INTEGRATED CULTURAL RESOURCES MANAGEMENT PLAN

NASA Ames Research Center

Prepared for:

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EXECUTIVE SUMMARY

This Integrated Cultural Resources Management Plan (ICRMP) has been prepared for the National Aeronautics and Space Administration (NASA) Ames Research Center (ARC), located adjacent to Mountain View, California, as an internal compliance and management tool that integrates the NASA Cultural Resources Management (CRM) Program with mission activities at ARC. The CRM Program is NASA's historic preservation program established for the identification, evaluation, and protection of historic properties in compliance with the National Historic Preservation Act (NHPA) and its implementing regulations (36 Code of Federal Regulations Part 800). The CRM Program provides the policy and procedures to ensure that each NASA center and component facility complies with all of the local, state, and federal laws and regulations related to cultural resources management, including NHPA, National Environmental Policy Act (NEPA), the Native American Graves Protection and Repatriation Act of 1990, and the Archaeological Resources Protection Act.

To facilitate efficient compliance with federal laws and regulations, particularly Sections 106 and 110 of NHPA, and the CRM Program policies, each NASA center must develop and implement a center-specific ICRMP that outlines procedures for the identification, evaluation, and protection of cultural resources. This ICRMP is intended to be used by ARC staff members who make decisions about planning efforts, especially the center's cultural resources management staff. Outside agencies and tenants/lessees who lease ARC facilities will also use the ICRMP's Standard Operating Procedures as directed by local cultural resources management staff. The procedures outlined herein will help ensure that all planning and development projects at ARC will comply with federal laws and regulations related to cultural resources, and will have minimal effect on cultural resources.

ARC is responsible for the implementation of this ICRMP. The ICRMP is designed to assist ARC in identifying CRM Program procedures required to comply with appropriate federal laws and implementing regulations. The ICRMP geographically covers the entire site, with the exception of areas where interagency management agreements regarding cultural resources management are established and active. Interagency coordination and tenant agreements are in place to guide the management of the areas. It is also the responsibility of all outside agencies and tenants/lessees using ARC facilities to comply with the ICRMP. However, if a conflict exists between the ICRMP and a lease, Programmatic Agreement (PA), Memorandum of Agreement (MOA), or other legally binding agreement, the provisions in the lease, PA, MOA, or other legally binding agreement will control particular development projects at ARC.

ARC contains several historic properties, defined under NHPA as buildings, structures, objects, sites, or districts that are listed in or determined eligible for listing in the National Register of Historic Places (NRHP). Historic properties at ARC include the Naval Air Station Sunnyvale Historic District, with contributing buildings and structures at Shenandoah Plaza and Moffett Federal Airfield (including Hangars 1, 2 and 3), Building N-200 (Ames Aeronautical Laboratory Administration Building), Building N-221 (40 x 80 Wind Tunnel), Building N-226 (6 x 6 Supersonic Wind Tunnel Laboratory), Building N-227 with N-227A-D (Unitary Plan Wind Tunnel Complex), Building N-238 (Arc Jet Laboratory), and Building N-243 (Flight and Guidance Simulation Laboratory). The Unitary Plan Wind Tunnel Complex is a National Historic Landmark. Known archaeological sites are located at ARC, and although these have

been evaluated as not eligible for the NRHP, the potential exists for future archaeological discoveries.

Ultimately, the ICRMP is a tool that outlines practical means for ARC and its tenants/lessees to comply with its various cultural resources management legal requirements. It focuses on specific actions NASA must take to gain and maintain compliance status with applicable laws and regulations, and specific actions to help minimize potential effects to historic properties.

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1.0 INTRODUCTION

1.1 Introduction

This Integrated Cultural Resources Management Plan (ICRMP) has been prepared for the National Aeronautics and Space Administration (NASA) Ames Research Center (ARC or Center) as an internal compliance and management tool that integrates the NASA Cultural Resources Management (CRM) Program with mission activities at ARC. The CRM Program is NASA's agency-wide historic preservation program established for the identification, evaluation, and protection of historic properties in compliance with the National Historic Preservation Act (NHPA) and its implementing regulations (36 Code of Federal Regulations [CFR] Part 800). The CRM Program provides the policy and procedures to ensure that each NASA center and component facility complies with all of the local, state, and federal laws and regulations related to cultural resources management, including NHPA, the National Environmental Policy Act (NEPA), the Native American Graves Protection and Repatriation Act of 1990 (NAGPRA), and the Archaeological Resources Protection Act (ARPA).

NASA's Federal Preservation Officer (FPO) at NASA Headquarters in Washington, D.C. develops, executes, and manages the CRM Program, which is implemented at each of NASA's 13 centers and component facilities. Each NASA center and component facility has a Historic Preservation Officer (HPO) who locally manages cultural resources. To facilitate efficient compliance with federal laws and regulations and the CRM Program policies, each NASA center must develop and implement a center-specific ICRMP that outlines procedures for the identification, evaluation, and protection of cultural resources. The FPO has been working closely with several centers to develop models for NASA ICRMPs; under the FPO's direction, the format and contents of this ICRMP for ARC has been modeled after the draft ICRMP for Glenn Research Center (GRC) in Ohio (SAIC 2013). The draft ICRMP for GRC was used as the source for baseline information regarding NASA's CRM Program, preservation laws and regulations, cultural resources manager's guidance, and Standard Operating Procedures (SOPs). These chapters have been adapted and customized for ARC, with acknowledgement to the authors of the GRC ICRMP (SAIC 2013).

This ICRMP is intended to be used by ARC staff members, including, but not limited to, the HPO, who make decisions about planning efforts. It is also meant to instruct outside agencies and tenants/lessees who lease ARC facilities. The procedures outlined herein will help ensure that all planning and development projects at ARC will comply with federal laws and regulations related to cultural resources, and will have minimal effect on cultural resources.

ARC is one of 13 NASA centers and component facilities in the United States. It is a pioneering research facility with the following mission:

> Ames Research Center (Silicon Valley) enables exploration through selected development, innovative technologies, and interdisciplinary scientific discovery. Ames provides leadership in astrobiology; robotic lunar exploration; technologies for CEV [Crew Exploration Vehicle], CLV [Crew Launch Vehicle], and HLV [Heavy Lift Launch Vehicle]; the search for habitable planets; supercomputing; intelligent/adaptive systems; advanced thermal protection; and airborne

> astronomy. Ames develops tools for a safer, more efficient national airspace and unique partnerships benefiting NASA's mission.

ARC is located adjacent to Mountain View, California, at the south end of San Francisco Bay (Figure 1-1). The ARC site totals 1,864 acres (Figure 1-2). ARC encompasses the site of the former Naval Air Station (NAS) Sunnyvale and is now divided into five developed zones and two undeveloped zones. In the western portion of ARC, starting at the north end and moving south is an undeveloped wetlands area; the Bay View area, which is currently under development pursuant to an Enhanced Use Lease; NASA Ames Campus; and NASA Research Park (NRP) at the southwest corner. NRP includes Shenandoah Plaza and the former U.S. Department of the Navy (Navy) Berry Court housing and support area. The eastern portion of the Center consists almost entirely of Moffett Federal Airfield (Eastside Airfield), with the exception of an area at the southeast end that is leased to the California Air National Guard. The Eastside Airfield includes two parallel runways; Hangars 1, 2, and 3; munitions magazines; the Golf Course at Moffett Field; a munitions bunker area; and a safety buffer zone. Jurisdiction of the ARC site is divided between NASA and the Air National Guard. ARC hosts several dozen partners who occupy ARC buildings, including private industry, academic, and nonprofit partners. ARC also holds ground-lease agreements with several entities, including Google (Planetary Ventures) in the Bay View area and University Associates Silicon Valley LLC in the NRP area.

The ICRMP provides background information and a summary of the cultural resources at ARC. ARC contains several historic properties, defined under NHPA as buildings, structures, objects, sites, or districts that are listed in or determined eligible for listing in the National Register of Historic Places (NRHP). Other types of significant cultural resources that may be present at ARC are also described. The context for cultural resources at ARC provides associations with prehistoric and historic activities, including several critical military and NASA missions. Historic properties at ARC include the NAS Sunnyvale Historic District, with contributing buildings and structures at Shenandoah Plaza and Moffett Federal Airfield (including Hangars 1, 2 and 3), Building N-200 (Ames Aeronautical Laboratory Administration Building), Building N-221 (40 x 80 Wind Tunnel), Building N-226 (6 x 6 Supersonic Wind Tunnel Laboratory), Building N-227 with N-227A-D (Unitary Plan Wind Tunnel Complex), Building N-238 (Arc Jet Laboratory), and Building N-243 (Flight and Guidance Simulation Laboratory). The Unitary Plan Wind Tunnel Complex is a National Historic Landmark. Known archaeological sites are located at ARC, and although these have been evaluated as not eligible for the NRHP, the potential exists for future archaeological discoveries.

ARC is responsible for the implementation of this ICRMP. The ICRMP geographically covers the entire site where NASA has jurisdiction, with the exception of areas where interagency management agreements (IMAs) regarding cultural resources management are established and active. IMAs and other tenant agreements are in place to guide the management of such areas. It is also the responsibility of all outside agencies and tenants using ARC facilities to comply with the ICRMP. However, if a conflict exists between the ICRMP and a lease, Programmatic Agreement (PA), Memorandum of Agreement (MOA), or other legally binding agreement, the provisions in the lease, PA, MOA, or other legally binding agreement will control particular development projects at ARC.

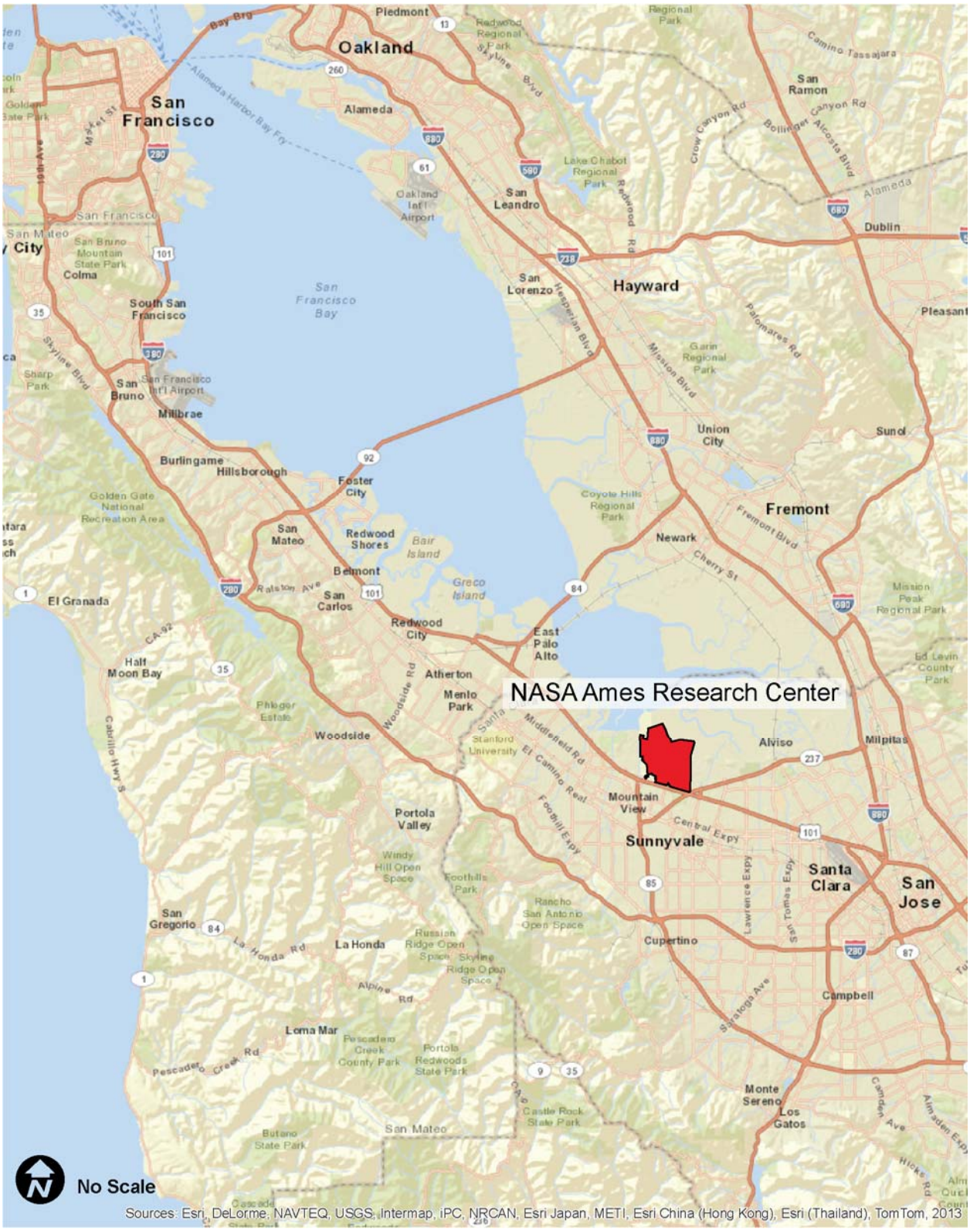

Figure 1-1
Location Map

Source: ESRI 2014; Bing 2014

2,500 1,250 0 2,500 Feet

Scale: 1:30,000;1 inch = 2,500 feet

Figure 1-2
ARC Map

ARC offices that work closely with the HPO to implement the CRM Program include the NASA Ames History Office and the ARC Environmental Management Division (EMD). The NASA Ames History Office explores ways to make ARC's past relevant to its future. Staffed by historians and archivists, the History Office supports research and writing and oral history projects, and helps preserve, describe, and provide access to records and artifacts related to the history of the Center.

ARC's EMD provides environmental leadership and expertise in support of NASA's culture of exploration and discovery. EMD carries out its function in concert with ARC, NASA, national, regional, state, local, and international goals for environmental quality and NASA values of safety, teamwork, integrity, and mission success. EMD demonstrates the Center's commitment to reducing risk to NASA's mission and Center business priorities by implementing the NASA Environmental Management System (EMS). The EMS requires the Division each year to not only support ARC in maintaining compliance but also to lead the Center in reducing environmental risk to its mission. Currently, EMD is directly involved in the CRM Program, and administers compliance and management of archaeological resources and Native American consultation at ARC, as delegated by the HPO. However, EMD does not have a qualified specialist for archaeology on staff at the time of this writing.

Figure 1-3 includes a chart of the organizational responsibilities for implementing the ICRMP.

1.2 Purpose

The ICRMP is designed to assist ARC in identifying CRM Program procedures required to comply with appropriate federal laws and implementing regulations.

Specifically, the ICRMP is intended to:

- promote preservation and minimize adverse effects to historic properties at ARC;
- ensure that cultural resources are managed in a manner consistent with both ARC's mission and applicable cultural resources legislation, regulations, and guidelines;
- provide a comprehensive list of known NRHP-listed and NRHP-eligible resources;
- establish a process to ensure that cultural resources are considered early in project planning and provide direction to ARC project managers and the HPO regarding the use and implementation of this process;
- integrate cultural resources management into comprehensive planning efforts at ARC;
- facilitate sharing of cultural resource information among ARC staff; and
- streamline the Section 106 consultation process with the State Historic Preservation Officer (SHPO) by establishing a shared understanding of ARC's procedures for fulfilling NASA's Section 106 responsibilities.

The specific goals and objectives of the CRM Program and this ICRMP are outlined in Chapter 4.

Figure 1-3
ARC Cultural Resources Management Staff Organization

1.3 Organization

The Executive Summary is an overview intended for senior management, and guidance within the sections below is intended for the HPO, ARC staff, maintenance personnel, and lessees who come in contact with cultural resources at ARC.

The ICRMP is organized into the following sections:

Chapter 1: Introduction. This chapter describes the purpose and organization of this ICRMP for the CRM Program.

Chapter 2: Preservation Laws and Regulations. This chapter lists the main statutes and regulations pertinent to cultural resources management.

Chapter 3: Cultural Resource Inventory and Issues. This chapter provides the environmental and cultural context for resources located at ARC, and background information on previous survey and evaluation efforts conducted to identify archaeological resources, built resources, and Traditional Cultural Properties (TCPs) at ARC. The goal of revisiting previous efforts and the current inventory of historic properties is to identify future planning needs at ARC.

Chapter 4: Cultural Resources Management Goals and Issues. This chapter discusses goals and objectives of the CRM Program at ARC, identifies potential threats to cultural resources and areas of concern, and sets forth recommendations for future cultural resources management.

Chapter 5: Cultural Resources Manager's Guidance. This chapter contains cultural resources management guidance pertaining to cultural resource training, internal communications, consultation, identification of cultural resources, curation of artifacts, and proactive management of cultural resources.

Chapter 6: Standard Operating Procedures. This chapter provides SOPs for personnel who come into contact with cultural resources. SOPs also define standardized strategies for cultural resources management.

Chapter 7: References. This chapter provides references cited in the ICRMP.

A list of acronyms, abbreviations, and definitions is provided in Appendix A. The confidential locations of archaeological sites at ARC are illustrated in Figure 3-1 in Appendix B, provided under separate cover. The locations of built environment resources at ARC are illustrated in a series of maps, Figure 3-2 (a-d), in Appendix C. A summary of the NRHP evaluation status of the built environment resources is provided in a table in Appendix D. Points of contact related to the CRM Program at ARC are listed in Appendix E. Also under separate cover, a confidential map illustrating archaeological sensitivity models for potential sites at ARC is provided in Appendix F. For the purposes of Section 106 consultation with the California Office of Historic Preservation, a checklist of items to submit for the Section 106 process is included in Appendix G. Finally, a bibliography of cultural resources reports and references relating information about ARC is included in Appendix H.

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2.0 CULTURAL RESOURCES LAWS AND REGULATIONS

2.1 Introduction

Laws and regulations regarding cultural resources are summarized below. These laws and regulations establish the stewardship role of federal agencies in the preservation of cultural resources. Compliance with these laws is the basis for the development of an ICRMP and one of the primary reasons for maintenance of cultural resources on federal property. This section also discusses compliance procedures and the penalties for noncompliance.

Significant cultural resources are defined as:

- "historic properties" in NHPA and NEPA,;
- "Traditional Cultural Properties" (TCPs) under NHPA, as defined in National Register Bulletin 38, *Guidelines for Evaluating and Documenting Traditional Cultural Properties* (Parker and King 1998)
- "cultural items" in NAGPRA;
- "archaeological resources" in ARPA;
- "historical and archaeological data," including relics and specimens, in the Archaeological and Historic Preservation Act (AHPA) of 1974;
- "sacred sites" (to which access is provided under the American Indian Religious Freedom Act of 1978 [AIRFA]) in Executive Order (EO) 13007, Indian Sacred Sites; and
- "collections" and "associated records" in 36 CFR Part 79, Curation of Federally Owned and Administered Collections.

Requirements set forth in NEPA, NHPA, ARPA, AHPA, NAGPRA, 36 CFR Part 79, EO 13007, EO 13175, and their implementing regulations define NASA's compliance responsibilities for management of cultural resources. The NASA Procedural Requirement (NPR) concerning environmental management responsibilities (NPR 8500.1B) provides specific NASA policy and requirements. NPR 8510.1 specifically addresses cultural resources management responsibilities. All NASA Centers must comply with the following applicable laws, regulations, and EOs related to cultural resources management.

2.2 Federal Laws and Regulations

Federal laws and regulations include:

- National Aeronautics and Space Act, 51 United States Code (U.S.C.) 20113(a)
- National Historic Preservation Act of 1966, 16 U.S.C. 470 et seq.
- Archaeological Resources Protection Act of 1979, 16 U.S.C. 470aa–470mm
- Federally Recognized Indian Tribe List Act of 1994, 25 U.S.C. 479a
- Native American Graves Protection and Repatriation Act, 25 U.S.C. 3001 et seq.

- American Indian Religious Freedom Act, 42 U.S.C. 1996
- Religious Freedom Restoration Act, 42 U.S.C. 2000bb–2000bb-4
- National Environmental Policy Act, 42 U.S.C. 4321 and 4331–4335
- Resource Conservation and Recovery Act, 42 U.S.C. 6901–6992k
- 14 CFR Part 1216, Subpart 1216.3, Procedures for Implementing the National Environmental Policy Act (NEPA)
- 36 CFR Part 61, Procedures for State, Tribal, and Local Government Historic Preservation Programs
- 36 CFR Part 65, National Historic Landmarks Program
- 36 CFR Part 67, Standards for Evaluating Significance within Registered Historic Districts
- 36 CFR Part 79, Curation of Federally Owned and Administered Archaeological Collections
- 36 CFR Part 800, Protection of Historic Properties (Advisory Council on Historic Preservation's [ACHP] regulations for implementing Section 106 of the NHPA)
- 43 CFR Part 7, Protection of Archaeological Resources
- 43 CFR Part 10, NAGPRA Regulations

2.2.1 National Environmental Policy Act of 1969

NEPA, as amended (NEPA; Public Law [PL] 91-190; 42 U.S.C. 4371 et seq.), requires federal agencies to consider the environmental effects of their proposed programs, projects, and actions prior to initiation. Pursuant to NEPA and the Council on Environmental Quality regulations (40 CFR Parts 1500–1508), the proponents of NASA actions will ensure that cultural resources are fully considered when preparing NEPA documents. NEPA documents will include, or make reference to, an assessment of the impacts of proposed NASA actions or activities on cultural resources. However, compliance with NEPA for a specific action does not relieve NASA of the independent compliance procedures associated with applicable cultural resources requirements, like Section 106 consultation, for example. Information and findings obtained through compliance with cultural resources statutes, regulations, EOs, and Presidential Memoranda should be integrated concurrently with NEPA compliance process and documents.

Impact assessments under NEPA must consider the effects of proposed federal actions on cultural resources and the effects on Native American tribes, Native Hawaiian organizations, Native Alaskan entities, and other ethnic and social communities to whom the cultural resources may have importance. The information needed to make such impact assessments may be acquired from information developed as a result of compliance with cultural resources statutes, regulations, and EOs. Impact evaluation procedures as specified by Section 106 of NHPA are currently the most acceptable process for dealing with cultural resources in a NEPA study. These procedures are discussed below.

2.2.2 National Historic Preservation Act of 1966

NHPA (PL 89-655, as amended through 2006; 16 U.S.C. 470 et seq.) establishes the federal government's policy to provide leadership in the preservation of historic properties and to administer federally owned or controlled historic properties in a spirit of stewardship.

Section 101 prescribes how state, local, and Indian tribal governments participate in the National Historic Preservation Program, establishes how the NRHP is maintained and expanded, and directs the Department of the Interior to promulgate various standards and guidelines, including regulations requiring federal agencies to place recovered artifacts and any records in institutions that have adequate long-term curatorial capabilities.

Section 106 requires federal agencies to take into account the effects of their activities and programs on historic properties. The regulation with the most effect on NASA's planning at ARC is 36 CFR Part 800, Protection of Historic Properties, which implements Section 106. This regulation requires compliance through a process of identification; consultation with SHPO, relevant Tribal Historic Preservation Offices (THPOs), and other concerned parties; and execution and implementation of agreements about how adverse effects will be addressed. It must be followed in planning any activity and in the ongoing management of Centers. The federal agency should consult SHPO, THPOs, and, if necessary, ACHP before beginning any undertaking that might affect historic properties. All consulted parties must be afforded a reasonable opportunity to comment. Under Section 106 of NHPA, NASA will manage and treat historic properties affected by undertakings.

Section 110 requires federal agencies to designate qualified federal preservation officers, to locate and inventory historic properties, to give preference to the use of historic properties for mission purposes, and to establish and implement a historic preservation program that includes identification of historic properties, planned management of such properties, and specific procedures for compliance with Section 106. Under Section 110, NASA will also identify, evaluate, and nominate historic properties throughout ARC for listing in the NRHP.

Section 111 requires federal agencies to "establish and implement alternatives for historic properties, including adaptive use" including leasing or exchanging historic property to "ensure the preservation of the historic property."

Section 112 requires a federal agency's employees or contractors to meet professional qualification standards published by the Secretary of the Interior.

Section 304 allows federal agencies, in consultation with the Secretary of the Interior, to withhold from disclosure to the public information relating to the location or character of historic resources when it is determined that such information would result in a significant violation of privacy; endanger the ability of a Native American group to exercise its religion; or create a substantial risk of harm, theft, or destruction. This section most frequently applies to archaeological sites and places of traditional religious value to Native Americans; however, locations are not universally withheld, and the need to withhold them must be balanced against the need of regulatory agencies and the public to know such locations to participate in project review under Section 106, NEPA, and other authorities.

