weathering, soil formation, and erosion before burial. Many stone lines seem to be buried erosion pavements, originally formed by sheet and rill erosion across the land surface.

Stones

Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter if rounded or 15 to 24 inches (38 to 60 centimeters) in length if flat.

Stony

Refers to a soil containing stones in numbers that interfere with or prevent tillage.

Stony spot (map symbol)

A spot where 0.01 to 0.1 percent of the soil surface is covered by rock fragments that are more than 10 inches in diameter in areas where the surrounding soil has no surface stones.

Strath terrace

A type of stream terrace; formed as an erosional surface cut on bedrock and thinly mantled with stream deposits (alluvium).

Stream terrace

One of a series of platforms in a stream valley, flanking and more or less parallel to the stream channel, originally formed near the level of the stream; represents

the remnants of an abandoned flood plain, stream bed, or valley floor produced during a former state of fluvial erosion or deposition.

Stripcropping

Growing crops in a systematic arrangement of strips or bands that provide vegetative barriers to wind erosion and water erosion.

Structure, soil

The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are:

Platy: Flat and laminated
Prismatic: Vertically elongated and having flat tops
Columnar: Vertically elongated and having rounded tops
Angular blocky: Having faces that intersect at sharp angles (planes)
Subangular blocky: Having subrounded and planar faces (no sharp angles)
Granular: Small structural units with curved or very irregular faces

Structureless soil horizons are defined as follows:

Single grained: Entirely noncoherent (each grain by itself), as in loose sand
Massive: Occurring as a coherent mass

Stubble mulch

Stubble or other crop residue left on the soil or partly worked into the soil. It protects the soil from wind erosion and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.

Subsoil

Technically, the B horizon; roughly, the part of the solum below plow depth.

Subsoiling

Tilling a soil below normal plow depth, ordinarily to shatter a hardpan or claypan.

Substratum

The part of the soil below the solum.

Subsurface layer

Any surface soil horizon (A, E, AB, or EB) below the surface layer.

Summer fallow

The tillage of uncropped land during the summer to control weeds and allow storage of moisture in the soil for the growth of a later crop. A practice common in semiarid regions, where annual precipitation is not enough to produce a crop every year. Summer fallow is frequently practiced before planting winter grain.

Summit

The topographically highest position of a hillslope. It has a nearly level (planar or only slightly convex) surface.

Surface layer

The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the “plow layer,” or the “Ap horizon.”

Surface soil

The A, E, AB, and EB horizons, considered collectively. It includes all subdivisions of these horizons.

Talus

Rock fragments of any size or shape (commonly coarse and angular) derived from and lying at the base of a cliff or very steep rock slope. The accumulated mass of such loose broken rock formed chiefly by falling, rolling, or sliding.

Taxadjuncts

Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use and behavior. Soils are recognized as taxadjuncts only when one or more of their characteristics are slightly outside the range defined for the family of the series for which the soils are named.

Terminal moraine

An end moraine that marks the farthest advance of a glacier. It typically has the form of a massive arcuate or concentric ridge, or complex of ridges, and is underlain by till and other types of drift.

Terrace (conservation)

An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet. A terrace in a field generally is built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

Terrace (geomorphology)

A steplike surface, bordering a valley floor or shoreline, that represents the former position of a flood plain, lake, or seashore. The term is usually applied both to the relatively flat summit surface (tread) that was cut or built by stream or wave action and to the steeper descending slope (scarp or riser) that has graded to a lower base level of erosion.

Terracettes

Small, irregular steplike forms on steep hillslopes, especially in pasture, formed by creep or erosion of surficial materials that may be induced or enhanced by trampling of livestock, such as sheep or cattle.

Texture, soil

The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying “coarse,”“fine,” or “very fine.”

Thin layer

Otherwise suitable soil material that is too thin for the specified use.

Till

Dominantly unsorted and nonstratified drift, generally unconsolidated and deposited directly by a glacier without subsequent reworking by meltwater, and consisting of a heterogeneous mixture of clay, silt, sand, gravel, stones, and boulders; rock fragments of various lithologies are embedded within a finer matrix that can range from clay to sandy loam.

Till plain

An extensive area of level to gently undulating soils underlain predominantly by till and bounded at the distal end by subordinate recessional or end moraines.

Tilth, soil

The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Toeslope

The gently inclined surface at the base of a hillslope. Toeslopes in profile are commonly gentle and linear and are constructional surfaces forming the lower part of a hillslope continuum that grades to valley or closed-depression floors.

Topsoil

The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Trace elements

Chemical elements, for example, zinc, cobalt, manganese, copper, and iron, in soils in extremely small amounts. They are essential to plant growth.

Tread

The flat to gently sloping, topmost, laterally extensive slope of terraces, flood-plain steps, or other stepped landforms; commonly a recurring part of a series of natural steplike landforms, such as successive stream terraces.

Tuff

A generic term for any consolidated or cemented deposit that is 50 percent or more volcanic ash.

Upland

An informal, general term for the higher ground of a region, in contrast with a low-lying adjacent area, such as a valley or plain, or for land at a higher elevation than the flood plain or low stream terrace; land above the footslope zone of the hillslope continuum.

Valley fill

The unconsolidated sediment deposited by any agent (water, wind, ice, or mass wasting) so as to fill or partly fill a valley.

Variegation

Refers to patterns of contrasting colors assumed to be inherited from the parent material rather than to be the result of poor drainage.

Varve

A sedimentary layer or a lamina or sequence of laminae deposited in a body of still water within a year. Specifically, a thin pair of graded glaciolacustrine layers seasonally deposited, usually by meltwater streams, in a glacial lake or other body of still water in front of a glacier.

Very stony spot (map symbol)

A spot where 0.1 to 3.0 percent of the soil surface is covered by rock fragments that are more than 10 inches in diameter in areas where the surface of the surrounding soil is covered by less than 0.01 percent stones.

Water bars

Smooth, shallow ditches or depressional areas that are excavated at an angle across a sloping road. They are used to reduce the downward velocity of water and divert it off and away from the road surface. Water bars can easily be driven over if constructed properly.

Weathering

All physical disintegration, chemical decomposition, and biologically induced changes in rocks or other deposits at or near the earth’s surface by atmospheric or biologic agents or by circulating surface waters but involving essentially no transport of the altered material.

Well graded

Refers to soil material consisting of coarse grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Wet spot (map symbol)

A somewhat poorly drained to very poorly drained area that is at least two drainage classes wetter than the named soils in the surrounding map unit.

Wilting point (or permanent wilting point)

The moisture content of soil, on an ovendry basis, at which a plant (specifically a sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

Windthrow

The uprooting and tipping over of trees by the wind.