2.2.3 Antiquities Act of 1906

The Antiquities Act of 1906 (PL 59-209; 16 U.S.C. 431, 432, and 433) allows the President of the United States (U.S.) to set aside federal lands as historic landmarks. It also allows the federal government to acquire private land for historic preservation. The act requires that qualified individuals conduct excavation of archaeological sites on federal land under federally issued permits and requires permanent preservation of artifacts and objects recovered from these excavations in museums.

The act establishes penalties for any person who excavates, injures, or destroys any historic property in federal land without permission from the appropriate federal agency. Instructions for seizure of illegally acquired archaeological objects are provided in implementing regulation 43 CFR Part 3. The procedure for issuing federal permits has largely been given over the permits issued under ARPA (see Section 2.2.5).

2.2.4 Archaeological and Historic Preservation Act of 1974

AHPA (also known as the Moss-Bennett Act, or the Archaeological Data Preservation Act) (PL 85-532; 16 U.S.C. 469–469c) was passed as a revision and amendment to the Reservoir Salvage Act of 1960. AHPA specifically provides for the survey and recovery of scientifically significant data that may be irreparably lost as a result of any alteration of the terrain from any federal construction projects or federally licensed project, activity, or program.

When a federal agency finds (or is notified in writing by an appropriate authority) that its activities may cause irreparable loss or destruction of significant scientific, archaeological, or historical resources, the agency is required to notify the Secretary of the Interior in writing and is to provide information concerning the activity, in accordance with AHPA. Upon this notification, the Secretary of the Interior shall, if he or she determines that such data are significant, and after reasonable notice to the Center responsible for the activity, conduct or cause to be conducted a survey and other investigation of the affected area and recover and preserve such data. AHPA provides federal agencies the authority to assist the Secretary of the Interior with funds for surveys or other activities to recover significant scientific data, but such financial assistance is not required. Likewise, federal agencies may choose to undertake such professional survey and recovery activities themselves with funds appropriated for the project, program, or activity.

2.2.5 Archaeological Resources Protection Act of 1979

Like the 1906 Antiquities Act, ARPA (PL 96-95; 16 U.S.C. 470aa–470mm) prohibits the excavation, collection, removal, and disturbance of archaeological resources (as defined by ARPA) and objects of antiquity (as referenced in the Antiquities Act) on federally owned property without a permit issued by the appropriate federal agency. Those permitted must be qualified individuals, and proposed recovery of archaeological resources must be undertaken strictly for the purpose of furthering archaeological knowledge. Permits must also require that the excavated archaeological artifact collection and associated records are permanently curated in a facility that meets the requirements of 36 CFR Part 79, Curation of Federally-Owned and Administered Archeological Collections. Permits are not necessary for archaeological work

conducted in support of mission requirements (e.g., in compliance with NHPA Section 106). Violation of ARPA may result in the assessment of civil or criminal penalties and forfeiture of vehicles and equipment that were used in connection with the violation.

Federal agencies may withhold any information pertaining to the location of archaeological sites if the agency determines that disclosing such information would put the resource at risk. ARPA specifically excludes such information against a Freedom of Information Act filing that includes all archaeological resources, not just those that are NRHP listed or eligible. Federal agencies must develop plans for surveying lands not scheduled for specific undertakings, record and report archaeological violations, and develop public awareness programs.

As indicated above, ARPA regulations (43 CFR Part 7, Protection of Archaeological Resources) for the ultimate disposition of materials recovered as a result of permitted activities state that archaeological resources excavated on public lands remain the property of the U.S. However, under NAGPRA (see Section 2.2.6), materials may be the property of a culturally affiliated tribe and those materials excavated from Indian lands remain the property of the Indian or Indian tribe having rights of ownership of such resources.

2.2.6 Native American Graves Protection and Repatriation Act of 1990

NAGPRA (PL 101–601; 25 U.S.C. 3001–3013) sets forth rules for intentional excavation and removal of Native American cultural items including human remains, sacred objects, or items of cultural patrimony, and for inadvertent discovery of such items. The intent of NAGPRA is to identify proper ownership and to ensure the rightful disposition of human remains and specific cultural items (defined in Section 2 of NAGPRA) that are in federal possession or control.

The act requires federal agencies to inventory collections of human remains and funerary objects and to provide the culturally affiliated tribes with a collection inventory, requires repatriation on request to the culturally affiliated tribe, and makes illegal the sale or purchase of Native American human remains found on federal or Native American lands. Under NAGPRA, Section 3(d), an agency must wait a mandatory 30 days before resuming a project even if the items found are minor or insignificant.

2.2.7 American Indian Religious Freedom Act of 1978

Under AIRFA (PL 95-341, amended 1994 as PL 103-344; 42 U.S.C. 1996 et seq.), NASA will develop and implement procedures to protect and preserve the American Indian, Eskimo, Aleut, and Native Hawaiian right of freedom to believe, express, and exercise their traditional religions, including, but not limited to, access to sacred sites, use and possession of sacred objects, and freedom to worship through ceremonials and traditional rites. Federal agencies will also establish procedures to facilitate consultation with federally recognized Tribes and Native Hawaiian organizations, as appropriate.

2.2.8 Curation of Federally Owned and Administered Archaeological Collections

The effective and efficient care of archaeological collections generated by public projects is a responsibility of many federal and other public agencies. These regulations, found in 36 CFR Part 79, Curation of Federally-Owned and Administered Archeological Collections, establish the

definitions, standards, procedures, and guidelines to follow in preserving collections of prehistoric and historic remains.

The federal agency will ensure that all "collections," as defined in 36 CFR Section 79.4(a), are processed, maintained, and curated in accordance with the requirements of 36 CFR Part 79. However, as noted above, NAGPRA cultural items and human remains in the possession and control of a federal agency will be disposed of in a manner consistent with the requirements of NAGPRA and 43 CFR Part 10, NAGPRA Regulations.

NASA archaeological collections may be processed, maintained, and curated on and by NASA; by another federal agency, state agency, or other outside institution or nongovernmental organization, in cooperative repositories maintained by or on behalf of multiple agencies; or in other facilities, under contract, cooperative agreement, or other formal funding and administrative arrangement provided that the standards of 36 CFR Part 79 are met. Generally, NASA should not establish archaeological curation facilities at individual centers due to the permanent recurring costs and personnel requirements to maintain such repositories to the minimum standards in 36 CFR Part 79 in perpetuity. Prior to NASA's approval of the establishment of an on-site archaeological curation facility, a cost analysis will be conducted and included as a primary factor in the decision. The cost analysis will include factors such as professional curatorial personnel costs for the facility; initial facility infrastructure start-up costs to establish the facility; and facility costs for annual operation, materials, maintenance, and repair. These cost factors should be compared with similar costs associated with curating the materials in an outside facility, such as at a state museum or other federal or state agency, or with a nongovernmental organization.

The HPO will establish procedures to minimize the amount of archaeological "material remains" (as defined in 36 CFR Part 79.4(a)(1)) that are collected during archaeological inventory and site excavation and that are permanently curated. Such procedures will be integrated into any SOPs and contracts or cooperative agreements for such activities and will serve to reduce the long-term costs associated with archaeological materials curation requirements. Per NPR 8510.1, Centers and Component Facilities will "serve as the Federal Agency Official, as defined in 36 CFR Part 79, with management authority over the Center or Component Facility's archaeological collections" (NPR 8510.1.3e). The Center or Component Facility is responsible for ensuring that "funding is available to coordinate the disposition of archaeological collections and associated records in curation facilities that comply with the requirements in 36 CFR Part 79, NHPA, ARPA, and other applicable regulations" (NPR 8510.1.3f). Archaeological material remains recovered during field inventory and site identification efforts should be analyzed and recorded but should be evaluated prior to accessioning into the permanent center archaeological collection. For artifacts recovered from more extensive excavations (e.g., site evaluation for NRHP eligibility and data recovery excavations/mitigation), some classes of material remains may be analyzed and recorded, but not permanently accessioned into the center collection. Permanent curation should be reserved for diagnostic artifacts and other significant and environmentally sensitive material that will add important information to site interpretation. Evaluation of materials for curation should be carried out in consultation with SHPO.

2.3 Executive Orders and Presidential Memoranda

EOs and Presidential Memoranda (PMs) include:

- EO 11593, Protection and Enhancement of the Cultural Environment
- EO 12114, Environmental Effects Abroad of Major Federal Actions
- EO 13007, Indian Sacred Sites
- EO 13175, Consultation and Coordination with Indian Tribal Governments
- EO 13287, Preserve America
- EO 13327, Federal Real Property Asset Management
- EO 13423, Strengthening Federal Environment, Energy, and Transportation Management
- EO 13514, Federal Leadership in Environmental, Energy, and Economic Performance
- PM, Government-to-Government Relations with Native American Tribal Governments, dated April 29, 1994, published in the Federal Register (FR), Vol. 59, No. 85, May 4, 1994 (Doc. 94-10877)
- PM, Tribal Consultation, dated November 5, 2009, published in FR, Vol. 74, No. 215, November 9, 2009 (57879–57882)
- Secretary of the Interior's Standards and Guidelines for Federal Agency Historic Preservation Programs Pursuant to the National Historic Preservation Act, FR, Vol. 63, No. 20496, April 24, 1998

2.3.1 Executive Order 11593, Protection and Enhancement of the Cultural Environment

EO 11593, Protection and Enhancement of the Cultural Environment, dated May 13, 1971, establishes a national policy to preserve and maintain the historic and cultural environment of the U.S. The EO directs federal agencies to administer historic properties under their control so as to preserve the resources for future generations. This EO was essentially incorporated into the 1980 amendments to NHPA as Section 110 and was further revised during the 1992 amendment to NHPA. Federal agencies must locate, inventory, and nominate all potentially eligible sites, buildings, districts, and objects under their control to the Secretary of the Interior for listing in the NRHP. The federal agencies must also take precautions to prevent the sale, transfer, or demolition of historic properties. Any property that will be damaged as a result of a federal undertaking must be fully assessed and documented before it is impacted. The agencies must report their efforts to the Secretary of the Interior.

2.3.2 Executive Order 13007, Indian Sacred Sites

EO 13007, Indian Sacred Sites, dated May 24, 1996, requires federal agencies to allow access to and ceremonial use of sacred Indian sites by Indian religious practitioners of federally recognized Tribes. Agencies will maintain confidentiality regarding the location of such sacred sites and will avoid adversely affecting their integrity.

2.3.3 Executive Order 13287, Preserve America

EO 13287, Preserve America, dated March 3, 2003, establishes a national policy for federal government leadership in preserving America's heritage through active advancement of the protection, enhancement, and contemporary use of the historic properties owned by the federal government. This order also promotes intergovernmental cooperation and partnerships for the preservation and use of historic properties. Through specific steps and deadlines, EO 13287 reemphasizes current requirements for assessment of the status of agency-controlled historic properties (under Section 110 of NHPA) and management needs and suitability of these historic properties for contributing to community economic development initiatives, including heritage tourism.

2.3.4 Presidential Memorandum, Government-to-Government Relations with Native American Tribal Governments

The PM Government-to-Government Relations with Native American Tribal Governments, dated April 29, 1994, requires that the consultation occur between a federal agency and federally recognized Tribes on a government-to-government basis and in an open and candid manner.

Consultation with federally recognized Tribes on a government-to-government basis occurs formally and directly between NASA and heads of federally recognized tribal governments. Center directors establish government-to-government relations with federally recognized Tribes by means of formal, written letters to the heads of tribal governments. Such letters should designate a NASA Center Coordinator for Native American Affairs who is authorized to conduct follow-on consultations with designated representatives of the tribal government. Any final decisions on Center plans, projects, programs, or activities that have been the subject of government-to-government consultation will be formally transmitted from the NASA Center Director to the head of the tribal government.

This PM also requires that the NASA Center directors assess the impact of their plans, projects, programs, and activities on tribal trust resources and ensure that tribal government rights and concerns are considered during the development of such plans, projects, programs, and activities.

2.4 NASA Policy Directives and NASA Procedural Requirements

NASA's policies are established in directives and procedural requirements for its programs and facilities. A NASA Policy Directive (NPD) outlines policy, and an NPR establishes the process for complying with NASA policy. Some NPDs and NPRs are Center-specific. Compliance is mandatory. NPDs and NPRs and other relevant NASA documents pertaining to cultural resources management include:

- NPD 1000.0, Strategic Management and Governance Handbook
- NPD 1000.3, The NASA Organization
- NPD 1440.6, NASA Records Management
- NPD 8500.1, NASA Environmental Management

- NPD 8800.14, Policy for Real Estate Management
- NPD 8820.2, Design and Construction of Facilities
- NPR 1441.1, NASA Records Retention Schedules
- NPR 4200.1G, NASA Equipment Management Procedural Requirements
- NPR 4310.1, Identification and Disposition of NASA Artifacts
- NPR 7120.5, NASA Space Flight Program and Project Management Requirements
- NPR 8510.1, NASA Cultural Resources Management
- NPR 8553.1, NASA Environmental Management System
- NPR 8800.15, Real Estate Management Program
- NPR 8820.2, Facility Project Requirements
- NPR 8820.2, Design and Construction of Facilities
- Statement of Federal Financial Accounting Standards 29, Heritage Assets and Stewardship Land, July 7, 2005
- PA among NASA, the National Conference of State Historic Preservation Officers, and ACHP regarding the management of NASA's National Historic Landmarks (NHLs) (dated 1989). (Currently, there is only one NHL at ARC: Building N-227 with N-227A-D – the Unitary Plan Wind Tunnel Complex.)

The most relevant NPD and NPRs are further described below.

2.4.1 NPD 8500.1C: NASA Environmental Management

NPD 8500.1C (effective December 02, 2013, expires December 02, 2018) is an internal directive to NASA employees regarding environmental management policy, including compliance with historic preservation laws and cultural resources management regulations, under the authority of NEPA and NHPA. Environmental management is intended to support NASA's missions, protect mission resources, and mitigate environmentally driven mission risks, while maintaining environmental stewardship of assets, controls over environmental responsibilities, and compliance with applicable legal and other requirements. Section 110 of NHPA requires federal agencies to designate an agency FPO to develop, execute, and manage a CRM Program. NASA's CRM Program establishes the position of HPO at each NASA Center and Component Facility to manage NHPA compliance activities.

This NPD identifies the principles of environmental management within the NASA Strategic Plan, and the policy and applicability of environmental management. The policy covers:

- compliance with federal and state laws and regulations, EOs, and interagency agreements;
- incorporation of risk reduction and sustainable practices in projects, plans, and activities;
- consideration of environmental factors throughout the life cycle of programs, projects, and activities, including consideration of environmental impacts as required by NEPA and NHPA;
- inclusion of potential environmental impacts of programmatic activities and the use of particular materials and the costs of mitigating such impacts in the life-cycle analysis of costs;
- application of NASA's scientific expertise and products to create climate-resilient NASA Centers;
- fostering and actively supporting environmentally related technology transfers through domestic, international, and commercial collaborative partnerships;
- communication, coordination, and cooperation to develop collaborative and effective partnerships to efficiently use resources, materials, and processes in support of environmental requirements, to manage goals, including preventing pollution, reducing waste generation, and managing cultural and natural resources;
- establishment of the environmental management system to address all environmental aspects of internal NASA operations and activities; and
- ensuring that environmental liabilities and compliance are addressed appropriately within Space Act Agreements, and tenant, customer, or similar arrangements.

NPD 8500.1C also outlines the responsibilities of all NASA employees, NASA organizational elements, the Assistant Administrator for Strategic Infrastructure (responsible for NASA Environmental Management), the Environmental Management Division Director, Associate Administrators, Assistant Administrators, Chiefs, Directors of Mission Directorates and Mission Support Offices, program and project managers, Center Directors, and Center and Component Facility environmental managers to fulfill these policies.

2.4.2 NPR 4310.1: Identification and Disposition of NASA Artifacts

Under NPR 4310.1, the National Air and Space Museum (NASM), which is administered by the Smithsonian Institution, is responsible for the custody, protection, preservation, exhibition, and loan of artifacts received from government agencies. Repositories for NASA artifacts are identified with the assistance of NASM so as to most effectively inform the public regarding NASA's endeavors. Artifacts are offered to NASM when programmatic utility to NASA has been exhausted.

2.4.3 NPR 8510.1: NASA Cultural Resources Management

NPR 8510.1 (effective June 20, 2012, expires June 20, 2017) implements applicable requirements for the CRM Program under NPD 8500.1. This NPR applies to NASA Headquarters and all Centers, including Component Facilities and to the Jet Propulsion

Laboratory; other contractors; grant recipients; and licensees or parties to agreements only to the extent specified or referenced in the appropriate contracts, grants, or agreements. This NPR establishes the CRM Program roles and responsibilities for program and project managers, and Center or Component Facility Directors, HPOs, and project managers. It also outlines the requirement for developing an ICRMP for each Center as a key component of a Center's management responsibilities. Each NASA Center and Component Facility is responsible for implementing NASA CRM and stakeholder engagement practices, as described in a Center or Component Facility ICRMP. The ICRMP establishes cultural resources management practices and procedures pursuant to Section 110 of NHPA for historic properties. The ICRMP should be developed in coordination with the Center or Component Facility's other significant planning documents, such as Master Plans.

NASA Mission Directorates are to reference this NPR in policy and guidance affecting NASA's cultural resources, including the requirement to fund programs and projects to meet NHPA compliance requirements. NASA institutional and support offices are to reference this NPR in policy and guidance documents that involve or affect NASA's cultural resources and will support the CRM Program through appropriate public outreach and events. This NPR reflects NASA's commitment to be a steward of cultural resources, and implementation of this NPR will ensure preservation of their significance to NASA's mission, communities, and the history of the U.S.

2.4.4 NPR 8553.1B: NASA Environmental Management System

NPR 8553.1B (effective September 22, 2009, expired September 22, 2014) describes NASA's EMS. An EMS is a system that does the following: (1) incorporates people, procedures, and work practices into a formal structure to ensure that the important environmental impacts of the organization are identified and addressed; (2) promotes continual improvement, including periodically evaluating environmental performance; (3) involves all members of the organization, as appropriate; and (4) actively involves senior management in support of the EMS. The purpose of the Agency EMS is to have a single, overall Agency approach to managing environmental activities that allows for efficient, prioritized system execution. The focus of the EMS is to improve environmental performance and to maintain compliance with applicable environmental legislation and regulations, as well as with other requirements to which NASA subscribes.

Regarding cultural resources, this NPR includes a ranking system of categorizing environmental benefits and/or impacts to cultural resources and the procedures to comply with regulations to resolve potential effects on cultural resources.

2.5 Ames Procedural Requirement and Ames Policy Directive

The following Ames Procedural Requirement (APR) and Ames Policy Directive (APD) are relevant to cultural resources management:

- APR 8500.1, *Ames Environmental Procedural Requirements*
- APD 8500.1, *Ames Environmental Policy*

2.6 State and Local Laws

In some cases where a project is a federal undertaking for which NASA or another federal agency is responsible for compliance with NHPA or other requirements, other federal, state, and local laws may apply. Generally, this occurs when state- or local-level projects trigger a federal nexus, e.g., a state or local project is located on federal lands or requires a federal permit. Conversely, a federal undertaking may affect a historic property owned and managed by the state, or is located on state-owned land, and state permits may be required. Normally in these cases, a state or local agency is directly involved with the undertaking, and serves as the local project sponsor for compliance requirements pertaining to state and local laws. Meeting state or local requirements may require specific compliance activities on the part of the federal lead agency conducting the action. NASA may delegate the responsibilities of the lead agency to the state agency or local authority to comply with state and local laws.

For the purposes of the California Environmental Quality Act (CEQA), state- and local-level criteria for identifying significant cultural resources are applied. A significant "historical resource" is one that qualifies for the California Register of Historical Resources (CRHR) or is listed in a local historic register or deemed significant in a historical resource survey, as provided under Section 5024.1(g) of the California Public Resources Code. A resource that is not listed in, or determined to be eligible for listing in, the CRHR; not included in a local register of historic resources; or not deemed significant in a historical resource survey may nonetheless be historically significant for purposes of CEQA. Determination of significance of impacts on historical and unique archaeological resources at the state level is based on the criteria found in Section 15064.5 of the state CEQA Guidelines.

2.7 Planning Needs

To comply with federal laws and NASA policies, the ARC CRM Program should adopt and reflect up-to-date regulatory information. NPDs and NPRs expire and are updated frequently, and changes to requirements and policies should be adopted upon enactment. To that end, this chapter of the ICRMP should be updated periodically. In addition, ARC's lease agreements may affect the terms of ARC's compliance responsibility. The ARC CRM Program should ensure that all leases or other agreements cover the responsibilities of compliance with related cultural resources laws, regulations, requirements, and policies.

3.0 STATUS OF KNOWLEDGE

This chapter describes the natural, prehistoric, ethnohistoric, and historic context as researched to date for cultural resources that are present at ARC. This chapter also includes information on previous investigations conducted at ARC and the cultural resources that have been previously identified through cultural resources surveys. Archaeological resources, built environment resources, and TCPs previously identified at ARC are described in further detail below.

3.1 Natural Context

Prior to development, the diverse ecological characteristics of the south San Francisco Bay and northern Santa Clara Valley region comprised three principal environmental zones. These zones included tidal marshland, grassland prairie, and oak woodland habitats. Riparian corridors meandered through the various ecological communities and enhanced what was an exceptionally productive environment (Albion Environmental, Inc. 2006).

The tidal marshland of the San Francisco Bay estuary provided habitat for a variety of fish, birds, and sea mammals. An extensive network of sloughs and tidal mudflats characterized the southern San Francisco Bay where it intruded into the northern Santa Clara Valley. Freshwater from a multitude of rivers, streams, and rivulets met with saltwater creating what was formerly a vast, brackish tidal marshland. Shore birds including gulls, pelicans, cormorants, rails, egrets, great blue herons, and many others populated the Bay marshlands along with great numbers of migratory ducks and geese (Beechey 1941:36; Schoenherr 1992). At low tide, the mud flats were teaming with shorebirds dining on snails, crabs, and other invertebrates. Within the sloughs, leopard shark (*Triakis semifasciata*), Pacific herring (*Clupea harengus*), Pacific sardine (*Sardinops sagax*), sturgeon (*Acipenser* sp.), bat ray (*Myliobatus californica*), and a host of other estuarine fish formed a productive biological zone. Sea otters, sea lions, and harbor seals subsisted on the abundant fish. The California horn snail (*Cerithidea californica*) was particularly abundant, as were bay mussel (*Mytilus edulis*), oyster (*Ostrea lurida*), and clams (*Macoma nasuta* and *Tivela stultorum*).

Grassland prairie formerly surrounded the perimeter of the Bay marshland and contained a range of plant species. Large earthen mounds provided dry ground during the winter when high tides, stream overflow, and ground saturation created a network of mires and vernal pools. Dense thickets of willows grew along the margin between the tidal marsh and grasslands where fresh water streams became lost in a maze of sloughs (Brown 1994:35; Mayfield 1978:32). Large herds of elk and pronghorn once existed on the Santa Clara Valley plains (Dane 1935:103–104; Fages 1937) and wolves and coyotes were also present (Mayfield 1978:66; Pinart 1952). The elevation of the grassland prairie zone rises progressively at greater distances from the Bay and vegetation communities graded into a wooded savanna setting that consisted of widely spaced, tall broad-leafed deciduous oak, laurel, and madrone trees, with an understory of bunch grasses, forbes and shrubs (Kuchler 1977). This community gave way to an extensive thicket of mixed hardwood, greasewood, toyon, chemise, and coyote brush that formed a belt along the lower foothills of Santa Clara Valley (Bolton 1926:3:263; 1930:1:410). The valley oak woodland zone particularly contained acorn-producing oaks.

In the south Bay, numerous creeks and rivers cross through various ecological zones and have developed distinctive corridors of riparian habitat. Silt deposits from episodic stream overflow along the banks of the meandering streams of Santa Clara Valley created topographic high points. Schoenherr (1992:153) has summarized the biological qualities of riparian corridors and noted that they create an ecotonal edge effect in which the density and diversity of species are greater than in any other community in California. The characteristics of a given ecotonal edge changed as drainages cut across various environmental zones. Larger creeks and rivers supported populations of Pacific pond turtles (*Clemmys marmorata*), brackish water crabs (*Rhithropanopeus harrisi*), fresh water clams and mussels (*Anodonta nuttalliana* and *Margaritifera margaritifera*), and, during the first seasonal rains, spawning runs of anadromous steelhead, or rainbow trout (*Salmo gairdeneri*) (Baumhoff 1978; Bolton 1933:355). Steelhead and other freshwater fish such as Sacramento sucker (*Catostomus occidentalis*), splittail, hitch, thicktail chub, and other carps and minnows (*Cyprinidae*) have been identified in archaeological contexts, along with marine fishes from the saltwater estuaries at the Bay Shore end of riparian corridors (Gobalet 1992:72–84).

3.2 Cultural Context

3.2.1 Prehistoric and Ethnohistoric Context

The earliest well-documented entry and spread of native peoples throughout California occurred at the beginning of the Paleo-Indian Period (12,000–8000 years Before Present [B.P.]), and social units are thought to have been small and highly mobile. Known sites have been identified in the contexts of ancient pluvial lakeshores and coastlines, as evidenced by such characteristic hunting implements as fluted projectile points and flaked stone crescent forms. Prehistoric adaptations over the ensuing centuries have been identified in the archaeological record by numerous researchers working in the Bay Area since the early 1900s, as summarized by Fredrickson (1974) and Moratto ([1984] 2004).

Few archaeological sites have been found in the Bay Area that date to the Paleo-Indian Period or the subsequent Lower Archaic (8000–5000 B.P.) time period, probably because of high sedimentation rates and sea level rise. However, archaeologists have recovered a great deal of information from sites occupied during the Middle Archaic Period (5000–2500 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, and 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 (2500–1300 B.P.). Exchange systems became more complex and formalized, and evidence of regular sustained trade between groups was more prevalent.

Several technological and social changes characterize the Emergent Period (1300–200 B.P.). Territorial boundaries between groups became well established, and it became increasingly common for distinctions in an individual's social status to be linked to acquired wealth. In the latter portion of this period (500–200 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 broken down further, according to additional cultural manifestations that are well represented in archaeological assemblages in the Bay Area:
- Windmiller Pattern (5000–1500 B.P.) peoples placed an increased emphasis on acorn use and on 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 from closer trading partners.
- Berkeley Pattern (2200–1300 B.P.) peoples exhibited an increase in the use of acorns as a food source, compared to what was seen previously in the archaeological record. Distinctive stone and shell artifacts differentiated this period from earlier or later cultural expressions. Burials were most often placed in a tightly flexed position and frequently included red ochre.
- The Augustine Pattern (1300–200 B.P.) reflected increasing populations, resulting from more intensive food procurement strategies, as well as from 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 are all hallmarks of this period.

Ethnographic and archaeological research indicates that ARC falls within the traditional boundaries of the Ohlone, whose territory stretched from San Francisco Bay at the north to the southern tip of Monterey Bay, extending 60 miles inland (NASA 2002b). The primary social organization of this group was centered around the patrilineal family unit, with a focus on patrilocality, and sovereign tribelets were often defined by territorial holdings (Bennyhoff 1977). ARC is located on Ramaytush and Tamyen (Tamien) lands of the Ohlone sphere of influence and has been specifically associated with the Posol-mi tribelet (a place name likely associated with the Rancho Posolmi, see Mexican Period subsection below) (NASA 2009; Kroeber 1925). The total number of individuals residing in this area has been estimated to be as high as 1,200 at the time of European contact; however, the combined effects of missionization and European-borne diseases had a heavy toll on these communities, nearly decimating the population and traditional practices (NASA 2009).

3.2.2 Historic Context

This section defines the historic period as the post-European contact era. The context is adapted from previous studies (NASA 2002a; AECOM 2013).

Spanish Period

The Spanish explored the Aliso-San Jose area as early as 1769, beginning with the expedition of Gaspar de Portola and Father Juan Crespi. In 1772, another expedition led by Juan Bautista de Anza and Father Pedro Font began exploring the inner coastal region of California, reaching the lower Guadalupe River in 1776. As part of their expansion into the area, the Spanish established

a permanent presence with presidios, missions, and secular towns in California, including Fort Castillo de San Joaquin, and a presidio in the Golden Gate area between 1776 and 1794.

Mission Santa Clara and the Pueblo San Jose de Guadalupe were established in 1777. The Pueblo of San Jose de Guadalupe was one of the three towns founded in Alta California to manage and coordinate the missions and presidios of the province. The pueblos provided a resident civilian population in Alta California and thereby played an integral part in Spanish conquest of the area. Of the seven missions located within Costanoan territory, Mission Santa Clara probably had the greatest impact on the aboriginal population living in the vicinity of the project alignment. Mission Santa Clara supported the religious needs of the Pueblo San Jose de Guadalupe until 1851.

Mexican Period

In 1822, Mexico revolted against Spain, and in 1834, the missions became secularized. The Spanish philosophy of government between 1797 and 1822 had involved ownership of the land by the Crown, and the founding of presidios, missions, and secular towns. In contrast, the later Mexican policies emphasized individual land ownership rights. Large tracts of land were granted to individuals during this time, including lands formerly in control of the missions, which had reverted to public domain. The lands farthest from the Pueblo and Mission were usually granted first. Valley and uplands acreage, as well as access to a water supply, were also usually included in the grants.

In 1844, the Rancho Posolmi was granted by Governor Micheltorena to Lopez Iñigo (also Inigo or Ynigo), a Native American documented as living in the vicinity of present-day Mountain View and farming what would become ARC lands (NASA 2009; Garaventa et al. 1991). Iñigo occupied the area from as early as 1834 until his death in 1864. The grant was later patented in 1881, at which time the grant was known to have been divided into three parts: 448.02 acres to Iñigo's descendants, 847.98 acres to Robert Walkinshaw, and 400 acres to Thomas Campbell. Research indicates that the known remains of buildings associated with these ranchos are located outside of the ARC land holdings. Iñigo is thought to have lived on-site until his death in 1864, and a marker entitled the "Inigo Grave Site" [sic] was erected by the Mountain View Pioneer and Historical Association on the perimeter road near the northeast corner of what was then known as NAS Moffett Field (Garaventa et al. 1991). Although the marker is no longer standing, Iñigo's interment is believed to be located within the boundaries of the recorded archaeological resource CA-SCI-12/H (see Section 3.3 below).

A small portion of ARC was also situated on Rancho Pastoria de las Borregas. Jose Mariano Estrada petitioned for this grant for himself and his son. Rancho Pastoria was finally granted to the son, Francisco M. Estrada, in 1842 by Governor Juan B. Alvarado. That same year, however, Jose Mariano Estrada sold the entire land grant to Mariano Castro, who in turn sold a portion of the Rancho to Martin Murphy Sr. in 1849.

American Period

After U.S. annexation of California in 1847, ranching established during the Mexican Period continued in the Santa Clara Valley. After a drought in 1863–1864, wheat-barley production,

dairy farms, and orchards became the primary agricultural practices. Agricultural experimentation and the expansion of markets via the railroad supported the development of more labor-intensive and profitable farming on smaller parcels in the valley. Innovations in refrigeration and preservation after 1875 spurred broad agricultural development, particularly in fruit farming, and economic and population growth in the valley. In the early 20th century, bolstered by a burgeoning agricultural economy and other emerging industries, many communities in the valley were becoming more urbanized and sought to become established cities. Mountain View, an old stagecoach stop and agricultural center, and Sunnyvale, an emergent industrial center, were incorporated in 1902 and 1912, respectively (Perry 2012; Koning and Metz 2010). Despite this, the area surrounding Mountain View, Sunnyvale, Milpitas, and San Jose primarily consisted of farms and farmsteads until the mid-20th century.

Military Presence

U.S. Navy Dirigible Operations (1931–1935)

The land that would become NAS Sunnyvale was purchased with funds raised by San Francisco, Santa Clara, San Mateo, and Alameda Counties in competition with a location in San Diego to host a West Coast naval airfield. The land was sold to the Navy for $1, and NAS Sunnyvale was officially established on August 2, 1931. Construction began on NAS Sunnyvale in October 1931. Hangar 1, the massive steel-frame structure built to house the dirigible USS *Macon*, the flagship for NAS Sunnyvale, was completed in April 1933. North and south of Hangar 1, two mooring circles were built to control and secure the dirigible. West of Hangar 1, the Navy Bureau of Yards and Docks built a campus of Spanish Colonial–style buildings (Shenandoah Plaza) to support dirigible operations on the airfield. East of Hangar 1, closer to San Francisco Bay, land was cleared and leveled for a single-runway airfield. Within a short time, the original runway was expanded and two small runways were added. NAS Sunnyvale was formally commissioned on April 12, 1933.

The expansion of airfield operations necessitated the development of housing on base. One of the first housing projects at the airfield occurred at what would become Berry Court. Constructed in 1933, and built in the Spanish Colonial style, Berry Court contained several residences, including attached Bachelor Officers' Quarters and Bachelor Enlisted Quarters, and nine single-family, detached, married officers' residences, with corresponding detached garages.

The USS *Macon* arrived at NAS Sunnyvale in October 1933 and was stationed there until February 1935, when the dirigible was damaged during a mission off the coast of Point Sur, California, and crashed in the Pacific Ocean. Soon after the crash, the Navy terminated its dirigible program at NAS Sunnyvale.

U.S. Army Air Corps Operations (1935–1941)

In September 1935, the Navy transferred NAS Sunnyvale to the U.S. Army Air Corps for use in pursuit and observation operations. When the airfield was occupied by the Army Air Corps, operations changed from lighter-than-air (LTA) to fixed-wing aircraft used in pursuit and training operations. The Army Air Corps used bigger aircraft that required longer and wider runways, including the P-36 Hawk and BT-13 Valiant. In 1938, the Army Air Corps removed the

older runway system and built a 2,140-foot-long runway (Runway 14R-32L) using 3-inch-thick asphalt concrete. Historic photographs taken during this period show a wide runway bordered on the west side by an apron or taxiway marked by diagonal lines. Parking areas surrounding Hangar 1 were unpaved earth (Veronico 2006).

In 1940, anticipating the outbreak of World War II, the Army Air Corps converted the airfield to become its West Coast training headquarters. In 1941, to accommodate larger aircraft used to train pilots and their support crew, Runway 14R-32L was extended again.

U.S. Navy LTA Operations (1942–1947)

After the strike on Pearl Harbor in December 1941, the Navy reassumed control of the airfield, which was renamed NAS Moffett Field (Moffett Field), after the late Rear Admiral William A. Moffett, Chief of the Navy Bureau of Aeronautics and a major advocate of naval aviation. LTA operations were needed by the military once again, and Moffett Field became devoted exclusively to LTA aviation, primarily for reconnaissance and surveillance of the Pacific coast. Moffett Field was the headquarters for Fleet Airship Wing Three, composed of three LTA bases on the West Coast: Tillamook, Oregon; Santa Ana, California; and Sunnyvale, California. The first blimps arrived at Moffett Field as part of the West Coast's first LTA squadron, ZP-32, which launched its first patrol flight over the Pacific coast in February 1942 (Veronico 2006). Moffett Field was also used to train new airship pilots, using free balloons and blimps.

With the increase in LTA activity at Moffett Field, Hangar 1 was once again filled to capacity with K- and L-class nonrigid airships. In 1942, construction started on the first of two new enormous wood-frame hangars on the east side of the airfield. Hangars 2 and 3 were completed in 1943 and used by the Navy Station Assembly and Repair Department to assemble, erect, store, and maintain blimps and balloons (Gleason 1958).

The Navy also expanded facilities for ammunition storage and fixed-wing aircraft. In April 1942, the Navy purchased 225 acres east of the airfield (Gleason 1958) and built a large munitions storage and loading area off the northeast corner of the airfield in 1943. The Navy chose this area because most munitions arrived at the airfield by boat along the ferry channel, and because that was the most lightly occupied part of the airfield (NASA 2013). The munitions area included five magazines (now known as 070 through 074), a small bunker, an inert ammunition storage building, and nine fortified combat ammunition loading circles.

Beginning in 1943, a series of major changes to the airfield and surrounding areas were made after the Naval Bureau of Yards and Docks allotted $1.12 million for new construction at Moffett Field (Gleason 1958). By this time, the Navy was flying larger and more powerful aircraft such as the PV-1 Ventura and Army B-26 Marauders, which required more modifications to the runway (Veronico 2006). In May 1944, Runway 14R-32L was extended to its present length with 11-inch Portland cement concrete, anticipating greater use by fixed-wing aircraft in the postwar period (NASA 2013). LTA operations continued at Moffett Field until August 1947, when the program was deemed obsolete and terminated, making Moffett Field an exclusively fixed-wing aircraft base (Gleason 1958).

Naval Air Transport Service Operations (1945–1949)

After World War II, Moffett Field became home to Squadron 4 of the Naval Air Transport Service, with support operations dedicated to aircraft maintenance and overhaul. It was during this period that most of the current-day airfield was built. Beginning in 1945, the Navy spent millions of dollars for improvements and new construction at Moffett Field (Gleason 1958). The airfield was expanded and extended to accommodate the Navy's largest transport aircraft, including a huge four-engine transport plane called the R5D Skymaster (Gleason 1958). In 1946, a second runway, 32R-14L, was built of 8-inch-thick reinforced concrete to an original length of 7,425 feet.

In the late 1940s, two more air transport squadrons (Squadrons 3 and 5) were commissioned at the base, making Moffett Field the largest Naval Air Transport Service base on the West Coast. Squadron 5, the first squadron in the Navy to have nuclear-weapon capabilities, flew the large patrol bombers P2V Neptune and AJ Savage (Gleason 1958). Moffett Field's Naval Air Transport Service overhaul and repair operations were closed down in October 1949 (Gleason 1958).

U.S. Navy Jet Operations (1950–1961)

The Korean War started in June 1950, and Moffett Field became the home base for aircraft carrier squadrons and their jet fighter aircrafts. Navy carrier squadrons stationed at Moffett Field used the airfield for training purposes, including simulated carrier landings. Almost every new supersonic jet fighter aircraft in the Navy or U.S. Air Force inventories in the early 1950s was flight-tested at Moffett Field (NASA 2013). To support the new jets stationed at Moffett Field, two new Fleet Aircraft Service Squadron (FASRON) groups were commissioned in March 1951 to provide maintenance services, and used Hangars 2 and 3 for operations.

In June 1951, to accommodate jet operations at Moffett Field, the Navy embarked on the largest post-World War II expansion program at the airfield. Because jet aircraft flew much faster and at higher altitudes than propeller-powered aircraft, the airfield at Moffett Field needed modification. Both runways were extended and resurfaced at least once; Runway 32R-14L was extended to 9,200 feet (Navy 1954). Taxiways were expanded; parking and apron areas were added; and new supply, transportation, garage, and barracks buildings were constructed (Gleason 1958). The Flight Operations Building (158) was completed in February 1954 (Gleason 1958). In October 1956, a cutting-edge, high-speed refueling system (MF1003) was added to the apron area north of Hangar 2. This system allowed eight aircraft to be refueled simultaneously at the rate of 5 minutes per plane.

The northeast area of the airfield near the coastline and magazines also saw changes during this period. Three new high-explosive magazines were built along Marriage Road (143, 147, and 528), and an ordnance handling pad (442) was added to the northeast side of the airfield. In 1953, an extensive fuel transport and storage system was completed. The barge canal, dock, wharf, and pipeline system enabled the Navy to bring in large amounts of fuel by barge directly from the refinery, rather than by truck or railroad; fuel was piped from the barge to underground storage tanks in the fuel farm east of Hangar 3, saving time and money. In 1960, a golf course was built

within the safety buffer zone surrounding the magazines as an acceptable low-occupancy use (NASA 2013).

Jet operations at Moffett Field were so extensive that the base was designated a master jet base in 1953 (the first of nine such Navy bases), and operational units on-site reached an all-time high in 1955. However, by the early 1960s, the Navy's operational priorities had changed, and the focus shifted from fighter jets to anti-submarine warfare. Jet operations at Moffett Field ended in 1961.

U.S. Navy Anti-Submarine Warfare Operations (1962–1994)

In November 1962, Moffett Field was selected as the West Coast's training center for the Navy's anti-submarine warfare in the Pacific Ocean. The training was centered on the new propeller-driven anti-submarine aircraft, the Lockheed P3 Orion. The Pacific Fleet's first Orion arrived at Moffett Field in late January 1963, and for the next three decades the P3s would be a common sight over Moffett Field (Navy 1963). Pilots and technical crews were trained on the Orion in an area of the airfield nicknamed "Orion University," with World War II-era buildings reconfigured for this use (654, 655, and 669). The P3 Orion had an internal bomb bay that could house torpedoes; nuclear weapons; and various other mines, missiles, and bombs. To store the weapons used for the Orion missions, specifically Mark 46 torpedoes, cluster bombs, and Bullpup or Harpoon missiles, the Navy added a new magazine facility (561 and 484-492) to the safety buffer zone in 1965.

In 1973, Moffett Field became the headquarters of the Commander Patrol Wings, U.S. Pacific Fleet, responsible for patrolling 93 million square miles of ocean from Alaska to Hawaii.

In 1991, the Base Realignment and Closure Commission recommended the closure of Moffett Field as a naval air station. In anticipation of the station's closure, the Department of Defense began negotiations with NASA for the transfer of the airfield. On July 1, 1994, Moffett Field was closed to military operations, renamed Moffett Federal Airfield, and transferred to NASA (with the exception of the military housing units, which were transferred to the U.S. Air Force).

Moffett Federal Airfield (1994–Present)

The munitions storage area is currently used to support operations of the California Air National Guard 129th Rescue Wing, and to store explosives used by ARC researchers working on the research gun ranges, both the horizontal ballistic ranges and the vertical impact gun range. It also encompasses the Moffett Golf Course, a full 18-hole regulation course that is open to federal and military personnel and retirees and is currently managed by the Ames Exchange.

Following the closing of Moffett Field in 1994, control of the housing units was transferred to the Air Force, who operated out of the Onizuka Air Force Station, adjacent to Sunnyvale. Almost immediately upon taking control, the Air Force sought to redevelop the area, establishing plans that featured a blend of new construction in undeveloped areas, demolition and reconstruction of a portion of Orion Park, and reuse of other housing, in some cases converting residential units to civilian housing (Mountain View City Council 1998). The efforts to redevelop and possibly privatize this housing, while not realized under the Air Force, continued when the Army took control in the early 2000s (Forsberg 2003).

National Advisory Committee for Aeronautics and NASA

In December 1939, the National Advisory Committee for Aeronautics (NACA) began construction of the Ames Aeronautical Laboratory off the northwest corner of the NAS Sunnyvale airfield. Ames was NACA's second laboratory, established after the Langley, Virginia facility, and named for Dr. Joseph S. Ames, NACA Chairperson from 1927 to 1939. One of the first buildings constructed at Ames Aeronautical Laboratory was a hangar for research aircraft, now called Flight Research Facility N-210. In October 1940, NACA's first research aircraft, a North American O-47 observation plane, arrived at the airfield. By 1941, NACA built and operated wind tunnels, testing airflow of high-speed fighter aircraft during World War II.

In the mid-1940s, NACA added a second aircraft hangar (N-211) to supplement N-210, and extended the ramps and taxiways connecting the airfield to the NACA area. Around this time, NACA was constructing more wind tunnels and had started a vigorous flight test program on the airfield. One such program, focusing on deicing technologies, won the Collier Trophy in 1946 and validated technology important to the air war in the Pacific during World War II.

The airfield improvements related to Navy Air Transport Service operations in the late 1940s, especially the addition of a longer runway (32R-14L), allowed a significant expansion in NACA's flight test program. Soon after the end of World War II, the NACA flight test program focused on problems with high-speed aircraft. Before Chuck Yeager broke the sound barrier in the Bell X-1 in 1947, NACA test pilot George Cooper broke the sound barrier in dives of aircraft over Moffett Field. The supersonic research carried out by NACA at Moffett Field in the 1940s resulted in some of the most significant advancements in aeronautical engineering up to that time (Anderson n.d.).

NACA was renamed NASA in 1958. In the 1960s, the Ames Aeronautical Laboratory continued its research program, and the airfield was the site of extensive research into short takeoff and landing technologies and vertical takeoff and landing aircraft. In 1965, the Army also located its Aeromechanics Laboratory at Moffett Field, and the airfield became the primary site for research on helicopters during the latter years of the Vietnam War. In the mid-1970s, NASA made a major commitment to advancing the technology of tilt-rotor aircraft, and the XV-15, the forerunner of the V-22 Osprey, was test-flown at Moffett Field. The site hosted a fleet of airborne science aircraft that made major discoveries in the discipline of infrared astronomy, and on which the earliest instruments for high-altitude observation of Earth were validated. The airfield became the staging area for some of the most significant earth sciences missions of the 1970s and 1980s. Into the 21st century, ARC has evolved into a diverse and sophisticated research campus.

3.3 Archaeological Resources

An archaeological site is any location that demonstrates human activities that occurred in the past. These activities are typically identified by the presence of artifacts, such as stone tools, pottery, or projectile points for prehistoric sites, and, for historic sites, items composed of brick, ceramic, glass, and metal. Archaeological sites may contain ecofacts, defined as flora or fauna found at an archaeological site, that, although not modified through human technology, does

possess cultural importance. Examples include shell (particularly if it originated from some distance away from the site and was transported to its place of deposition), animal bone, seeds, and pollen. A prehistoric campsite may include, but is not limited to, a lithic scatter related to the manufacture of stone tools and/or presence of stone tools; hearth features with fire-cracked rock, charcoal, seeds, and other materials; or even stone alignments. Historic sites may include trash scatters, building foundations, and privies, among others.

Generally, an archaeological site is considered eligible for the NRHP if it is at least 50 years of age, has archaeological integrity, and has the potential to contribute information important in history or prehistory (National Register Criterion D). If so, it would be considered a historic property and the provisions of NHPA would apply. Additionally, the same site likely is protected by the provisions of ARPA, provided the archaeological resource is at least 100 years old. The site also may contain Native American cultural items, and NAGPRA may be applicable, or it may be a sacred site or a TCP to a federally recognized Tribe or other group, subject to additional federal laws and regulations.

Archaeological sites that include human remains, cemeteries, or a burial are sensitive and require protection or other treatment. If human remains, sacred items, or objects of cultural patrimony are identified during any ARC activities, then the provisions of NAGPRA immediately apply. Refer to SOP No. 4, "Responding to Inadvertent Discovery of Archaeological Deposits" and SOP No. 5, "Treatment of Human Remains and Funerary/Sacred Objects" in Chapter 6 if a suspected human burial is found.

Information regarding the location and nature of archaeological or burial sites is to be kept confidential and not released to the public in accordance with Section 9 of ARPA and Section 304 of NHPA.

The HPO must ensure that all hard copies and electronic documents, maps, and reports prepared for this ICRMP do not contain location or other sensitive information if they are released to the public. Only authorized personnel are allowed access to these records. Qualified personnel include, but are not limited to, archaeologists conducting relevant research and the CRM for planning and preservation purposes.

3.3.1 Previous Surveys and Investigations

Previous archaeological investigations at ARC include a comprehensive pedestrian survey of the Center, supplemental surveys, and subsurface testing. Table 3-1 lists the major investigations conducted at ARC.

Archeological Overview and Survey, Naval Air Station Moffett Field, Santa Clara County, California and Naval Auxiliary Landing Field Crows Landing, Stanislaus County (Basin Research Associates, Inc. 1991)

In 1991, Basin Research Associates conducted a comprehensive survey of NAS Moffett Field, encompassing the NAS Sunnyvale Historic District and the Eastside Airfield. Prior to this study, 10 prehistoric or prehistoric/historic archaeological sites were recorded (originally by L.L. Loud in 1912) in the study area: CA-SCI-12/H, -14, -15, -16, -17, -18, -19, -20/H, -21/H, and -24.

Table 3-1. Previous Archaeological Investigations

Date	Author	Title	Recommendations
1991	Basin Research Associates, Inc.	*Archeological Overview and Survey, Naval Air Station Moffett Field, Santa Clara County, California and Naval Auxiliary Landing Field Crows Landing, Stanislaus County*	Archaeological investigation of NAS Moffett Field and NALF Crows Landing; could not relocate 10 previously recorded sites (CA-SCI-12/H, -14, -15, -16, -17, -18, -19, -20/H, -21/H, and -24); determined the sites not eligible for the NRHP due to lack of integrity.
1993a	Basin Research Associates, Inc.	*Archeological Survey Investigation for the Modification of the Outdoor Aerodynamic Research Facility, NASA/Ames Research Center, Moffett Field, Santa Clara County, California*	Archaeological Investigation of the Outdoor Aerodynamic Research Facility; recommended no further investigation; cultural resources contingency clause should be included in construction contracts.
1993b	Basin Research Associates, Inc.	*Archeological Test Program CA- SCI-23 and Vicinity for the National Wind Tunnel Complex (NWTC) NASA Ames Research Center, Moffett Field, Santa Clara County, California*	Subsurface archaeological testing of CA-SCI-23; recommended no further investigation; cultural resources contingency clause should be included in construction contracts.
2006	Albion Environmental, Inc.	*Extended Phase I Study of the Berry Court Archaeological Site*	Pedestrian survey and subsurface archaeological testing at Berry Court; recommended further investigation and evaluation of the site at Berry Court for NRHP eligibility.

Several of these sites were associated with Iñigo-era activities. Two of these sites had been previously tested: CA-SCI-12/H appeared eligible for the NRHP (Gualtieri 1988, 1990); and CA-SCI-24 did not appear eligible for the NRHP (Chavez 1981). Basin Research Associates found no evidence of these sites during the field survey. CA-SCI-20 was discounted as a prehistoric archaeological site. Basin Research Associates concluded that, due to development of the site, the previously recorded archaeological sites were likely destroyed and therefore lacked the integrity to be eligible for the NRHP. The report pointed out the potential for pre-1880 historic archaeological resources including a landing and connecting road, stage stop, and residences from the 1850s–1890s. The report also cited a number of subsurface activities since 1931, including electrical, telephone, water, fuel, and steam lines and drains, and concluded that the likelihood of the existence of pristine archaeological sites was remote.

Archeological Survey Investigation for the Modification of the Outdoor Aerodynamic Research Facility, NASA/Ames Research Center, Moffett Field, Santa Clara County, California (Basin Research Associates, Inc. 1993a)

In 1993, Basin Research Associates conducted a surface survey and backhoe testing program in search of site CA-SCI-23 for a project involved in the extension of Parsons Avenue. Previous investigations for NASA were inconclusive in locating the site, which was originally identified in 1909 by Nels C. Nelson. The right-of-way for Parsons Avenue was surveyed by archaeologists on July 27, 1993. The survey was negative for cultural material or any indicators of a prehistoric site. During the presence or absence testing a total of 30 backhoe test units (BTUs) were placed. Of the 30 BTUs, 19 were within the Parsons Avenue extension right-of-way and 11 were within

the assumed location of site CA-SCI-23. All 30 BTUs were negative for prehistoric material, and only a few isolated historic artifacts were observed within the Parsons Avenue right-of-way.

Archeological Test Program CA-SCI-23 and Vicinity for the National Wind Tunnel Complex (NWTC) NASA/Ames Research Center, Moffett Field, Santa Clara County, California (Basin Research Associates, Inc. 1993b)

In 1993, Basin Research Associates conducted surface survey and backhoe testing program in search of site CA-SCI-23 for the proposed National Wind Tunnel Complex (NWTC) on approximately 40 to 60 acres north of Allen Road and buildings N-255 and N-258. The site was originally identified in 1909 by Nels C. Nelson and was observed in the mid-1950s. However investigations by NASA in the 1970s and 1980s were unable to relocate site CA-SCI-23. The Proposed NWTC Project site was surveyed by archaeologists on November 8–10, 1993. The survey was negative for cultural material or any indicators of a prehistoric site. During the presence or absence testing a total of 58 BTUs were placed. All BTUs were negative for prehistoric and historic material.

Extended Phase I Study of the Berry Court Archaeological Site (Albion Environmental, Inc. 2006)

In 2006, Albion Environmental conducted an extensive Phase 1 study of a newly discovered archaeological find located on Berry Court at Moffett Field, Santa Clara County, California. The accidental discovery of prehistoric human remains was made during backhoe excavation for the gas utility upgrades on April 5, 2006. On April 7, 2006, National Parks archaeologists proceeded to excavate the remains as well as check for additional remains with test units. Test unit 4 located 12 meters north of the initial find yielded a human phalange and upper lateral incisor. Due to the sensitive nature of the discovery, the installation of underground gas lines was abandoned. However, 14 shovel test pits were excavated throughout the neighborhood to help delineate the site boundary. The area of the grassy knoll where the remains were found seems to have depositional integrity, and the surrounding areas appear to be disturbed by modern construction and landscaping. The identification of additional remains (test unit 4) seems to indicate a high potential for human remains within the grassy knoll area.

The ultimate outcome and dispensation of the human remains is unclear from available data. However, although this was an U.S. Army Reserves endeavor, the protocol followed and decisions made regarding the human remains could have implications for the way NASA addresses potential NAGPRA concerns in the high sensitivity NASA-owned lands in the vicinity of the Berry Court archaeological find. Prior to the initiation of NASA activities in an area of high archaeological sensitivity, a Plan of Action for NAGPRA should be developed in consultation with applicable federally recognized Tribes. Knowing the outcome of projects having NAGPRA responsibilities allows for better communication with federally recognized Tribes about potential future finds.

3.3.2 Archaeological Resources

The 1865 original survey for Township 6S, Range 2W depicts the campus as including the Lopez Ynigo land grant and as being north of the Rancho Pastorias de las Boregas. The vicinity at the

time of the survey was characterized as marsh and thicket, and no structures or features associated with the land grant or rancho are shown on the map. Ten archaeological sites were recorded on the site of Moffett Field by L.L. Loud in 1912. Table 3-2 provides a brief description of each resource. The locations of these sites are shown in Appendix B, Figure 3-1 (confidential). Current understandings of the prehistoric sensitivity are informed by Loud, and original survey and historic topographic maps assisted in determining historic period sensitivity in the area. An archaeological sensitivity map has been included in Appendix F.

Table 3-2. Archaeological Sites Identified at ARC

Site No.	Description	Notes
CA-SCl-12/H	Occupation site	Recorded in 1912; listed in the Santa Clara County Heritage Resource Inventory under *Moffett Field Indian Mound*; not present in 1991 survey; determined not eligible for NRHP (Basin Research Associates, Inc. 1991)
CA-SCl-14	Occupation site	Recorded in 1912; listed in the Santa Clara County Heritage Resource Inventory under *Moffett Field Indian Mound*; not present in 1991 survey; determined not eligible for NRHP (Basin Research Associates, Inc. 1991)
CA-SCl-15	Occupation site	Recorded in 1912; listed in the Santa Clara County Heritage Resource Inventory under *Moffett Field Indian Mound*; not present in 1991 survey; determined not eligible for NRHP (Basin Research Associates, Inc. 1991)
CA-SCl-16	Occupation site	Recorded in 1912; listed in the Santa Clara County Heritage Resource Inventory under *Moffett Field Indian Mound*; not present in 1991 survey; determined not eligible for NRHP (Basin Research Associates, Inc. 1991)
CA-SCl-17	Occupation site	Recorded in 1912; listed in the Santa Clara County Heritage Resource Inventory under *Moffett Field Indian Mound*; not present in 1991 survey; determined not eligible for NRHP (Basin Research Associates, Inc. 1991)
CA-SCl-18	Campsite	Recorded in 1912; listed in the Santa Clara County Heritage Resource Inventory under *Moffett Field Indian Mound*; not present in 1991 survey; determined not eligible for NRHP (Basin Research Associates, Inc. 1991)
CA-SCl-19	Occupation site	Recorded in 1912; listed in the Santa Clara County Heritage Resource Inventory under *Moffett Field Indian Mound*; not present in 1991 survey; determined not eligible for NRHP (Basin Research Associates, Inc. 1991)
CA-SCl-20/H	Occupation site	Recorded in 1912; listed in the Santa Clara County Heritage Resource Inventory under *Moffett Field Indian Mound*; not present in 1991 survey; determined not eligible for NRHP (Basin Research Associates, Inc. 1991)
CA-SCl-21/H	Occupation site	Recorded in 1912; listed in the Santa Clara County Heritage Resource Inventory under *Moffett Field Indian Mound*; not present in 1991 survey; determined not eligible for NRHP (Basin Research Associates, Inc. 1991)
CA-SCl-24	Occupation site	Recorded in 1912; listed in the Santa Clara County Heritage Resource Inventory under *Moffett Field Indian Mound*; not present in 1991 survey; determined not eligible for NRHP (Basin Research Associates, Inc. 1991)

3.4 Built Environment Resources

One of the primary CRM responsibilities of a federal agency as stipulated in NHPA is to maintain a preservation program for the identification and evaluation of all features of the built environment that fall within the agency's jurisdiction. Built environment features can include buildings, structures, landscapes, objects, and historic districts. To comply with NHPA Section 110, an agency must keep an up-to-date inventory of all historic properties. These inventories must be updated regularly to allow buildings that have come of age since previous surveys were completed to be evaluated.

When a built environment survey is updated, it is important that the agency evaluate properties less than 50 years of age under NRHP Criteria Consideration G ("Properties that Have Achieved Significance within the Past Fifty Years") to assess if the feature is exceptionally significant. Features of the built environment that have not been evaluated for NRHP eligibility must be treated and managed as eligible properties until an eligibility determination can be made. Built environment resources should be evaluated by individuals who meet federal professional qualifications as defined in 36 CFR Part 61, Appendix A, Professional Qualifications Standards.

Certain areas of ARC have disparate architectural styles associated with different periods of development. Shenandoah Plaza was constructed in 1932 and its buildings were primarily designed in the Spanish Colonial Revival and the Mission Revival styles, some highly ornamented. The ARC campus began in 1939 with aircraft research hangars followed by wind tunnels and other modernistic buildings in the International Style. Berry Court and other support buildings built by the Navy are typical of post-World War II military building campaigns.

3.4.1 Previous Surveys and Investigations

Previous efforts to identify historic properties at ARC have included thematic studies of Apollo Program-era, Space Shuttle Program-era, and Cold War-era NASA facilities; an NRHP nomination for the NAS Sunnyvale Historic District (Moffett Field); and supplemental surveys. Table 3-3 lists relevant evaluation efforts in previous surveys at ARC.

Table 3-3. Previous Built Environment Investigations

Date	Author	Title	Recommendations
1984	National Park Service	*Man in Space: National Historic Landmark Theme Study*	Unitary Plan Wind Tunnel (N-227) recommended for designation as an NHL.
1991	Urban Programmers	*National Register of Historic Places District Nomination: US. Naval Air Station Moffett Field*	NAS Sunnyvale Historic District recommended NRHP eligible (Criteria A and C), including 43 contributing resources. The district was listed in 1994.
1999	SAIC	*Final Inventory and Evaluation of Cold War Era Historical Resources, Moffett Federal Airfield and NASA Crows Landing Flight Facility*	Inventory identified 148 Cold War-era buildings; recommended not eligible for the NRHP. SHPO concurrence.
2001	Architectural Resources Group, Inc.	*Building Evaluations for N204, N205, N206, N207, N208, N209, N218, N222, and N223, NASA Ames Research Center, Mountain View, California*	Evaluated 10 buildings at Ames campus for individual NRHP eligibility associated with flight and aerospace development, including wind tunnel research, flight simulation, space transport and reentry systems, and hypersonic vehicle flight research. Recommended not individually NRHP eligible; did not include evaluation as a potential historic district.
2002	NASA	*NASA Ames Research Center Historic Resources Protection Plan for Portions of Moffett Field, California*	Buildings 27, 28, 69, 70–74, 82, 111, 113, 118, 119, 328, and 343 recommended not eligible for the NRHP; excluded facilities 104, 108, 381, 431/432, 438, 493, 534, 571, 585, 590, 964/965, and 966/967 from evaluation.

Date	Author	Title	Recommendations
2004	Architectural Resources Group, Inc.	*National Register of Historic Places Nomination, Ames Aeronautical Laboratory Administration Building*	NRHP nomination drafted for Building N-200.
2005	Page & Turnbull, Inc.	*Reconnaissance Survey of NACA and NASA Buildings*	Buildings N-221, N-227, N-227A, N-227B, and N-227C recommended eligible for the NRHP. Evaluation reversed in later report (see below, Page & Turnbull, Inc. 2007)
2006	Page & Turnbull, Inc.	*Hangar 1, Moffett Field Naval Air Station, Historic American Engineering Record #CA-335*	Level I Historic American Engineering Record prepared for Building 1 (Hangar 1) includes detailed information about the construction and context of Hangar 1, with archival photographs
2007	Page & Turnbull, Inc.	*Evaluation of Historic Resources Associated with the Space Shuttle Program at Ames Research Center*	Buildings N-238 and N-243 recommended eligible for listing in the NRHP under Criterion A and Criteria Consideration G. Buildings N-221 and N-227A-C recommended not eligible.
2013	AECOM	*Historic Property Survey Report for the Airfield at NASA Ames Research Center, Moffett Field, California*	Airfield and its contributing features, a total of 27 structures, recommended NRHP eligible as an extension of the NAS Sunnyvale Historic District.

Man in Space: National Historic Landmark Theme Study (National Park Service 1984)

In 1984, the National Park Service (NPS) completed the *Man in Space: National Historic Landmark Theme Study*. The purpose of the study was to evaluate potential resources at all NASA centers and component facilities that related to the theme of Man in Space, in reference to Apollo program-era facilities, and to recommend resources for designation as NHLs. The study looked at resources related to the following subthemes: Technical Foundations before 1958; Efforts to Land a Man on the Moon; Exploration of the Planets and Solar System; and the Role of Scientific and Communications Satellites. ARC was one of many centers and component facilities evaluated as part of the study. The study recommended 24 resources for designation as NHLs because they "represent the best and most important surviving examples of this technology" (NPS 1984). The only property at ARC recommended for designation was N-227, the Unitary Plan Wind Tunnel Complex.

NRHP Nomination for United States Naval Air Station Sunnyvale, California, Historic District (Urban Programmers 1991)

In 1991, Urban Programmers wrote the NRHP nomination for NAS Sunnyvale Historic District (also known as the Shenandoah Plaza Historic District). This included an intensive survey of the Navy-era section of ARC (presently the NRP) and Eastside Airfield. The district boundary encompasses the 1933 original installation area to the west of the airfield, as well as the 22.5-acre discontiguous area containing Hangars 2 and 3, which are associated with LTA military aircraft in World War II. The district's periods of significance are 1930–1935 and 1942–1946, and it is listed under Criteria A and C in the areas of Military History, Architecture, and Engineering. Under Criterion A, the NRHP nomination describes the district as representing a

"unique and significant episode in the development of U.S. naval aviation prior to World War II…one of two Naval Air Stations built to support lighter-than-air dirigibles during the 1930s" (Urban Programmers 1991). Under Criterion C, the district is considered a good regional example of military design in the Spanish Colonial Revival style. The NRHP nomination calls Hangars 1, 2, and 3 "excellent examples of early twentieth-century military planning, engineering and construction" (Urban Programmers 1991). Other contributing elements contained in the district include the Spanish Colonial Revival buildings and International Style buildings of the 1940s. The nomination identified 40 buildings, one structure, and two objects that contribute to the district, and 54 noncontributing resources. The survey did not include the original NACA/NASA buildings. The NAS Sunnyvale Historic District was listed in the NRHP in 1994.

Final Inventory and Evaluation of Cold War Era Historical Resources, Moffett Federal Airfield, Moffett Field, California; NASA Crows Landing Flight Facility, Crows Landing, California (SAIC 1999)

In 1999, SAIC conducted a Cold War (1945–1989) period survey of the Moffett Federal Airfield and NASA Crows Landing Flight Facility, in Crows Landing, California. The survey identified a total of 148 buildings, some of which were not over 50 years old. Twenty buildings were identified as associated with the Cold War Navy P-3 Orion anti-submarine warfare mission, but all had been altered. The buildings were analyzed and evaluated for listing in the NRHP, and for potential eligibility under NRHP Criteria Consideration G. None of the buildings were recommended eligible for listing in the NRHP. SHPO concurred with this evaluation.

Building Evaluations, NASA Ames Research Center, Mountain View, California (Architectural Resources Group, Inc. 2001)

In 2001, Architectural Resources Group evaluated 10 buildings constructed by NASA for potential individual eligibility for listing in the NRHP. The 10 buildings, consisting of N-204, 204A, 205, 206, 207A, 208, 209, 218A, 222, and 223, were found to not meet the criteria or integrity requirements for listing in the NRHP. The buildings were not evaluated as a potential historic district, and further investigation to determine this potential was recommended.

NASA Ames Research Center, Historic Resources Protection Plan for Portions of Moffett Field, California (NASA 2002a)

In 2002, NASA prepared a Historic Resources Protection Plan (HRPP) for portions of Moffett Field that were affected by the 2002 proposed development of the NRP (including Shenandoah Plaza; the western portion of the airfield; and Hangars 1, 2, and 3). The HRPP's purpose was to establish procedures to integrate the planning, preservation, and use of the Shenandoah Plaza Historic District and Hangar 1. The HRPP identified several buildings within the study area that had not been evaluated for NRHP eligibility or as part of the NAS Sunnyvale (Shenandoah Plaza) Historic District. Buildings 82, 111, 113, 118, 119, and 343 were recorded on Department of Parks and Recreation (DPR) 523 forms and evaluated for NRHP eligibility. In addition, facilities 104, 108, 381, 431/432, 438, 493, 534, 571, 585, 590, 964/965, and 966/967 were identified but not recorded on DPR 523 forms. Several buildings outside the HRPP study area,

including buildings 27, 28, 69, 70–74, and 328, were also evaluated. The HRPP concluded that none of these structures appeared eligible for listing in the NRHP.

Reconnaissance Survey of NACA and NASA Buildings (Page & Turnbull, Inc. 2005)

In 2005, Page & Turnbull completed a reconnaissance survey of NACA and NASA properties, with portions of ARC in the study area. The purposes of the study were to identify and evaluate structures built by NASA, and its predecessor NACA, to determine their eligibility for the NRHP, CRHR, or other local listings or designations. As a result, two buildings (N-200 and N-226) were recommended individually eligible for the NRHP; two buildings (N-210 and N-211) were recommended not eligible for the NRHP, but eligible for listing in the CRHR; eight buildings (N-202, N-204A, N-206A, N-212, N-215, N-216, N-219, N-220) were recommended not eligible for the NRHP, but eligible for local listing or designation as contributing structures to a district; and five properties (N-201, N-207, N-207A, N-249/N-249A, and N-267) were determined not eligible for the NRHP or any other local listing or designation. The survey found that an additional five structures, N-221, N-227, N-227A, N-227B, and N-227C, were eligible for listing in the NRHP.

National Register of Historic Places Nomination, Ames Aeronautical Laboratory Administration Building (Architectural Resources Group, Inc. 2004)

In 2004, Architectural Resources Group prepared the NRHP nomination for Building N-200, the Ames Aeronautical Laboratory Administration Building. The nomination found the building eligible under NRHP Criterion A for its association with important events in the areas of aeronautical research and development including the development of the subsonic airfoil theory (c.1940s); wind tunnel construction (c.1940–1956); the development of the blunt body theory of aerodynamics (c. 1951); the Biosatellite Projects (c.1960–1973); the manned space flight Apollo and Mercury programs (c.1960s–1970s); the Pioneer Projects (1963–2000); testing, research, and development for the first Space Shuttle Orbiter prototype; and the establishment of the Kuiper Airborne Observatory (c.1970s). It was also found eligible under Criterion B for its associations with Smith DeFrance, H. Julian Allen, Harry J. Goett, and John F. Parsons, four men who were integral to the history of the aeronautical facility and technological and theoretical advancements in aeronautical engineering, research, and development. The nomination was signed by SHPO in 2008.

Hangar 1, Moffett Field Naval Air Station, Historic American Engineering Record #CA-335 (Page & Turnbull, Inc. 2006)

A Historic American Engineering Record (HAER) was prepared for Hangar 1 in anticipation of major alterations to the materials of the structure. Hangar 1 is a contributing resource to the NRHP-listed NAS Sunnyvale Historic District. The HAER record documented the building with a historical narrative and archival photographs.

Evaluation of Historic Resources Associated with the Space Shuttle Program at Ames Research Center (Page & Turnbull, Inc. 2007)

In 2007, Page & Turnbull completed a Space Shuttle Program thematic study and assessment of 11 resources located at ARC. Each identified resource was evaluated utilizing specialized criteria developed between NASA and NPS. In addition to evaluating each structure with NRHP Criteria A–D, the structures were evaluated in attention to Criteria Considerations B and G. Of the 11 resources surveyed, N-238 (Arc Jet Laboratory) and N-243 (Flight and Guidance Simulation Laboratory) were determined to meet NRHP criteria within the context of the Space Shuttle Program under Criterion A and Criteria Consideration G. The remaining nine resources were found not eligible for listing in the NRHP. Two of these nine resources, N-221 and N-227A-C, were previously found NRHP-eligible for other historical associations (Page & Turnbull, Inc. 2005), and N-227 remains an NHL property.

Historic Property Survey Report for the Airfield at NASA Ames Research Center, Moffett Field, California (AECOM 2013)

In 2013, AECOM prepared a Historic Property Survey Report that identified resources within the East Airfield area and evaluated their NRHP eligibility as contributing features of the previously designated NAS Sunnyvale Historic District. The study recommended that the airfield and its contributing features, a total of 27 structures, are eligible for listing in the NRHP as an extension of the NAS Sunnyvale Historic District.

3.4.2 Reuse and Design Guidelines

Between 2002 and 2007, a series of reuse guidelines for individual buildings were prepared by qualified preservation architecture firms such as Architectural Resources Group and Page & Turnbull. The purpose of the reuse guidelines is to assist NASA Ames professional staff, tenants, and their consultants in rehabilitating historic structures in a manner consistent with federal preservation standards by identifying character-defining features, outlining the opportunities for reuse, and evaluating code deficiencies.

The need for the reuse guidelines was identified in the 2002 HRPP, and thus the majority of the guidelines are focused on buildings and structures located within the NAS Sunnyvale Historic District. The district was set for new construction to accommodate and meet NASA's vision for further developing the ARC into a world-class research and learning park. Some of the proposed new development included the construction of a regional conference and training center and infill buildings to support space technology research and development. Set forth in the guidelines, design for new construction was to be consistent, or at least compatible, with the design of existing historic buildings within the district, maintaining the architectural character of the community, built mostly in Spanish Colonial Revival-style. All new buildings had to contain a stucco exterior (articulated, not plain); feature symmetrical and recessed window openings and doors (flat and surrounded by molding); be one or two stories in height; be compatible with the size, bulk, and scale of adjacent existing buildings; and be oriented toward the street, with no blank walls facing the street. Flat, hipped, or gabled red tile roofs were deemed the only acceptable designs, and only if compatible with the existing architectural character. The plan

called for all existing streets to be retained, with the exception of Dugan Road, and the axial layout of the area and existing landscaping to be maintained.

A complete list of the reuse guidelines is provided in Table 3-4.

Table 3-4. Built Environment Reuse and Design Guidelines Reports

Date	Author	Title	Recommendations for Sites
2000	Architectural Resources Group, Inc.	*Re-Use Guidelines for Building 17*	Further evaluation required upon the development of reuse designs.
2000	Architectural Resources Group, Inc.	*Re-Use Guidelines for Building 20*	Further evaluation required upon the development of reuse designs.
2000	Architectural Resources Group, Inc.	*Re-Use Guidelines for Buildings 21 and 22*	Further evaluation required upon the development of reuse designs.
2000	Architectural Resources Group, Inc.	*Re-Use Guidelines for Building 23*	Further evaluation required upon the development of reuse designs.
2000	Architectural Resources Group, Inc.	*Re-Use Guidelines for Building 25*	Further evaluation required upon the development of reuse designs.
2001	Page & Turnbull, Inc.	*Re-Use Guidelines for Hangar 1*	Guidelines established for new construction and reuse.
2002	Architectural Resources Group, Inc.	*Re-Use Guidelines for Building 24*	Guidelines established for new construction and reuse.
2003	Architectural Resources Group, Inc.	*Re-Use Guidelines for Building 18*	Further upgrades required upon the development of reuse designs.
2004	Architectural Resources Group, Inc.	*Re-Use Guidelines for Building 2*	Further investigations to management of hazardous materials, and further upgrades to mechanical, electrical, and structural systems.
2004	Architectural Resources Group, Inc.	*Re-Use Guidelines for Building 10*	Further investigations to analyze management of hazardous materials, and further upgrades to mechanical, electrical, and structural systems.
2006	Page & Turnbull, Inc.	*Re-Use Guidelines for Hangar 2*	Guidelines established for new construction and reuse.
2006	Page & Turnbull, Inc.	*Re-Use Guidelines for Hangar 3*	Guidelines established for new construction and reuse.
2007	Architectural Resources Group, Inc.	*Re-Use Guidelines for Building 19*	Guidelines established for new construction and reuse.
2007	Architectural Resources Group, Inc.	*Re-Use Guidelines for Building 26*	Guidelines established for new construction and reuse.
2007	Architectural Resources Group, Inc.	*Re-Use Guidelines for Building 32*	Guidelines established for new construction and reuse.
2007	Architectural Resources Group, Inc.	*Re-Use Guidelines for Building 33*	Guidelines established for new construction and reuse.
2007	Architectural Resources Group, Inc.	*Re-Use Guidelines for Building 200*	Guidelines established for new construction and reuse.
2007	Architectural Resources Group, Inc.	*Re-Use Guidelines for Building 221*	Guidelines established for new construction and reuse.
2007	Architectural Resources Group, Inc.	*Re-Use Guidelines for Building 226*	Guidelines established for new construction and reuse.

3.4.3 Built Environment Resources

Previous evaluations identified five historic properties (Table 3-5) as defined by NHPA and one NHL property. The historic properties are the NAS Sunnyvale Historic District, including 67 contributing resources at the Moffett Field campus (40 recorded in the original 1991 nomination, and 27 recorded as an expansion of the district) (Urban Programmers 1991; AECOM 2013), and five buildings at the Ames campus—N-200, N-221, N-226, N-238, and N-243. The NHL property is Building N-227, also located on the Ames campus. Figures 3-2a through 3-2d show the location of built environment resources at ARC (Appendix C).

A comprehensive list of all buildings at ARC that indicates the survey and NRHP evaluation status of each building is included in Appendix D.

Table 3-5. Historic Properties at ARC

Resource	Description	Notes
NAS Sunnyvale Historic District (aka Shenandoah Plaza Historic District)	NRHP-listed historic district containing 40 listed contributing elements; recommended expansion of the district to include Moffett Federal Airfield and an additional 27 associated contributing resources.	Listed in the NRHP. Alterations to the district based on recommendations to expand the boundary to include the airfield and an additional 27 resources have not been submitted to the Keeper of the NRHP.
Building N-200	Ames Aeronautical Laboratory Administration Building	NRHP eligible
Building N-221	40 x 80 Wind Tunnel	NRHP eligible
Building N-226	6 x 6 Supersonic Wind Tunnel Laboratory	NRHP eligible
Building N-227 (with N-227A-D)	Unitary Plan Wind Tunnel Complex	NHL
Building N-238	Arc Jet Laboratory	NRHP eligible
Building N-243	Flight and Guidance Simulation Laboratory	NRHP eligible

NAS Sunnyvale Historic District

The NAS Sunnyvale Historic District was recorded in 1991 and listed in the NRHP in 1994. The original nomination included 40 contributing resources within a boundary that encompassed the original Sunnyvale campus, including Hangars 1, 2, and 3 (Urban Programmers 1991). In 2013, the adjoining airfield was surveyed, and 27 additional resources were recommended as contributing resources within an expanded significance related to post-World War II/Cold War-era activities and an enlarged boundary for the NAS Sunnyvale Historic District (AECOM 2013).

The NAS Sunnyvale Historic District is significant under NRHP Criterion A for its association with military engineering, and under Criterion C for its unified architectural design in the Spanish Colonial Revival and Mission Revival styles. Hangar 1 was constructed in 1932 for the USS *Macon* dirigible and is listed in the NRHP for its architectural, historical, and engineering qualities both individually and as contributing elements of the NAS Sunnyvale Historic District. The district is made up of a group of historically significant buildings that exemplify Spanish

Mission Revival architectural styles of the 1920s and 1930s. The buildings are clustered symmetrically in a formal campus-like layout that includes grand boulevards, broad expanses on manicured lawns, mature trees, and shrubs. The district contains 124 acres, 22 contributing buildings and structures, nine contributing houses, and three monuments.

Building N-200 (Ames Aeronautical Laboratory Administration Building)

Built in 1943, Building N-200, the Ames Aeronautical Laboratory Administration Building, was designed to house all offices for the Ames facility. In 2004, an NRHP nomination was prepared for the resource (Architectural Resources Group, Inc. 2004). SHPO concurrence of this recommendation is not established. N-200 was found eligible for its association with science and invention, and space exploration and settlement. It is apparently eligible under Criteria A and B, although specific associations under Criterion B are unclear based on available documentation.

Building N-221 (40 x 80 Wind Tunnel)

Constructed in 1944, N-221 was built as the 40 x 80 Wind Tunnel. The building has concrete foundations, corrugated metal and Transite cement asbestos corrugated siding, geodesic steel bent structural frames, and a multi-gable roof. It is eligible under Criteria A and C for its association with science and invention in aviation research, space exploration and settlement, and engineering (Page & Turnbull, Inc. 2007).

Building N-226 (6 x 6 Supersonic Wind Tunnel Laboratory)

Building N-226, the 6 x 6 Supersonic Wind Tunnel Laboratory, was constructed in 1948 for supersonic flight research discoveries and testing supersonic craft and missiles. N-226 was found eligible under Criteria A and C for its association with aeronautics and space exploration, and engineering.

Building N-238 (Arc Jet Laboratory)

Building N-238, Arc Jet Laboratory, was constructed in 1964 as a jet laboratory/research facility/machine shop/warehouse. Associated with research and development of the Space Shuttle's Thermal Protection Systems, the facility was determined to meet Criterion A and Criteria Consideration G for the research and development of the Space Shuttle's Thermal Protection Systems (TPS) (Page & Turnbull, Inc. 2007).

Building N-243 (Flight and Guidance Simulation Laboratory)

Building N-243, Flight and Guidance Simulation Laboratory, was found eligible for individual listing in the NRHP as part of the Space Shuttle Program inventory (Page & Turnbull, Inc. 2007). Building N-243 was constructed between 1965 and 1967 for research and development of NASA's program for pilot/astronaut training. It is eligible under Criterion A and Criteria Consideration G for the Vertical Motion Simulator, which contributed to the training of the astronauts for the Space Shuttle Program.

Building N-227 and N-227A-D (Unitary Plan Wind Tunnel Complex)

The Unitary Plan Wind Tunnel Complex including Building N-227 and N-227A-D was nominated and accepted by the Department of Interior as an NHL on October 3, 1985.

The American Society of Mechanical Engineers dedicated the complex as an International Historic Mechanical Engineering Landmark in May 1996.

As an NHL, Building N-227 was included in the 1989 PA concerning NHLs between NASA, National Conference of SHPOs, and ACHP. The PA outlined Section 106 consultation requirements for undertakings affecting the NHLs. As an NHL, it requires protection under federal law.

3.5 Traditional Cultural Properties and Sacred Sites

National Register Bulletin 38, *Guidelines for Evaluating and Documenting Traditional Cultural Properties* (Parker and King 1998) defines a TCP as being eligible for inclusion in the NRHP because of associations with beliefs or cultural practices belonging to a living community when those activities or beliefs (a) are rooted in that community's history, and (b) are important in maintaining the continuing cultural identity of the community." Although TCPs are commonly associated with Native American groups, cultural value may be ascribed to properties by groups of any background. Some examples include the following:

1. Locations associated with origin stories or culture histories
2. Sites of religious practices or ceremonies
3. Locations or gathering places where activities (such as economic, artistic, or cultural practices) important to maintaining historical identity occur

Based on previous ARC research, no known TCPs or sacred sites are located within the ARC property, but an updated systematic inventory should be undertaken. Identification of such properties should be done in consultation with the appropriate interested cultural parties, including Native American groups. Not conducting such a survey would be in violation of the "reasonable and good faith effort" standard required of agencies managing federal properties and public lands (Butzier and Stevenson 2013:11).

3.5.1 Tribal Consultation Recommendations

It is NASA's responsibility to consult with federally recognized Tribes on a government-to-government basis regarding TCPs. Although not required, federal agencies with facilities in California also elect to correspond with tribal groups recognized by the State of California but who do not possess federal recognition. By corresponding with the Native American Heritage Commission (NAHC), NASA may obtain a comprehensive list of tribal groups with interest in the ARC facility-held lands. The NAHC can also provide information regarding known TCPs in the vicinity, but, as these locations are often kept in confidence by Native groups, direct contact with specific individuals (contact information to be provided by the NAHC) is recommended.

3.5.2 Protection of TCPs

Information regarding the location and nature of traditional cultural resources, burials, and archaeological sites will not be released to the public in accordance with Section 9 of ARPA and Section 304 of the NRHP. Therefore, the HPO must ensure that all hard copies and electronic documents, maps, and reports prepared for this ICRMP do not contain location or other sensitive information if they are released to the public.

Additionally, only authorized personnel are allowed access to these records. Qualified personnel include archaeologists conducting relevant research, federally recognized Tribes seeking access to the TCP for traditional or religious activities, and the HPO for planning and preservation purposes.

3.5.3 Access to TCPs

Were sacred sites or TCPs to be identified within ARC boundaries, the location and nature of these properties would not be released to the public per Section 9 of ARPA[1] and Section 304 of the NRHP.[2] Accommodation for continued access of these properties by the groups who have ascribed them value must be made. Other authorized, qualified individuals who may be granted access to these records or locations may include archaeologists conducting relevant work and HPOs for the purpose of land management and planning and preservation purposes.

3.6 Objects, Collections, and Records

Title 36 CFR Part 79, *Curation of Federally Owned and Administered Archaeological Collections*, requires that all archaeological collections and associated records, as defined in 36 CFR Part 79.4(a) are processed, maintained, and preserved at a repository with long-term curatorial capabilities.

- Objects are called *material remains* according to 36 CFR Part 79.4(1). They include artifacts, objects, specimens, and other physical evidence that are excavated or removed in connection with inventories that locate, evaluate, document, study, preserve, or recover a prehistoric or historic resource. Examples of objects are listed in 36 CFR Part 79.4 (i–x).
- Collections are material remains that are excavated or removed during a survey, excavation, or other study of a prehistoric or historic resource and associated records that are prepared or assembled in connection with the survey, excavation, or other study (36 CFR Part 79.4[a]).
- Associated records are original records (or copies thereof) that are prepared or assembled that document efforts to locate, evaluate, record, study, preserve, or recover a prehistoric

[1] "Section 9 requires that managers responsible for the protection of archeological resources hold information about the locations and nature of these resources confidential unless providing the information would further the purpose of the statute and not create a risk of harm for the resources" (http://www.nps.gov/archeology/tools/Laws/arpa.htm, accessed February 7, 2014).

[2] [16 U.S.C. 470w-3(a) — Confidentiality of the location of sensitive historic resources]

or historic resource (36 CFR Part 79.4[2]). Records include field notes, artifact inventories, oral histories, deeds, survey plats, historical maps and diaries, or archival documents that are assembled and studied as a result of historical research.

3.7 Curation Facilities

Upon cleaning, analysis, and stabilization, artifacts and associated documentation are sent to a curation facility that is specifically designed to serve as a physical repository where objects and collections are placed in an appropriate, environmentally controlled, secure storage area. Proper curation also includes a review and update of all paper records. In the absence of an on-site curation facility, an appropriate physical repository will be identified that meets the minimum standards described in 36 CFR Part 79 and will be included in collections management plans. ARC will initiate and negotiate a Memorandum of Understanding (MOU) or similar agreement with the California SHPO, selected repository or curation facility, and other parties, as appropriate.

3.8 Archaeological Research Questions

Archaeological research can assist in providing information for numerous topics of prehistoric and historic interest, including cultural identity, chronology, technology, and settlement patterns and subsistence strategies. Further, archaeological study is one of the means by which one can identify and interpret shifts in cultural norms (either temporally or spatially), which may be addressed by such questions as (1) what changes are reflected in artifact assemblages (e.g., type, form, function), (2) how these changes were manifested over space and time, and (3) why these changes occurred.

Current understandings of chronological frameworks can be supplemented through review of archaeological data, including artifacts and features reflective of meaningful time-sensitive signatures. Sequences of human occupation can be determined through a variety of data sets, but artifact morphology, pedology (particularly through analysis of anthropic soils), and absolute dating (i.e., radiocarbon dating) are common methods. There have been many research questions regarding technological change, but some common questions include (1) may these changes be viewed as responses to surrounding environmental changes? and (2) do these changes represent shifts to cultural landscapes (such as may happen when new groups displace older ones or when new interactions result in the introduction of new ideas and practices)? Lithic forms and source materials can be used as media through which prehistoric change is viewed, but archaeological features (such as those that indicate camp arrangements) are also valuable. The archaeological record is also able to shed light on later period interactions between indigenous populations and European transplants. Examples of this are when European-manufactured artifacts are found in association with prehistoric artifacts and features, or features showing the shift from traditional housing to adobe structures.

Similarly, subsistence strategies often leave signatures on the landscape and can subsequently be observed in the archaeological record. Examination of the composition, structure, and distribution of sites can aid in answering the following: what sort of subsistence strategies were practiced; might they be classified as intensive or selective, broad based or local; and could they be responses to climactic conditions? As previously discussed, indigenous occupants in the

vicinity of what is now ARC were a Yokutsan-speaking population who practiced a primarily hunting-gathering subsistence economy. Although large game was occasionally hunted, consumption of aquatic resources (mussels, abalone, and salmon), as well as plant stuffs like acorn, composed the dominant strategy. Numerous prehistoric mound sites are known to once have been located within the ARC boundaries and surrounding vicinity. Were evidence of these mounds to come to light, valuable information concerning chronological sequences, regional subsistence systems, and possibly even mortuary practices could be obtained.

Although present, few prehistoric period burials have been identified within the ARC property proper, and those sets of skeletal remains that have been encountered in the immediate vicinity (including the Berry Court individual) have been in what were thought to have been previously disturbed contexts. Were like burials to be encountered during work on ARC property, possible contextual information regarding mortuary practices, health, and mortality among pre-European contact populations could be obtained.

Most of what has been known as NAS Moffett Field was once part of the Rancho Posolmi y Pozita de las Animas (Little Wells of Souls) granted to Iñigo in 1844. Little is known of Iñigo except that he had a strong affiliation with the Mission Santa Ana and cultivated the land, supplemented by his weaving, as early as 1834. He died in 1864 at a presumed age of 104 and was buried in the vicinity of the research area. Multiple adobe structures are thought to have been located near here, including one that conforms to the suggested location for Iñigo's house. If these locations were to be researched, valuable information about known individuals, as well as post-mission system cultural adaptation during the time of the California rancho period, could be added to the existing data sets.

Interestingly, California has a long history of collecting ethnographic data, resulting in a large amount of information through which to view culture change. As Kent Lightfoot (1994) has indicated, three areas of study should be considered prior to undertaking any interpretation of culture change via the archaeological record. These include the method by which long-term change will be studied, how culture change is measured, and how ethnohistoric data are incorporated into research designs. Therefore, ethnohistoric data should be used when available to supplement the archaeological record, especially during the contact period.

Historic maps indicate that Moffett Field has the potential to contain pre-1880 historic archaeological resources, including a landing and connecting road, stage stop, and a number of residences dating from the 1850s to the 1890s (Basin Research Associates, Inc. 1991: Appendix II, List II-3).

3.9 Planning Needs

For the purposes of developing the CRM Program, planning needs related to the status of knowledge of cultural resources under ARC jurisdiction include:

- assignment of responsibilities to NASA employees for collecting cultural resources data under the CRM Program at ARC under direction of or as delegated by the HPO;
- accurate and detailed reporting on the evaluation status of cultural resources at ARC;

- organization of a cataloged library of all previous cultural resources surveys and resource evaluations at ARC, including locating or requesting missing documents;
- ongoing compilation of records of NASA correspondence to SHPO, SHPO correspondence to NASA, SHPO consultation, and SHPO concurrence on determinations of eligibility;
- creation of a comprehensive context for potential resources specific to ARC, including the history of all activities on-site under other jurisdictions;
- further Section 110 surveys to cover all areas and account for cultural resources under ARC jurisdiction, including periodically updating NRHP evaluations of built environment resources, including the potential nomination of new historic districts;
- a comprehensive records search and inventory of archaeological data for a more complete picture of archaeological resources in the vicinity, and thus the cultural context for any sites encountered at ARC (see Section 4.2.3 for further discussion of this planning need);
- update of historic properties information on the ARC historic preservation office website at http://historicproperties.arc.nasa.gov/index.html; and
- a geographical database of cultural resources, specifically geographic information system (GIS) data, to inform personnel through digitally mapped exhibits.

4.0 CULTURAL RESOURCES MANAGEMENT GOALS, ISSUES, AND RECOMMENDATIONS

This chapter outlines the goals and objectives of the CRM Program to integrate with other ARC planning programs, to identify historic properties at ARC, and to maintain and manage cultural resources at ARC, and lists action items related to each goal. (Specific guidance and procedures for the HPO and its delegates related to these goals are further detailed in Chapter 5.) This chapter also discusses cultural resources issues, including potential impacts on cultural resources resulting from routine maintenance and planned projects, and planning needs to fully identify historic properties at ARC. Finally, this chapter includes recommendations for future projects and the treatment of cultural resources in support of the CRM Program's objectives. This section should be reviewed and updated, at a minimum, annually.

4.1 Goals and Objectives

In general, the HPO will plan and develop projects to identify, evaluate, manage, and protect cultural resources and to ensure appropriate compliance action when the resources may be affected. The purpose of these action items is to be proactive in implementing the CRM Program and addressing cultural resources compliance. The action items for each goal are listed below, and identify guidance and procedures for the HPO, or its delegates, which are described in further detail in Chapter 5. The HPO coordinates and communicates with stakeholders and off-site entities, including parties with demonstrated interest in the heritage of ARC or the surrounding communities. A brief Point of Contact list is provided in Appendix E.

Goal 1: Integrate the CRM Program with ARC facility-wide plans, projects, and programs.

Objectives:

- Elevate awareness and understanding of cultural resources laws and regulations.
- Integrate cultural resources management into ARC master planning.
- Identify and integrate internal and external stakeholders' interest concerning cultural resources into ARC plans and programs.

Action Item	Method	Purpose	Section
Cultural resources management training	HPO provides cultural resources awareness training, as needed	To increase knowledge of cultural resources regulations and regulatory compliance procedures	5.1.4
Internal communication	HPO coordinates with other ARC personnel on upcoming and ongoing projects	To ensure that other ARC personnel are aware of existing and potential cultural resources and requirements	5.1.5
Participate in planning meetings	HPO participates in planning meetings	To ensure that other ARC personnel are aware of existing and potential cultural resources and requirements	5.1.5
Review programs and plans	HPO reviews ARC planning documents (master plans, Integrated Natural Resource Management Plans [INRMPs], etc.)	To ensure cultural resources management goals are integrated into other programs and planning	5.1.5

Action Item	Method	Purpose	Section
Identify and consult with interested parties and stakeholders	HPO or its delegate coordinates outreach with federally recognized Tribes, SHPO, and other interested parties to determine level of interest and potential for cultural resources	To initiate consultation early in planning process to avoid project delays To respect interest of other groups	5.1.6

Goal 2: Identify cultural resources on NASA property.

Objectives:

- Ensure stewardship for the nation's heritage for present and future generations.
- Understand resources that require management and preservation.
- Keep the status of knowledge of cultural resources at ARC up-to-date.

Action Item	Method	Purpose	Section
Cultural resources survey and inventory	HPO manages survey of existing and newly acquired lands for cultural resources HPO manages inventory of built environment resources that are over 50 years of age or related to special thematic studies HPO or its delegate coordinates consultation with federally recognized Tribes to identify TCPs	To identify cultural resources for management purposes under the CRM Program To comply with Section 110 of NHPA	5.2.1 5.2.1.1
Verify professional qualifications for conducting cultural resources surveys	HPO verifies qualifications of cultural resources professional who will conduct survey and evaluation	To ensure that cultural resources surveys are valid and correct	5.2.2
Inadvertent discovery	EMD, as delegated by HPO, maintains procedures for accidental discoveries	To avoid lengthy delays and protect discovered sites	5.2.4

Goal 3: Proactively maintain and manage cultural resources

Objectives:

- Avoid, minimize, or mitigate adverse effects on historic properties.
- Proactively and efficiently achieve compliance with cultural resources regulations.
- Integrate interest of external stakeholders with cultural resources management.

Action Item	Method	Purpose	Guidance and Procedures Section
Initiate and execute Section 106 on undertakings	HPO follows Section 106 procedures for undertakings	To comply with Section 106	5.4.1
Implement a cultural landscape approach to cultural management	HPO implements a holistic approach to cultural resource identification and management	To identify potential significance related to cultural resources at ARC	5.4.5
Geographic information system (GIS) mapping	HPO, or EMD as delegated by HPO, manages mapping cultural resources and survey areas using GIS data	To create a tool for cultural resources management and planning	5.4.6
Integrate cultural resources management with other environmental requirements	HPO, or EMD as delegated by HPO, integrates the NHPA process into the NEPA process, where possible, using NEPA forms and procedures	To streamline the environmental compliance process	5.4.7
Implement and maintain ARC-specific ICRMP	HPO ensures the ARC-specific ICRMP is maintained and renewed with up-to-date procedures, requirements, and status of knowledge	To provide accurate information and guidance for known resources To assist with specific resource management and issues if cultural resources are discovered during surveys	5.4.8
Archaeological site monitoring	HPO, or EMD as delegated by HPO, manages a program to monitor archaeological sites	To ensure that known or potential archaeological sites are monitored and protected from damage and vandalism	5.4.9
Maintenance of historic buildings and structures	HPO manages procedures for protecting and maintaining historic buildings	To ensure that significant architectural resources are protected and maintained	5.4.10

4.2 Cultural Resources Management Issues

Several programs and activities at ARC have the potential to impact cultural resources or conflict with the CRM Program objectives. Below is a discussion of issues with implications for cultural resources management related to the integration of the CRM Program with other management programs at ARC, potential impacts associated with routine and planned project activities, and planning needs for the identification and evaluation of cultural resources at ARC.

4.2.1 Integration with Other ARC Management Programs

Management objectives of the CRM Program are generally compatible with those of other management initiatives of ARC. Other ARC management functions that interact with and may impact the CRM Program are described below.

Natural Resources Management. Cultural resources and natural resources management are well integrated and in some instances, such as in the NEPA process, reinforce each other. A natural resource can also be considered to have archaeological, historical, or traditional cultural significance. Many TCPs are culturally significant natural resources.

Engineering/Facilities Maintenance. Cultural resources management has the potential to impact the facilities maintenance and construction mission of ARC. Preservation considerations for historic properties can result in a greater project review period (and increased costs) than that for non-historic properties; this is particularly true for projects involving alteration or demolition of structures. On occasion, mitigation for historic properties may involve modification of a proposed project.

Environmental Protection. Cultural resources have the potential to affect the spill response mission of the environmental program. When responding to a spill, personnel should be aware of the presence of any archaeological sites to avoid inadvertent damage. Generally, communication has not been a problem because some responsibilities for cultural resources management are assigned to EMD. The incorporation of archaeological maps into GIS will ensure that confusion or delays are avoided.

4.2.2 Potential Impacts to Cultural Resources

Mission-related activities at ARC may impact historic properties or other cultural resources at ARC and at off-site locations. Mission undertakings and their outcomes must be assessed for any potential effects to historic properties. Specific mission undertakings are defined and implemented on an on-going basis, and will need to be assessed by the HPO in accordance with the ICRMP's guidance on implementing Section 106 reviews. ARC is a pioneering research facility with the following mission:

> Ames Research Center (Silicon Valley) enables exploration through selected development, innovative technologies, and interdisciplinary scientific discovery. Ames provides leadership in astrobiology; robotic lunar exploration; technologies for CEV [Crew Exploration Vehicle], CLV [Crew Launch Vehicle], and HLV [Heavy Lift Launch Vehicle]; the search for habitable planets; supercomputing; intelligent/adaptive systems; advanced thermal protection; and airborne astronomy. Ames develops tools for a safer, more efficient national airspace and unique partnerships benefiting NASA's mission.

Missions and projects that are projected to move forward at ARC in the next 10 years include the following (NASA 2012):

1. The Kepler mission is searching for Earth-size and smaller planets.

2. ARC will lead a Quantum Sensing Program to identify the set of application areas in space communications and sensing that could benefit from novel quantum-enhanced techniques under realistic environmental conditions; to identify key performance requirements to realize the promised gains and to capture the state-of-the-art relative to

these requirements in order to determine the research and development avenues that could deliver quantum-enhanced capabilities.

3. ARC will use the Pleiades supercomputer, one of the fastest in the world, to develop detailed models of galaxy evolution, improve tropical storm forecasting and assess climate change, enhance aircraft performance, and advance space vehicle design.

4. ARC will utilize the recently completed "Sustainability Base," as a model of how NASA developed space technologies can improve energy efficiency on Earth. Sustainability Base is a LEED platinum-certified multipurpose building designed to be the highest performing building in the federal government.

5. ARC will lead a new program office that combines the former Franklin and Edison Programs into the Small Spacecraft Technology Program (SSTP). The SSTP will encompass all of the small satellite technology development and technology demonstration elements from the former Franklin and Edison Programs.

6. ARC supports the commercialization of space by providing Level 2 responsibility for the Emerging Commercial Space Office that enables entrepreneurial space ventures for industrial and public benefit.

Planned and budgeted projects for FY15–FY16 that may impact historic properties include:

FY15

- Restore Electrical Reliability of Agency Telecom Gateway, N-254
- Replace Varnished Cambric Lead Cables

FY16

- Replace Unitary Plan Wind Tunnel Auxiliaries 1000 kVA Transformers
- Replace Arc Jet Aerodynamic Heating Facility Heart Exchanger
- Restore Reliability of Vertical Motion Simulator, N-243
- Replace Roofs, Life Research Laboratory, N-239
- New Bio Science Laboratory Building

While several of these planned and budgeted projects do not have high potential to affect historic properties, the repair and replacement of historic materials may be an issue. The design and construction of new buildings within and historic district or in proximity to individual historic properties have the potential to affect the setting and integrity of the historic property and should be carefully reviewed for adverse effects.

Existing and planned lease agreements with outside agencies and tenants may impact historic properties. ARC has several lease agreements with various tenants within its facilities. Currently, ARC is negotiating the lease of Moffett Federal Airfield. The proposed lease would have a long-

term duration and would permit the lessee to make physical changes to historic properties and to conduct activities throughout the lease area. NASA is responsible for compliance with the CRM Program encompassing lease areas and will establish an agreement that will guide the compliance of lease areas and any other leased facilities.

Other ongoing activities that may impact historic properties and other cultural resources at ARC and at off-site locations include programmatic and discrete activities related to maintenance, planned projects, and the outlease of NASA facilities.

Activities that may impact cultural resources include:

- changes to landscape design
- upgrading and/or altering a historic building, structure, or feature
- renovation projects
- intentional and unintentional damage
- new construction and infrastructure
- sale or transfer of land or facilities out of NASA control

These activities all have the potential to impact historic properties and should be carefully reviewed for adverse effects.

Routine activities or conditions that may impact cultural resources include:

- landscaping
- maintenance
- neglect
- climate change

These have a low potential to impact cultural resources, and ongoing training of personnel responsible for these activities would avoid any potential adverse effects.

To ensure that cultural resources are adequately considered during future planning and construction efforts, it is essential that the standards and procedures outlined in this ICRMP be implemented throughout ARC.

4.2.3 Unidentified Cultural Resources

Areas of ARC have been extensively surveyed for archaeological and built environment resources. However, there are information gaps in the status of knowledge of cultural resources at ARC (see also Chapter 3).

A comprehensive archaeological survey of Moffett Field was conducted in 1991 (Basin Research Associates, Inc. 1991) but is currently outdated. Subsequent archaeological surveys have covered smaller areas of ARC. The physical area that has been covered by previous archaeological

surveys is unclear. By updating the status of knowledge [Chapter 3 of this ICRMP] with accurate mapping of previous investigations, the exact areas that have not been surveyed for archaeological resources may be identified through a precise gap analysis. The CRM Program should create and manage a GIS database of previous archaeological survey area maps to have conclusive information about areas that have not been previously covered by survey. Ten archaeological sites have been identified at ARC (see Table 3.2). All were evaluated as not eligible for the NRHP. No known archaeological sites require further evaluation at this time.

Built environment resources have been surveyed in relation to thematic studies relating to NAS Sunnyvale and NAS Moffett Field (resulting in the NAS Sunnyvale Historic District nomination), Apollo-era resources, Space Shuttle-era resources, and Cold War-era resources. A comprehensive inventory of all built environment resources at ARC has not been conducted. To determine areas that have not been covered by built environment surveys, mapping of previous investigations study areas, and comparing survey results with a comprehensive list of resources at ARC will provide information for the gap analysis. The HPO should regularly maintain the comprehensive list to identify resources that are or may be turning 50 years old and may require evaluation with dates of construction, original and current functions, dates of alteration, whether they have been surveyed as part of a built environment study and under which historical theme, and their current NRHP eligibility status. Several buildings at ARC have not been surveyed or have not been adequately evaluated under all potential historical thematic studies for NRHP eligibility. For the current list of all buildings at ARC and their NRHP status, see Appendix D.

4.3 Guidance for Future Cultural Resources Projects

This section includes specific actions or projects that the ARC CRM Program may implement in the next 5 years. The HPO will identify funding sources and, when available, will proactively coordinate surveys, evaluations, or treatments of cultural resources to further the CRM Program based on these recommendations. This coordination is critical to receive an approved adequate budget and timely funding for cultural resources actions and projects.

4.3.1 Future Archaeological Work

During potential future or planned studies, three treatment plans can be followed for the protection of prehistoric and historic cultural resources. These are avoidance, physical protection through demarcation, and protection of statistically valid samples of sites.

- Avoidance: All areas having significant archaeological sites would be avoided. This is generally considered one of the most cost-effective methods of protecting NRHP-eligible sites. Discussions regarding resource locations within a given project's area of potential effects (APE) as well as the project's purpose and need take place early in the process. This way, if significant resources exist within proposed project boundaries, then the scope of the project can be altered to avoid impacts to the resources.
- Physical protection: archaeological sites can be marked off through methods such as burying, fencing, or other means of demarcation rendering the sites inaccessible. Signage indicating these regions as restricted access areas is also useful, particularly where near-surface archaeological resources are present. In-field monitoring of sites is useful in assessing the effectiveness of protective measures. Visiting sites at regular intervals, and

ensuring that physical protection remains in place and in good condition, helps to maintain site integrity.

- Sampling: Through selection of statistically valid samples, those sites or features that have been assessed as significant can be preserved in perpetuity. For this method to be successful, however, it is critical that these sites be removed from areas that will be subject to development so that mission activities avoid these resources.

Although avoidance and preservation are always the preferable routes, it is understood that mission activities may render such methods infeasible. When that occurs, data recovery should be performed in order to mitigate for the archaeological resource's loss of information potential and integrity. Any program of data recovery should be undertaken with the site's significant features in mind. All data recovery efforts must be conducted in accordance with 36 CFR Part 66, Recovery of Scientific, Prehistoric, Historic, and Scientific Data: Methods, Standards, and Reporting Requirements, and the Secretary of the Interior's Standards and Guidelines for Archeological Documentation (Federal Register, Vol. 48, No. 190, pp. 44734-44737, September 29, 1983). Specifically,

- A professional archaeologist meeting the Secretary of the Interior's qualifications for archaeology will direct the data recovery efforts.
- A data recovery plan will be developed in advance of each mitigation effort. The plan will be specific to the undertaking and will include the significance of the site being investigated, reasons that the site cannot be avoided, and a research design discussing the specific questions the undertaking will address. It will also detail the specific field methods to be employed and collections management plans, as applicable.
- Data recovery projects, although specific to the undertaking, should also include as much information as feasible in order to obtain a wide range of data for use in addressing future archaeological research questions.
- As with any research design, those that concern data recovery and mitigation efforts should be flexible enough to allow for unforeseen developments, problems, or discoveries (U.S. Department of the Interior 2011).

4.3.2 Future Built Environment Resources Work

Several planning needs for built environment resources need to be met to form a comprehensive status of knowledge of historic properties. As mentioned above, built environment resources have generally been surveyed in relation to thematic studies. A comprehensive inventory of all built environment resources at ARC has not been conducted. Recommendations for projects meeting these needs include:

- Maintaining the GIS database with building information, including dates of construction and alteration, and survey and evaluation status.
- Compiling a comprehensive list of all previous studies and evaluations.
- Conducting more surveys of built environment resources with comprehensive evaluations of all historical themes and contexts related to ARC's history.

- Conducting periodical surveys of built environment resources to determine the potential for acquired significance as resources age or as historical themes are developed.
- Creating reuse guidelines for all historic properties at ARC.
- Preparing and submitting NRHP nominations for all NRHP-eligible and as yet unlisted properties.

In future built environment studies, particular consideration should be given to resources that are currently less than 50 years old and will require reassessment of the NRHP eligibility as they reach 50 years of age. It is recommended that a reassessment of NRHP eligibility be conducted every 5 to 10 years for buildings, structures, and districts that have reached 50 years of age since the previous evaluation of NRHP eligibility. This reevaluation will ensure that the significance of resources built during the recent past is adequately and accurately evaluated.

Following *The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings* (Weeks and Grimmer 1995), preservation and rehabilitation are the preferred treatments for historic properties at ARC. The HPO should develop a historic structures maintenance program for historic properties that adheres to the standards. The maintenance program should include training for maintenance staff concerning the special issues associated with preserving older buildings, particularly such problems as identification and avoidance of conditions that lead to historic materials deterioration, and the appropriate and acceptable techniques to repair and preserve the historic resources in compliance with guidelines (as outlined in the NPS Preservation Briefs, available at http://www.nps.gov/tps/how-to-preserve/briefs.htm.) At least one staff person should be designated and trained to coordinate maintenance on historic buildings or structures, and to regularly coordinate with the HPO to ensure that the procedures are enacted properly.

Reuse guidelines have already been established for several buildings at ARC but should be created for all NRHP-eligible properties. Building managers and any future tenant units should receive instruction that the buildings for which they are responsible are historic properties and thereby require special management attention and procedures. Procedures can be developed to coordinate repairs and maintenance procedures with the buildings' occupants.

Any changes to historic properties or other cultural resources must be documented by photographs and accompanied by a brief description. If monitoring determines that existing protective measures are not adequate to protect the historic property, other measures should be designed and implemented.

4.3.3 Future Tribal Consultation Work

Currently, there are no federally recognized Tribes in the immediate vicinity of ARC. If any should be recognized in the future, NASA will consult with federally recognized Tribes to identify areas of concerns, sacred sites, or TCPs. When concerns arise related to ARC projects not located on ARC, it is recommended that NASA contact the NAHC to identify the appropriate federally recognized Tribes and to initiate consultation as soon as possible. It is also suggested that NASA establish contact with those nonfederally recognized tribes for whom the NAHC will likely also provide contact information.

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5.0 CULTURAL RESOURCES MANAGER'S GUIDANCE

This chapter provides the framework, guidance, and procedures for the HPO to meet the goals and objectives of the CRM Program.

5.1 Cultural Resources Integration in Project Planning

5.1.1 NHPA/NEPA Review Coordination in Project Planning

Cultural resources compliance requirements must be completed prior to implementation of mission-essential programs and projects. All ARC projects need to take into consideration the protection and management of cultural resources during project planning, especially for projects that may involve ground disturbance.

The NEPA environmental review process should be coordinated with the Section 106 process. Agencies are encouraged to coordinate compliance with Section 106 with any steps taken to meet NEPA review requirements. Compliance with NEPA includes, but is not limited to, categorical exclusions, Environmental Assessments (EAs), and Environmental Impact Statements (EISs). Agencies are authorized to use the procedures and documentation required for the preparation of an EA and Finding of No Significant Impact or an EIS and Record of Decision to comply with Section 106, if this is coordinated in advance with SHPO. The method of NEPA-NHPA coordination will be determined jointly by the HPO, Center NEPA Manager, Project Proponent, and, if appropriate, SHPO. If an EA or EIS is to be prepared, the public involvement for NEPA and NHPA compliance can be coordinated. This should be done early in the planning for the proposed project when a range of alternatives is being considered and the public's input is best considered. However, for any adverse effect under NHPA, in accordance with 14 CFR Part 1216, Subpart 1216.3, Procedures for Implementing the National Environmental Policy Act (NEPA), a categorical exclusion can be used to satisfy NEPA if SHPO concurs with the finding made under Section 106 review.

At ARC, projects that will involve construction must have an approved Environmental Checklist form prior to the start of engineering. The project manager utilizes the Environmental Checklist to define the scope of the project, and must identify any work that may involve ground disturbance or impacts to structures that are historic properties, contributing to a historic district, or NHLs. The project manager submits the Environmental Checklist according to APR 8822.1 and NPR 8580.1, as appropriate. EMD reviews the Environmental Checklist for NEPA issues and concerns, and initiates coordination with the HPO on any activities with the potential to affect historical resources. The HPO reviews the Environmental Checklist to determine whether cultural resources impacts are identified or need to be identified. The HPO will inform EMD, typically via email, whether a project will have the potential to affect cultural resources. The HPO will consult with EMD to address Section 106 compliance prior to the project moving forward.

5.1.2 Historic Preservation Officer

The HPO, located within the Facilities Division, coordinates the CRM Program and is responsible for compliance with Section 106 and the oversight of activities that may affect

cultural resources located at ARC, as well as ARC activities that may affect cultural resources on non-NASA lands.

The HPO is the initial point of contact for project initiators for all undertakings that involve historic properties. While the HPO ultimately holds the responsibility for cultural resources management under the CRM Program, at ARC, the HPO addresses all undertakings that involve built environment resources, and has delegated purview of all undertakings that involve subsurface archaeological resources to EMD. EMD has the responsibility of determining potential effects to archaeological resources. EMD works closely with the HPO to ensure compliance with Section 106 and NPR 8510.1.

The ARC HPO is:

Keith Venter
Telephone: (650) 604-6408
Email: keith.venter@nasa.gov

5.1.3 Cultural Resources Awareness Training

General cultural resources awareness training for ARC personnel is crucial to ensure the success of the CRM Program, compliance with environmental laws and policies, and protection of cultural resources. The HPO will develop a briefing for awareness of cultural resources for relevant personnel who may encounter cultural resources. Training subjects will be tailored to ARC's cultural resources but can include understanding SOPs, understanding what cultural resources have been identified on ARC property, introduction to cultural resources regulations and management, and identification of cultural resources. A cultural resources awareness training course would be approximately 1 to 4 hours and would occur on an as-needed basis.

5.1.4 Cultural Resources Management Training

Specific cultural resources management training for ARC's dedicated cultural resources and environmental planning personnel could include courses that provide an overview of relevant laws and regulations, such as Section 106 and Section 110 of NHPA, ARPA, and NAGPRA. Other course topics might include maintenance of historic property, preservation of cultural landscapes, agreement documents, tribal consultation, collections curation, and Native American consultation. Training is offered by:

- California Office of Historic Preservation (http://ohp.parks.ca.gov/?page_id=24681)
- Advisory Council on Historic Preservation (www.achp.gov)
- National Preservation Institute (www.npi.org)

5.1.5 Internal Communications

To effectively manage the CRM Program, coordination with other program offices is critical. The HPO must be aware of the actions of program offices that could potentially impact cultural resources, and must reciprocate awareness of the CRM Program's requirements. For specific projects, coordination with the project initiator (such as Facilities) should be an ongoing process.

Projects involving tribal consultation and stakeholder involvement should be identified as early as possible. Potential conflicts could occur when the integration and coordination of other programs with the CRM Program break down. The sooner the HPO is involved in the planning and project process, the more likely the process will continue without interruption and delays.

Actions that typically trigger cultural resources compliance and internal coordination with the HPO include:

- maintenance, repair, alteration, or demolition of building and/or structures
- landscape and grounds maintenance or alteration
- new construction – buildings or additions, infrastructure, roads, and trails
- major changes in use of buildings
- major changes in training locations or type
- master planning
- divesting of property
- leasing or using private or public property
- acquisition of new property
- emergency operations
- compliance with Homeland Security requirements
- mission-related undertakings that include off-site work

To encourage integration of the CRM Program with other ARC programs and plans, the HPO will:

- participate in various planning meetings, including board meetings and committee meetings
- distribute cultural resources project list and emphasize time requirements for compliance
- distribute SOPs (Chapter 6) to applicable parties
- create, update, and distribute a list of historic properties and archaeological sensitivity models (Appendix F)
- develop and conduct cultural resources awareness training
- meet, at a minimum, once a year to discuss upcoming projects and plans
- interface with individuals on updates and new plans and programs as they are developed
- provide the ICRMP and periodical ICRMP updates to land use planners for integration with the ARC Master Plan as it is updated

- update the ICRMP every 5–10 years, or sooner in the case of new cultural discoveries, NASA missions, or definition of new historic themes (e.g., the Space Shuttle program, Cold War-era development, or the International Space Station (ISS) program).

5.1.6 Coordination with Outside Agencies and Tenants/Lessees at ARC

The CRM Program applies to all projects at ARC, including those initiated by outside agencies or tenants/lessees that propose changes to ARC facilities. Communication and coordination between the HPO and outside agencies or tenants regarding these proposed projects is necessary to ensure compliance with the federal laws and regulations, and the CRM Program. The HPO must be aware of the actions of outside agencies and tenants/lessees that could potentially impact cultural resources, and must reciprocate awareness of the CRM Program's requirements. For specific projects, coordination with the project initiator should be an ongoing process. Projects involving tribal consultation and stakeholder involvement should be identified as early as possible. Potential conflicts could occur when communication and coordination with the CRM Program breaks down. The sooner the HPO is involved in the planning and project process, the more likely the process will continue without interruption and delays.

Actions proposed by outside agencies or tenants/lessees that trigger cultural resources compliance and coordination with the HPO include:

- maintenance, repair, alteration, or demolition of buildings and/or structures
- landscape and grounds maintenance
- new construction – buildings or additions, infrastructure, roads, and trails
- major changes in use of buildings
- major changes in training locations or type
- master planning
- changes to the lease agreement of ARC facilities
- emergency operations

To assist outside agency and tenant/lessee compliance with the CRM Program, the HPO will:

- Distribute cultural resources project list and emphasize time requirements for compliance.
- Distribute applicable SOPs (Chapter 6) to applicable parties.
- Create, update, and distribute a list of historic properties and archaeological sensitivity models (Appendix F).
- Develop and conduct cultural resources awareness training.
- Meet, at a minimum, once a year to discuss upcoming projects and plans.
- Interface with individuals on updates and new plans and programs as they are developed.

- Provide ICRMP as it is updated every 5 to 10 years, or sooner in the case of new cultural discoveries, NASA missions, or definition of new historic themes (e.g., the Space Shuttle program, Cold War-era development, or the ISS program).

Tenants/Lessees must conform project planning for leased facilities with the HPO to ensure ARC's compliance with the CRM Program and federal regulations. The procedure for tenant/lessee project review and compliance is listed in Chapter 6.

5.1.7 Coordination with Interested Parties and Stakeholders

The HPO should coordinate and consult with outside entities including SHPO, federally recognized Tribes, and local interest groups. Other groups could include local governments; ethnic, social, and occupational groups; or other historical organizations. The HPO may request consultation with ACHP and will notify the FPO of this consultation per NPR 8510.1, Section 1.3.2. Section 106 of NHPA requires consultation for all federal undertakings with the potential to affect historic properties. Neglecting to do so early in the planning process may result in delays that translate into government time and cost. Recent legislation has strengthened responsibilities to consult with federally recognized Tribes. The HPO should develop a memo for record (MFR) after telephone calls are made and formal letters or emails are sent regarding consultation actions. The MFR should include who was contacted and in what form (call, letter, or email), date of communication, summary of communication made, and any other pertinent information.

NASA will comply with all pertinent laws and regulations concerning the management and preservation of cultural resources and will, where appropriate, consult with SHPO, THPO, ACHP, Tribes, and interested persons in order to ensure compliance when the NHPA Section 106 consultation requirements are integrated into the NEPA process. In accordance with NHPA, if NASA, SHPO, and/or THPO/federally recognized Tribes where tribal lands are concerned disagree regarding NRHP eligibility evaluations, the Keeper of the NRHP (NPS) will be consulted. Guidance on preparing a determination of eligibility can be found at 36 CFR Part 63.2, Determination of Eligibility Process. If NASA and SHPO come to a disagreement regarding the Section 106 process, ACHP may assist.

Tribal Consultation

NHPA, EO 13007, Indian Sacred Sites, EO 13175, Presidential Memorandum for Heads of Executive Departments and Agencies, and PM Government-to-Government Relations with Native American Tribal Governments require federal agencies to consult with federally recognized Tribes on a government-to-government basis. Consultation takes on many forms. NASA may need to consult on a project basis for proposed actions that may affect cultural resources of interest to federally recognized Tribes. If NASA activities have the potential to affect tribal properties or resources, all interested federally recognized Tribes identified by the NAHC will be consulted early in the planning process and their concerns addressed to the greatest extent possible.

Establishing a permanent relationship with federally recognized Tribes will lead to a better understanding of each party's interests and concerns and development of a trust relationship.

This will streamline future project-based consultation and the inadvertent discovery process. It is the goal of the consultation process to identify both the resource management concerns and the strategies for addressing them through an interactive dialogue with appropriate federally recognized Tribes.

When a proposed NASA decision poses potential consequences for lands and resources valued by federally recognized Tribes, consultation with the community that holds the values and identified the consequences is required.

Timing for tribal consultation will vary depending on the consultation methods, the nature of the ongoing relationship, and the purpose of the consultation. Consultation to develop understanding of interests and concerns with land and resource management, and establish procedures for working together, is a continuous and ongoing process.

For project-specific consultation, the HPO should send appropriate reports and documentation to potentially affected THPOs/federally recognized Tribes describing the proposed action and analysis of effects (either Section 106 and/or NEPA documents) and request comments and input. If after 30 days no correspondence has been received from the THPOs/federally recognized Tribes, the HPO should follow up with a telephone call to them. Complete records must be kept. For projects of particular interest to THPOs/federally recognized Tribes, the HPO could consider a site visit and meeting with affected THPOs/federally recognized Tribes. On the whole, however, NASA should establish relationships with federally recognized Tribes whose interests may be impacted by potential mission activities. This relationship should be developed outside the Section 106 process before any undertaking is developed that may affect properties or interests of these groups. Agency-to-agency correspondence with federally recognized Tribes must occur at the Center Director level.

Public Involvement

Stakeholder and public involvement and outreach can be driven by regulation in project-specific cases, or can be a proactive method of partnering with interested parties to achieve long-range goals and solicit program support. Stakeholders can include the following:

- SHPO
- THPOs/federally recognized Tribes
- nonfederally recognized tribes
- interested public
- federal and state agencies
- local governments
- special interest groups
- local historical committees and societies
- tenants, lessees, and land users (i.e., golf course, police)
- neighbors

- landowners
- contractors

Public participation and involvement are required for most environmental programs, including the CRM Program. Benefits of public involvement to NASA include the following:

- opening the decision-making process to the public and building credibility
- assisting with the identification of issues
- enhancing mutual understanding of stakeholder values and ARC management challenges
- making better decisions
- minimizing delays and enhancing community support

The public involvement requirements under NEPA and NHPA are complementary but not identical. Section 106 implementing regulation under 36 CFR Part 800.2(d) requires that NASA seek and consider public views in its undertakings that may have an effect on historic properties.

If NASA actions have the potential to affect a historic property and an EA or EIS is deemed unnecessary, under Section 106 regulations, federal agencies are still required to involve the public. This includes identifying and notifying stakeholders and the public of proposed actions, and providing them information about historic properties and possible effects to them from the proposed actions, consistent with 36 CFR Part 800.2(d). NASA also is required to consider input from the public that may have been unsolicited.

If an EA or EIS is to be prepared, the public involvement for NEPA and NHPA compliance can be coordinated or combined with Section 106 consultation, but SHPO and ACHP must be notified at the beginning of the process that NEPA public outreach will be used in lieu of independent Section 106 consultation with the public. This should be done early in the planning for the proposed project when a range of alternatives is being considered and the public's input may be the most impactful.

For any adverse effect, it is NASA's responsibility to determine which stakeholders may have an interest, e.g., a local historic preservation group or the California Preservation Foundation, and determine the level of public involvement needed. However, for any adverse effect under NHPA, in accordance with 14 CFR Part 1216, Subpart 1216.3, a categorical exclusion can be used, if SHPO concurs with the action.

Public involvement for Section 106 and NEPA compliance can be coordinated in the following manner:

- Coordinate with the project proponent to establish the APE for cultural resources; identify stakeholders, consulting parties, and the public; identify cultural resources within the APE.
- Determine if a project has the potential to affect those resources within the APE in consultation with SHPO and federally recognized Tribes, as appropriate.

- In the EA or Draft EIS, include the results of the cultural resources identification; determination of effect; and consultation with SHPO and federally recognized Tribes, stakeholders, and public.
- Consult with SHPO, federally recognized Tribes, stakeholders, and the public to address cultural resources input received in the EA or Draft EIS or in the Section 106 process.
- Include the results of the Section 106 compliance (e.g., concurrence of SHPO and federally recognized Tribes as appropriate, or signed MOA/PA, or comments of ACHP and NASA response) in the final NEPA document.

For Section 106 projects and EAs, it will take approximately 6 to 9 months to complete the compliance process but can take longer. If an EIS is required, it will take approximately 12 to 16 months to complete the compliance process. More complex or controversial projects could take longer, perhaps 3 years or more to reach completion. Public involvement requirements are included in these time estimates.

5.1.8 Standard Operating Procedures

Chapter 6 contains SOPs, which have been prepared to assist NASA personnel who are not responsible for cultural resources management but whose areas of responsibility could affect cultural resources. The HPO will distribute these SOPs to NASA personnel and provide guidance and training, as necessary.

The HPO can develop additional SOPs for specific facility situations, triggering events, and responsible individuals.

5.2 Identification of Cultural Resources

This section contains guidance for the identification of cultural resources on property owned, managed, or leased by ARC; or should additional facilities be acquired, as in the case of a boundary increase; or if there is an inadvertent discovery.

5.2.1 Survey and Inventory of Cultural Resources

Inventories and evaluations are a required step for undertakings and compliance with Sections 106 and 110 of NHPA and sometimes as part of the preparation of a NEPA document when the NHPA process is integrated into the NEPA process.

Archaeological Surveys and Excavation

The following definitions apply to archaeological site surveys and excavations conducted in the state of California. Archaeological investigations must be conducted by qualified personnel. A phased approach is used in California; the phases correspond to the required tasks of identification, evaluation, and data recovery, where appropriate. Phase I is the inventory and survey for archaeological resources, Phase II corresponds to evaluative testing of identified resources, and Phase III consists of the treatment of impacted, significant cultural resources through methods such as data recovery. Such methods are intended to mitigate any adverse effects to significant sites.

Constraints-Level Study*:* A constraints analysis often is completed to characterize a property and its potential to contain historic properties in the most general way. A records/literature search of materials such as previously conducted studies, previously reported sites, historic topographic maps, and historic property data files is conducted. This is followed by a letter report to document the preliminary analysis, data gaps, and recommendations for additional work, as appropriate.

Survey: A survey involves a records search/literature review, a field survey including a systematic coverage of the property, recording or updating all discovered sites, and submittal of a written report. NPS[3] defines a reconnaissance survey as:

> … an examination of all or part of an area accomplished in sufficient detail to make generalizations about the types and distributions of historic properties that may be present

It further defines intensive survey as:

> a systematic, detailed examination of an area designed to gather information about historic properties sufficient to evaluate them against predetermined criteria of significance within specific historic contexts

Surveys may fall into one of four levels of coverage: intensive, moderate, cursory, and intuitive Intensive coverage is when qualified archaeologists conduct a systematic pedestrian survey along transects spaced no more than 20 meters apart. Moderate intensity also employs pedestrian survey along systematically placed transects, but the intervals are larger than 21 meters apart but usually not more than 40 feet apart. Cursory coverage includes transects spaced greater than 41 meters apart. Intuitive-level intensity is a detailed inspection of those features or locations that exhibit particular characteristics of archaeological sensitivity (e.g., mounds or elevated land adjacent or near water sources) or in areas where resources have been previously recorded. Transects may be spaced between 30 and 50 meters apart. A cursory-level intensity is no more than a quick visual reconnaissance and should be employed with other visual aids, like aerial photography.

Sampling Program: A sampling program can be useful when time or monetary resources are unavailable to complete a comprehensive cultural resource survey or excavation. A sampling program is derived from a predictive model. Both the predictive model and a sampling program are based on scientific methods that are used to anticipate the number and location of archaeological sites and historic properties.

A predictive model frequently applies the results from a cultural resource survey to a similar geographical area that has not been surveyed. After the predictive model has been applied to an area, a sampling program can be developed for any unsurveyed area. A unit within the geographical area is surveyed or excavated. The results from the survey or excavation are applied over the larger unsurveyed area in order to estimate the location and type of cultural resources within a larger geographical area.

[3] http://www.nps.gov/history/local-law/arch_stnds_10.htm.

Evaluation: Evaluation is equivalent to a Phase II investigation and is intended to determine whether a resource is significant. Research techniques in Phase II evaluation are designed to yield information regarding the extent and integrity of the resource, including stratification, the presence of features, artifact types, and site boundaries, among others. A detailed research plan including objectives and methods should be developed by a qualified archaeologist and be in place prior to the initiation of evaluation testing. Field methods may include shovel testing and sample excavation units with surface mapping and collection of cultural material. All collected items must be curated in a facility that meets the standards outlined in 36 CFR Part 79.

Upon completion of excavation, a report is prepared to summarize the testing and make a recommendation of eligibility. If a resource is determined significant, then mitigation measures must be employed.

Data Recovery: If a significant cultural property will be impacted by an action or undertaking, there must be mitigation, and data recovery is one form of mitigation for archaeological sites. Avoidance is always preferable, but project missions do not always allow for it. If avoidance is infeasible, other mitigation measures, such as Phase III data recovery, may be developed, Data recovery requires preparation of a research design that describes the site, what information is hoped to be gained by the data recovery, the study questions, the sample design, the catalog methods, special studies, and the report preparation. This research design is carefully reviewed by SHPO prior to field efforts. All collected items must be curated in a facility that meets the standards of 36 CFR Part 79.

Alternative Mitigation: Archaeological sites are nonrenewable resources, and, although data recovery is the most common means of mitigation, it is destructive by nature. Avoidance is always the preferable alternative but is not always feasible in meeting mission objectives. Therefore, mitigation measures alternative to data recovery should be explored during project planning and implementation. Examples of such measures include preservation in place or the burial, or capping, of archaeological sites in or immediately near a project. Alternative mitigation may include funding of archaeological excavations removed in time or place from the undertaking necessitating mitigation and/or developing cultural programming like educational curricula and archaeological exhibits. Presentations to public and/or professional audiences and compiling regional or resource type databases should also be considered.

Procedures: Ensure that the scope of work clearly defines the type of survey or excavation; federal and state regulations to be met; the project objectives; a description of the deliverables, including Global Positioning System/GIS standards; and qualifications for those performing the work.

These projects can vary widely in time requirements to research, write a project plan, conduct the fieldwork, and prepare the survey report. A minimum of 4 months is anticipated for a small project.

SHPO, THPO(s), and federally recognized Tribes should be provided a copy of survey reports and afforded an opportunity to comment.

Archaeological Resources Protection Act Permits: ARPA permits are required when the following occur:

- The project is on federal land (fee-simple).
- The digging or collection of artifacts will occur.

However, NASA staff or contractors carrying out official duties associated with the management of archaeological resources who meet the professional qualifications in 36 CFR Part 61, Appendix A, and whose investigations meet the requirements of 32 CFR Part 229.8, are not required to obtain a permit under ARPA or the Antiquities Act for the investigation of archaeological resources on federally owned lands, including situations where cultural items as defined by NAGPRA may be excavated. Archaeological resources, objects of antiquity, and significant scientific data from federal property belong to the agencies that own them, except where NAGPRA requires repatriation to a lineal descendant, federally recognized Tribe, or a Native Hawaiian organization.

In situations where NAGPRA human remains, sacred items, or objects of cultural patrimony or NHPA historic properties may be encountered during intentional excavation of archaeological resources, the requirements of NAGPRA, 43 CFR Part 10, NHPA, and 36 CFR Part 800 must be met prior to such archaeological excavations. NAGPRA also has specific provisions that NASA must follow regarding the inadvertent discovery of NAGPRA cultural items.

For the purposes of NASA compliance with ARPA, Center or Component Facility Directors will serve as the Federal Land Manager for complying with ARPA as defined in NPR 8510.1.3 An ARPA permit is not required for excavation or survey in direct support of mission requirements or for activities that are conducted exclusively for purposes other than the excavation and/or removal of archaeological or paleontological remains if found in an archaeological context (e.g., excavation of a building foundation), even when such activities may result in the disturbance of such remains. However, in such cases, NASA must comply with the requirements for Section 106 consultation (Marshall Space Flight Center 2009).

In accordance with ARPA, the excavation or removal of archaeological artifacts or paleontological remains, other than that conducted by NASA in direct support of a mission, under a valid testing program, is prohibited except as conducted under a valid ARPA permit. To comply with ARPA, the Center Director will:

- Proactively preserve and protect all known archaeological sites.
- Ensure that any interests that Indian tribes may have in the permitted activity are addressed in a manner consistent with the requirements of NHPA and NAGPRA, prior to issuance of the permit.
- Ensure that all excavated archaeological artifact collections and associated records are permanently curated in a curation facility that meets the requirements of 36 CFR Part 79.
- Allow for the consulting archaeologist to review all applications for ARPA permits.
- Require that permitted activities be performed according to applicable professional standards of the Secretary of the Interior.

- Require that the excavated archaeological artifact collection and associated records are permanently curated in a curation facility that meets the requirements of 36 CFR Part 79.
- The participation of interested Indian tribes and other members of the interested public will be sought for undertakings or actions that may affect archaeological sites or sites of religious and cultural significance (ARPA 16 U.S.C. 470 cc(c)).
- Ensure that documentation of consultation with culturally affiliated federally recognized Tribes is prepared and maintained as part of the record of each such permit.

ARPA permits can take up to 6 months to issue.

Figure 5-1 is a flowchart of the ARPA permitting process.

Archaeological and Sacred Site Confidentiality

Numerous provisions of cultural resource law require that interested members of the public have access to cultural resources management programs undertaken at the public's expense.

Information regarding the location and nature of traditional cultural resources and the character of archaeological sites, in accordance with Section 9 of ARPA and Section 304 of the NRHP, will not be released to the public. Therefore, it is extremely important that persons using this document and other cultural resource reports and maps understand that all archaeological resource descriptions and locations are confidential. For this reason, maps or information delineating the locations of archaeological resources are not included in this ICRMP, nor will any be released to the public.

Federally recognized Tribes may wish to divulge sensitive information about cultural resources to NASA but will be reluctant to do so unless confidentiality can be reasonably ensured. When tribal members divulge sensitive information, Center personnel will do their best to protect this information but should be honest about their ability to do so. For instance, NASA would have to reveal confidential information if ordered to do so by a court. If it is not necessary to create a written record of sensitive details about cultural resources, Center personnel should not do so.

NASA cultural resource documentation will be prepared so that maps and other information with specific archaeological locations and tribal resources are easily removable. Documents for the public will be copied so that archaeological maps or site forms are not included.

Built Environment Resources

A building is created principally to shelter any form of human activity. "Building" may also be used to refer to a historically and functionally related complex, such as a courthouse and jail or a house and barn. Buildings eligible for the NRHP must retain their integrity or include all of their basic structural elements. Parts of buildings, such as interiors, or wings, are not eligible independent of the rest of the existing building. In some cases, an original building is historic but the addition is not. However, a building need not be entirely original and may have recent additions or changes as long as the building, in total, retains its integrity. For example, an addition to the rear of a building that otherwise retains its historical or architectural integrity may

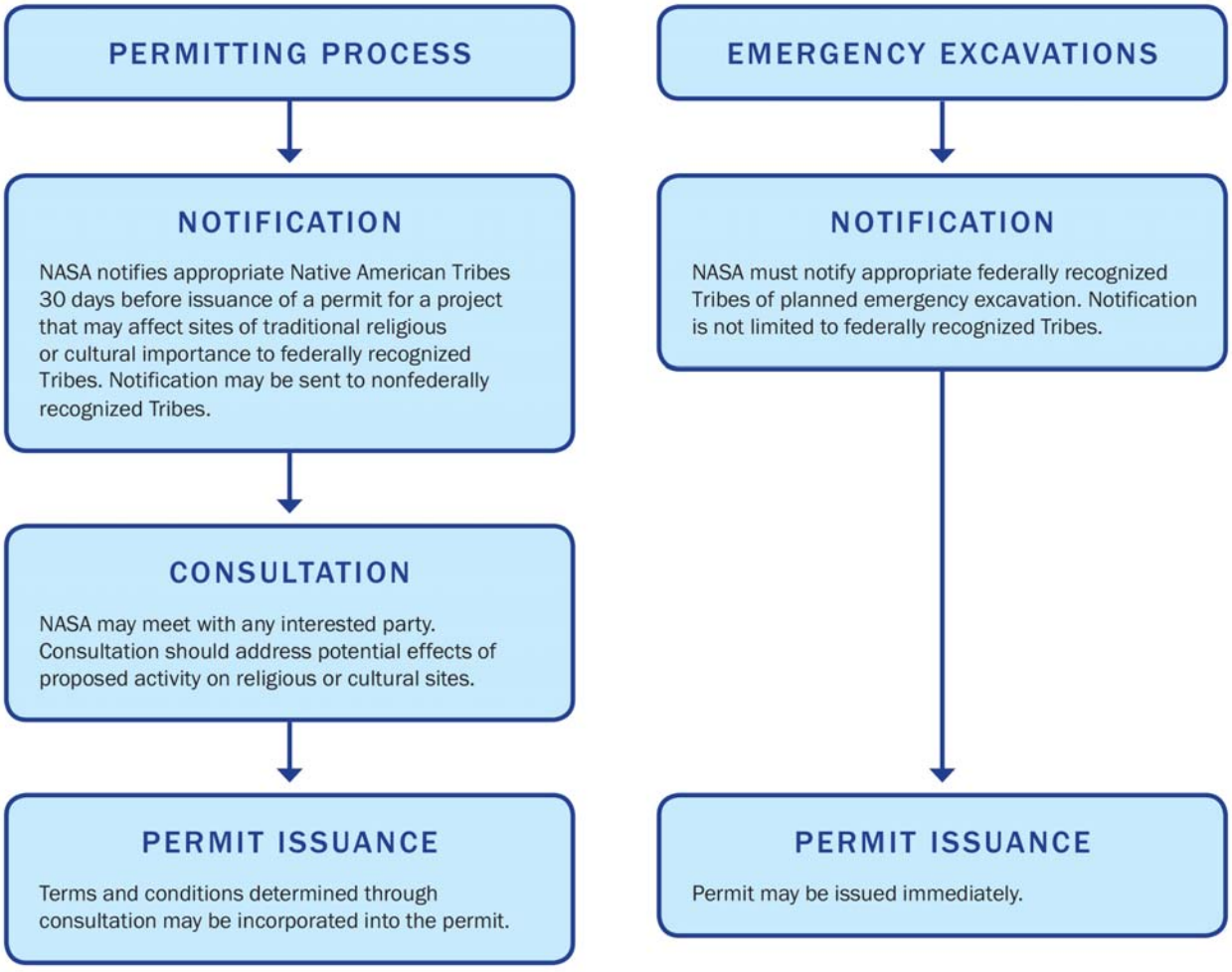


Figure 5-1
ARPA Permitting Flowchart

still be considered eligible for the NRHP. In evaluating buildings for NRHP eligibility, the whole building must be considered and its significant features must be identified. If a building has lost its basic structural elements, it is usually considered a "ruin" and is categorized as a site.

The term "structure" is used to distinguish buildings from those functional constructions made usually for purposes other than creating human shelter. Structures nominated to the NRHP must include all of the extant basic structural elements. Parts of a structure cannot be considered eligible if the whole structure remains. For example, a truss bridge is composed of the metal or wooden truss, the abutments, and supporting piers, all of which, if extant, must be included when evaluating the property for NRHP eligibility.

Survey and Evaluation: For NASA, resources 45 years of age or older (in anticipation of their turning 50) and resources less than 50 years old that may have exceptional significance under NRHP Criteria Consideration G should be identified and evaluated in accordance with Section 110 of NHPA. Resources that have previously been determined eligible or ineligible for listing in the NRHP prior to their turning 50 years of age should be reassessed periodically to address the passage of time, changing perceptions of significance, subsequent changes to the property, or incomplete prior evaluations. Resources that are less than 50 years old and associated with NASA's highly technical and scientific missions may have exceptional significance to meet NRHP criteria and Criteria Consideration G. The ACHP has published guidance on the evaluation of highly technical facilities, and specifically discusses how this relates to the evaluation of NASA facilities (ACHP 1991). The ACHP report identifies ways to reconcile preservation needs with ongoing operational needs of scientific and technological institutions. Generally, the survey and evaluation are conducted concurrently.

A built environment resources survey or inventory involves background and archival research; an intensive survey of above-ground, standing resources; recording or updating identified built environment resources records with the construction date, its original and current function, a physical description of the building or structure and its current condition, and a description of changes over time; evaluation under NRHP criteria, including Criteria Consideration G for resources less than 50 years of age; and submittal of a written report, per California Office of Historic Preservation's *Instructions for Recording Historical Resources* (OHP 1995).

Procedures: Ensure that the scope of work clearly defines the survey and evaluation aspects of a built environment resources inventory; federal and state regulations and guidelines; the project objectives; a description of the deliverables; and qualifications for those performing the work.

These projects can vary widely in time requirements to research, write a project plan, conduct the fieldwork, and prepare the survey report. SHPO should be provided a copy of survey reports and afforded an opportunity to comment and/or concur with any determinations of eligibility established by NASA.

Traditional Cultural Resources and Sacred Sites

Traditional cultural resources include TCPs; sacred sites; cemeteries; burials; and any other properties of traditional, cultural, or religious significance. These resources are associated with culture, which according to the NRHP is understood to mean the traditions, beliefs, practices,

lifeways, arts, crafts, and social institutions of any community, whether it be a Native American tribe; a local ethnic, social, and occupational group; or the people of the nation as a whole.

Guidelines for evaluating and documenting TCPs are located in National Register Bulletin 38 *Guidelines for Evaluating and Documenting Traditional Cultural Properties* (Parker and King 1998). It gives a description of TCPs, preservation planning, identification, and documentation.

Identification of Traditional Cultural Properties. Consultation with federally recognized Tribes and other ethnic, social, and occupational groups in the surrounding area concerning the identification of TCPs within the Center needs to be initiated.

Identification of Sacred Sites. According to EO 13007, a "sacred site" is "any specific, discrete, narrowly delineated location on federal land that is identified by a Native American tribe, or Indian individual determined to be an appropriately authoritative representative of a Native American ceremony, as sacred by virtue of its established ceremonial significance to, or use by, a Native American religion; provided that the tribe or appropriately authoritative representative of a Native American religion has informed the agency of the existence of such a site."

Consultation with federally recognized Tribes should be conducted to identify their cultural resources management concerns, specifically regarding TCPs and sacred sites. If sacred sites have been suspected during a survey, federally recognized Tribes should be notified.

Federally recognized Tribes have the right to access and use sacred sites on NASA-controlled lands. Reasonable terms, conditions, and restrictions regarding access to sacred sites will be agreed upon in order to protect personal health and safety and to avoid interference with the mission or with national security. Sacred sites may be used for ceremonies that take place one or more times during a year. Reasonable notice should be given by NASA if mission actions may prohibit federally recognized Tribes to access a sacred site.

Steps should be taken to avoid adversely affecting the physical integrity of sacred sites. If the site is adversely affected or has the potential of being adversely affected, NASA must comply with NHPA Section 106 procedures. See Section 5.4.1 regarding Section 106 procedures.

Confidentiality of information about sacred sites is recommended and will ensure a positive working relationship with federally recognized Tribes. Information regarding the location and nature of traditional cultural resources and the character of archaeological sites, in accordance with Section 9 of ARPA and Section 304 of the NRHP, will not be released to the public. These cultural resources are protected from risk of vandalism, theft of objects, or destruction of the integrity of the sites. Therefore, the HPO must ensure that all hard copy and electronic documents, maps, and reports prepared for this ICRMP do not contain location or other sensitive information if they are released to the public.

Historic Districts and Cultural Landscapes

A historic district possesses a significant concentration, linkage, or continuity of sites, buildings, structures, or objects united historically or aesthetically by plan or physical development. The definition for cultural landscape currently used by NPS is the following: a geographic area,

including both cultural and natural resources and the wildlife or domestic animals therein, associated with a historic event, activity, or person or exhibiting other cultural or aesthetic values (Cultural Resources Management Guidelines, NPS-28). A historic district or cultural landscape can be one of the following:

Historic Site: The location of a significant event or activity, or a building or structure, whether standing, ruined, or vanished, where the location itself possesses historic, cultural, or archaeological value regardless of the value of any existing structure.

Historic Designed Landscape: A landscape having (1) historic significance as a design or work of art because it was consciously designed and laid out by a landscape architect, master gardener, architect, or horticulturist according to design principles, or by an owner or other amateur using a recognized style or tradition in response or reaction to a recognized style or tradition; (2) a historic association with a significant person or persons, trend, or event in landscape gardening or landscape architecture; or (3) a significant relationship to the theory and practice of landscape architecture.

Historic Vernacular Landscape: A landscape whose use, construction, or physical layout reflects endemic traditions, customs, beliefs, or values in which the expression of cultural values, social behavior, and individual actions over time is manifested in the physical features and materials and their interrelationships, including patterns of spatial organization, land use, circulation, vegetation, structures, and objects and in which the physical, biological, and cultural features reflect the customs and everyday lives of people.

Ethnographic Landscape: A landscape traditionally associated with a contemporary ethnic, social, and occupational group typically used for such activities as subsistence hunting and gathering, religious or sacred ceremonies, and traditional meetings.

Concentration, Linkage, and Continuity of Features: A district derives its importance from being a unified entity, even though it is often composed of a wide variety of resources. The identity of a district results from the interrelationship of its resources, which can convey a visual sense of the overall historic environment or be an arrangement of historically or functionally related properties. For example, a district can reflect one principal activity, such as a mill or a ranch, or it can encompass several interrelated activities, such as an area that includes industrial, residential, or commercial buildings, sites, structures, or objects. A district can also be a grouping of archaeological sites related primarily by their common components; these types of districts often will not visually represent a specific historic environment.

Significance: A district must be significant and an identifiable entity. It must be important for historical, architectural, archaeological, engineering, or cultural values. Therefore, districts that are significant will usually meet the last portion of Criterion C plus Criterion A, Criterion B, other portions of Criterion C, or Criterion D.

Types of Features: A district can comprise both features that lack individual distinction and individually distinctive features that serve as focal points. It may even be considered eligible if all of the components lack individual distinction, provided that the grouping achieves significance as a whole within its historic context. In either case, the majority of the components

that add to the district's historic character, even if they are individually undistinguished, must possess integrity, as must the district as a whole.

A district can contain buildings, structures, sites, objects, or open spaces that do not contribute to the significance of the district. The number of noncontributing properties a district can contain yet still convey its sense of time and place and historical development depends on how these properties affect the district's integrity. In archaeological districts, the primary factor to be considered is the effect of any disturbances on the information potential of the district as a whole.

Geographical Boundaries: A district must be a definable geographic area that can be distinguished from surrounding properties by changes such as density, scale, type, age, style of sites, buildings, structures, and objects, or by documented differences in patterns of historic development or associations. It is seldom defined, however, by the limits of current parcels of ownership, management, or planning boundaries. The boundaries must be based upon a shared relationship among the properties constituting the district.

Discontiguous Districts: A district is usually a single geographic area of contiguous historic properties; however, a district can also be composed of two or more definable significant areas separated by nonsignificant areas. A discontiguous district is most appropriate where:

- elements are spatially discrete;
- the space between the elements is not related to the significance of the district; and/or
- visual continuity is not a factor in the significance.

In addition, a canal can be treated as a discontiguous district when the system consists of man-made sections of canal interspersed with sections of river navigation. For scattered archaeological properties, a discontiguous district is appropriate when the deposits are related to each other through cultural affiliation, period of use, or site type.

It is not appropriate to use the discontiguous district format to include an isolated resource or small group of resources that were once connected to the district, but have since been separated either through demolition or new construction. For example, the discontiguous district format should not be used to nominate individual buildings of a downtown commercial district that have become isolated through demolition.

Other Cultural Resources

Other cultural resources of interest include the following:

Cemeteries: For assessing the significance of cemeteries, and gathering information that can be used for their subsequent preservation and protection, the HPO should follow the National Register Bulletin 41, *Guidelines for Evaluating and Registering Cemeteries and Burial Places* (Potter and Boland 1992). Cemeteries are also protected by state law in many states; these laws include penalties for vandalism of cemeteries or removal of human remains, as well as provisions for reporting and protecting unmarked burials. Refer to state laws for compliance and requirements for cemeteries. SHPO may also provide information on cemeteries.

Objects: Objects can include records, photographs, artifacts, and donated private collections that are associated with NASA's history. These objects should be inventoried and ownership determined.

5.2.2 Evaluation

National Register of Historic Places Evaluation

Evaluations are conducted using NRHP criteria, as listed in 36 CFR Part 60.4, Criteria for Evaluation. To be listed, or considered eligible for listing, in the NRHP, a cultural resource must meet at least one of the four following criteria:

Criterion A: The resource is associated with events that have made a significant contribution to the broad pattern of history.

Criterion B: The resource is associated with the lives of people significant in the past.

Criterion C: The resource embodies distinctive characteristics of a type, period, or method of construction; represents the work of a master; possesses high artistic value; or represents a significant and distinguishable entity whose components may lack individual distinction.

Criterion D: The resource has yielded, or may be likely to yield, information important in prehistory or history.

In addition to meeting at least one of these criteria, a cultural resource must also possess integrity. Integrity is defined as the authenticity of a property's historic identity, as evidenced by the survival of physical characteristics it possessed in the past and its capacity to convey information about a culture or group of people, a historic pattern, or a specific type of architectural or engineering design or technology. There are seven elements of integrity: location, design, setting, materials, workmanship, feeling, and association.

Location refers to the place where an event occurred or a property was originally built. Design considers elements such as plan, form, and style of a property. Setting is the physical environment of the property. Materials refer to the physical elements used to construct the property. Workmanship refers to the craftsmanship of the creators of a property. Feeling is the ability of the property to convey its historic time and place. Association refers to the link between the property and a historically significant event or person.

Sites or structures that may not be considered individually significant may be considered eligible for listing in the NRHP as part of a historic district. According to the NRHP, a historic district possesses a significant concentration, linkage, or continuity of sites, buildings, structures, or objects that are historically or aesthetically united by plan or physical development.

Certain kinds of properties are not usually considered for listing in the NRHP. However, these properties can be eligible for listing if they meet special requirements called "criteria considerations." These property types and their specific criteria considerations include the following:

- religious properties (Criteria Consideration A)
- moved properties (Criteria Consideration B)
- birthplaces or graves (Criteria Consideration C)
- cemeteries (Criteria Consideration D)
- reconstructed properties (Criteria Consideration E)
- commemorative properties (Criteria Consideration F)
- properties that have achieved significance within the last 50 years (Criteria Consideration G)

The criteria considerations are listed in National Register Bulletin 15, *How to Apply the National Register Criteria for Evaluation* (NPS 1990). A property must meet one or more of the four criteria for evaluation and also possess integrity of materials and design before it can be considered under the various criteria considerations.

5.2.3 Professional Qualification Standards for Contractors

The following requirements for the Secretary of Interior's Professional Qualification Standards have been published in 36 CFR Part 61, Appendix A, and are used by NPS. The qualifications define minimum education and experience required to perform identification, evaluation, registration, and treatment activities. In some cases, additional areas or levels of expertise may be needed, depending on the complexity of the task and the nature of the historic properties involved.

History

The minimum professional qualifications in history are a graduate degree in history or a closely related field or a bachelor's degree in history or closely related field and one of the following:

- At least 2 years of full-time experience in research, writing, teaching, interpretation, or other demonstrable professional activity with an academic institution, historic organization or agency, museum, or other professional institution.
- Substantial contribution through research and publication to the body of scholarly knowledge in the field of history.

Archaeology

The Secretary of the Interior standards for professional qualifications describe minimum qualifications in archaeology as possessing a graduate degree in archaeology, anthropology, or a closely related field and the following:

- At least 1 year of full-time professional experience or equivalent specialized training in archaeological research, administration, or management.

- At least 4 months of supervised field and analytic experience in general North American archaeology.
- Demonstrated ability to carry research to completion.

In addition to these minimum qualifications, a professional in prehistoric archaeology will have at least 1 year of full-time professional experience at a supervisory level in the study of archaeological resources of the prehistoric period. A professional in historic archaeology will have at least 1 year of full-time professional experience at a supervisory level in the study of archaeological resources of the historic period.

Architectural History

The minimum professional qualifications in architectural history are a graduate degree in architectural history, art history, historic preservation, or a closely related field, with course work in American architectural history, or a bachelor's degree in architectural history, art history, historic preservation, or a closely related field and one of the following:

- At least 2 years of full-time experience in research, writing, or teaching in American architectural history or restoration architecture with an academic institution, historical organization or agency, museum, or other professional institution.
- Substantial contribution through research and publication to the body of scholarly knowledge in the field of American architectural history.

Architecture

The minimum professional qualifications in architecture are a professional degree in architecture and at least 2 years of full-time experience in architecture or a state license to practice architecture.

Historic Architecture

The minimum professional qualifications in historic architecture are a professional degree in architecture or a state license to practice architecture and one of the following:

- At least 1 year of graduate study in architectural preservation, American architectural history, preservation planning, or a closely related field.
- At least 1 year of full-time professional experience on historic preservation projects.
- Such graduate study or experience will include detailed investigations of historic structures, preparation of historic structures research reports, and preparation of plans and specifications for preservation projects.

5.2.4 Inadvertent Discovery of Cultural Material

The following procedures are for activities involving federal actions, funding, or lands. Projects that do not involve these features should be viewed in relation to state law requirements for state actions or state lands inclusive of the identification, recovery, and ultimate disposition of human

remains and objects of cultural patrimony. Nonfederal jurisdictional agencies should be queried if training will occur on land managed by other state agencies/entities.

Inadvertent Discovery of Human Remains or Funerary Objects

In the event of discovery of human remains, funerary objects, sacred objects, or objects of cultural patrimony, the HPO will ensure that all appropriate measures are implemented to protect the remains and any other protected cultural items. All appropriate Tribes and agencies will be promptly notified of the find. All applicable federal, tribal, and state procedures will be followed, as appropriate.

Native American Graves Protection and Repatriation Act. NAGPRA places affirmative duties on federal agencies to protect, inventory, and rightfully dispose of Native American cultural items, both those in existing collections and those that may be discovered in the future. NAGPRA intends to ensure the protection and rightful disposition of Native American cultural items located on federal or Native American lands in the federal government's possession or control. Section 2 of NAGPRA and its regulations in 43 CFR Part 10 provide a detailed definition of cultural items regulated under the act. Responsibilities under NAGPRA include identification of whether a facility has actual possession or control of existing collections of Native American cultural items; determination of what and where those items are; determination if a planned activity will result in the excavation of cultural items; notification to tribal groups of proposed activities before issuing approvals or permits; and development of procedures for the inadvertent discovery of cultural items. For the purposes of NAGPRA, "Native American" includes American Indian tribes and Native Hawaiian and Native Alaskan organizations. Repatriation of items to lineal Native American descendants (or to the tribe or organization with the closest cultural affiliation, if descendants cannot be determined) is regulated by 43 CFR Parts 10.8 and 10.10.

The purpose of consultation under NAGPRA is to reach agreement as to the treatment and disposition of the specific kinds of "cultural items" defined in the act: Native American human remains, funerary objects, sacred objects, and objects of cultural patrimony. NASA is required to consult with the appropriate federally recognized Tribe or lineal descendant if NASA is processing an application for a permit that would allow the excavation and removal of human remains and associated funerary objects from federal lands and if items covered by the act have been disturbed, unintentionally.

NASA must consult with appropriate Native American organizations or individuals prior to authorizing the intentional removal of Native American human remains and funerary objects. The responsible agency must prepare documentation to show that consultation pursuant to Section 3(c) of NAGPRA has occurred and the file must be included and maintained in the decision record. A cultural resource use permit or equivalent documentation is generally required before human remains and artifacts covered by the act may be excavated or removed from federal lands. Permit-related notification and consultation, if requested, are required by ARPA Section 4 and 43 CFR Part 7.7. Consultation for NAGPRA purposes must occur before the excavation or removal of human remains and cultural items may be authorized.

Human remains or cultural items subject to NAGPRA discovered as a result of a project or activity, such as construction or maintenance, are to be handled in the manner described in the "inadvertent discovery" procedures found at Section 3 (d) of NAGPRA. Where there is a reasonable likelihood of encountering undetected cultural items during a proposed land use, agreements should be negotiated with federally recognized Tribes or groups before the project is authorized to provide general guidance on treatment of any cultural items that might be exposed. Having these agreements in place saves time and confusion during the action (see Figure 5-2).

For ground-disturbing activities, project planners, engineers, unit personnel, tenants, and construction personnel should be informed of the types of cultural resources potentially existing on NASA property, and should be briefed on the provisions in SOP No. 3 (refer to Chapter 6).

The following steps were summarized from SOP No. 3. They are to be taken for any unanticipated discovery of human remains, funerary objects, sacred objects, or objects of cultural patrimony on NASA property:

- Ensure that activities have ceased within 100 feet of the discovery site and that the site has been secured from human and natural forces.
- Contact local law enforcement.
- Notify the tribal government(s) and SHPO of the discovery. Check with SHPO to determine if the State Archaeologist should also be contacted. This notification should be by telephone, to be followed immediately by written notification and the development of an MFR.
- Begin consultation with the Native American representative(s) in accordance with NAGPRA and 43 CFR Part 10 and develop a plan of action.
- Visit the location of the discovery within 24 hours of the find. The services of appropriate technical experts (e.g., archaeologists, specialists in human osteology, forensic anthropologists) may be retained to participate in the field visit.
- If the HPO has reason to believe that Native American human remains, funerary objects, sacred objects, or objects of cultural patrimony have been discovered, the HPO must provide immediate telephone notification of the discovery, along with written notification by certified mail, to the Department of the Interior's departmental consulting archaeologist (DCA) at the following address:

  Archaeological Assistance Division
  National Park Service
  Washington, DC 20013-7127
  Telephone: (202) 343-4101

The DCA will be advised on the nature of the discovery. If known, as much information as possible concerning the human remains or cultural items subject to NAGPRA (such as the type, date, location, and circumstances of the discovery and any indicators of ethnicity) should be provided to the DCA. The DCA retains the option of notifying and consulting with ACHP, who may require an on-site examination of the affected remains. The DCA will determine the significance and origin of the remains and what mitigation measures to implement.

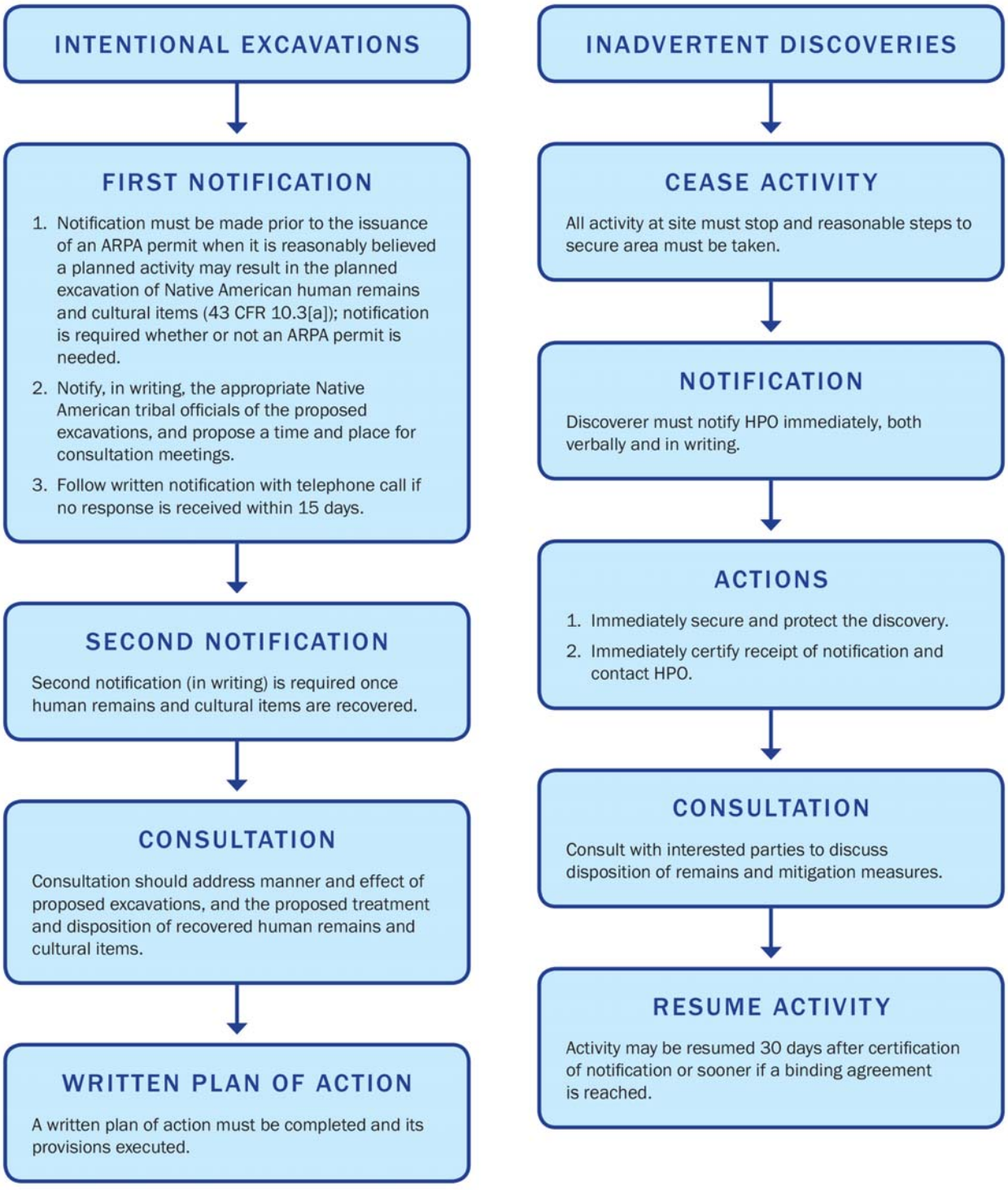


Figure 5-2
NAGPRA Flowchart

- The HPO will obtain certification of notification from the DCA. Federally recognized Tribes must be notified by telephone followed by written confirmation within 3 days after certification. This notification must include pertinent information as to the nature of the human remains, funerary objects, sacred objects, or objects of cultural patrimony; their condition; and the circumstances of their discovery.
- The HPO will consult with interested parties (SHPO, federally recognized Tribes, property owner, etc.) to discuss disposition of the remains and mitigation measures. The HPO, in consultation with SHPO and Native American groups, as appropriate, will determine the procedures for disposition and control of any Native American cultural items excavated or removed as a result of inadvertent discoveries.
- Activities in the area of discovery will resume 30 days after certification of notification is received, or sooner, if a signed binding agreement is reached.

To establish future protocols for the management of inadvertent discovery of human remains or cultural items subject to NAGPRA, NASA may also consider developing a Comprehensive Agreement (CA) prior to the encounter of a burial to agree upon procedures and streamline the process.

Inadvertent Discovery of Archaeological Artifacts

The HPO will ensure that, in the event of the inadvertent discovery of archaeological resources, measures are taken promptly to protect the find from disturbance; assess the significance of the discovery; and, if necessary, to implement appropriate avoidance or mitigation measures for significant resources. Specific procedures are as follows:

- Ensure that activities have ceased at the discovery site, and that the site has been secured from human and natural forces.
- If discovery includes artifacts and cultural items as defined by NAGPRA, the HPO will promptly notify SHPO of the discovery.
- Record the site if the site can be avoided.
- Prepare full documentation of the resource and a report summarizing the results of the investigation including mitigation as appropriate. The documentation must be performed by persons meeting federal professional qualifications (36 CFR Part 61, Appendix A). This documentation and the report will be submitted to SHPO and federally recognized Tribes.

Note: Per 36 CFR Part 800.12(d), immediate rescue and salvage operations conducted to preserve life or property are exempt from the provisions of Section 106 of NHPA.

5.3 Curation of Artifacts

In accordance with the requirements of 36 CFR Part 79, Curation of Federally Owned and Administered Archaeological Collections, all archaeological collections and associated records, as defined in 36 CFR Part 79.4 (a), are processed, maintained, and preserved.

The HPO will ensure that all collections are processed, maintained, and curated in accordance with the requirements of 36 CFR Part 79.

The HPO should consider the long-term ongoing cost of permanent collection curation and include this in the annual budgeting process.

Collections from federal lands should be deposited in a repository that meets the standards outlined in 36 CFR Part 79 to ensure that they will be safeguarded and permanently curated in accordance with federal guidelines. In the absence of a California State-administered collections management facility, it is the responsibility of NASA to identify a repository that meets the standards defined in 36 CFR Part 79.

5.3.1 Curation Requirements

36 CFR Part 79, Curation of Federally Owned and Administered Archaeological Collections, requires that all archaeological collections and associated records, as defined in 36 CFR Part 79.4(a) are processed, maintained, and preserved at a repository with long-term curatorial capabilities.

- Objects are called material remains according to 36 CFR Part 79.4(1). They include artifacts, objects, specimens, and other physical evidence that are excavated or removed in connection with inventories that locate, evaluate, document, study, preserve, or recover a prehistoric or historic resource. Examples of objects are listed in 36 CFR Part 79.4 (i–x).
- Collections are material remains that are excavated or removed during a survey, excavation, or other study of a prehistoric or historic resource and associated records that are prepared or assembled in connection with the survey, excavation, or other study (36 CFR Part 79.4[a]).
- Associated records are original records (or copies thereof) that are prepared or assembled that document efforts to locate, evaluate, record, study, preserve, or recover a prehistoric or historic resource (36 CFR Part 79.4[2]). Records include field notes, artifact inventories, oral histories, deeds, survey plats, historical maps and diaries, or archival documents that are assembled and studied as a result of historical research.
- The annual Secretary of the Interior's report to Congress requires an assessment of archaeological records and materials in federal repositories. Such reporting is mandatory.
- Before permanent curation, all artifacts recovered on NASA property will be analyzed using commonly accepted methods for artifacts in the region. Artifact analyses will be consistent with current archaeological research objectives for the region.
- Cleaning, curation, and storage of artifacts and associated documents will meet professional standards.
- Artifacts and associated documents will be stored in clean, spacious, temperature-controlled facilities while on-site and kept in archival-quality bags, folders, or boxes.
- NASA archaeological collections may be processed, maintained, and curated on and by NASA; by another federal agency, state agency, or other outside institution or

nongovernmental organization, in cooperative repositories maintained by or on behalf of multiple agencies; or in other facilities, under contract, cooperative agreement, or other formal funding and administrative arrangement provided that the standards of 36 CFR Part 79 are met. All field, laboratory, and other project records will be reproduced on archival-quality paper.

Prior to placement in permanent curation facilities, all cultural material (artifacts, ecofacts, samples, etc.) recovered on NASA property will be studied by qualified professionals using accepted methods for artifact analyses and consistent with current archaeological research designs and objectives for the region. Collections management (cleaning, curation, and storage) of cultural material and associated documentation will be in accordance with current professional standards.

Diagnostic and/or Exceptional Isolated Finds

In certain instances, isolated finds may be subject to special treatment. Such isolated finds would include diagnostic prehistoric artifacts; intact, unusual historic-period artifacts meeting the age criterion; or other cultural material of exceptional merit (high-quality, unique, or labeled examples). Such examples include, but are not limited to, mortars, pestles, projectile points, ornaments, embossed bottles, decorated or maker-marked ceramic vessels, or dated or/inscribed metal objects.

Diagnostic artifacts will be treated as follows:

- Excavation and construction activities are halted in the immediate vicinity of the find, while appropriate cultural resources staff records the find on a DPR 523A form, including a location map and a photograph.
- Work may resume when EMD receives notification of the discovery and acknowledges the adequacy of the required information.
- If, after evaluation, EMD determines that further archaeological excavation is required, additional steps to secure the vicinity may be required. Such steps may include marking off the area for avoidance or monitoring of ground-disturbing activities.
- A copy of the completed DPR 523A Form will be submitted to the California Historical Resources Information System (CHRIS) information center at Sonoma State University in Rohnert Park.
- Curation of isolated artifacts will be collected and curated at the discretion of EMD.

5.3.2 Curation Reporting Requirements

The annual Secretary of the Interior's report to Congress requires an assessment of archaeological records and materials in federal repositories.

The HPO will determine, on an annual basis, the volume of records and materials held by NASA or curated on its behalf at a curation facility. The collection is recorded in square feet and associated records are recorded in linear feet. Inspections of federally curated archaeological

collections will be conducted periodically in accordance with the Federal Property and Administrative Services Act (40 U.S.C. 484) and its implementing regulation 41 CFR Part 101.

Consistent with 36 CFR Part 79.11(a), the following is managed by EMD:

- Maintain a list of any federally owned historic artifacts (including objects, photographs, journals, documents, etc.) received by the HPO.
- Periodically inspect the physical environment in which all archaeological materials are stored for the purpose of monitoring the physical security and environmental control measures.
- Periodically inspect the collections in storage for the purposes of assessing the condition of the material remains and associated records, and of monitoring those remains and records for possible deterioration and damage.
- Periodically inventory the collection by accession, lot, or catalog record for the purpose of verifying the location of the material remains and associated records.
- Periodically inventory any other federally owned personal property in the possession of the HPO.

5.4 Proactive Management of Cultural Resources

The main objective of this program guidance is to integrate the legal requirements for managing cultural resources with planning and mission activities of NASA. Guidance for Center real property and land use decisions is provided. Regulatory objectives are as follows:

- To establish specific procedures for compliance with all state and federal laws and regulations concerning the identification, management, protection, and preservation of cultural resources within ongoing mission-related activities.
- To provide guidance to protect and manage all cultural resources that meet the NRHP eligibility criteria using *The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings* (Weeks and Grimmer 1995). Where cultural resources have not been evaluated for their NRHP eligibility, NASA will consider them NRHP-eligible and manage them accordingly.

5.4.1 Section 106 of NHPA Compliance

Section 106 of NHPA charges federal agencies with taking into account the effects of their undertakings on properties that are listed or eligible for listing in the NRHP and affording ACHP an opportunity to comment:

> The head of any federal agency having a direct or indirect jurisdiction over a proposed federal or federally assisted undertaking in any state and the head of any federal department or independent agency having authority to license an undertaking shall, prior to approval of the expenditure of any federal funds on the undertaking or prior to the issuance of any license, as the case may be, take into

> account the effects of the undertaking on any district, site, building, structure, or object that is included in or eligible for inclusion in the National Register of Historic Places. The head of any such federal agency will afford the Advisory Council on Historic Preservation established under part B of this subchapter a reasonable opportunity to comment with regard to such undertaking.

Section 106 applies to federal undertakings regardless of land status, e.g., federal property (lands or buildings), state, or other status if the action has any federal involvement (such as use of federal personnel, equipment, or funding; issuance of federal permits or right-of-way to enable others to carry out an action; or approval). Construction, demolition, renovation, rehabilitation, or maintenance of facilities; changes of operations; ground-disturbing activities; and disposing or leasing of lands all are examples of undertakings that will require NASA compliance with Section 106.

Consultation with SHPO and/or ACHP and federally recognized Tribes is a critical and required step in this process. If an undertaking on federal lands may affect properties having historic value to a federally recognized Tribe, such federally recognized Tribe will be afforded the opportunity to participate as consulting parties during the consultation process defined in 36 CFR Part 800.

The Section 106 process is designed to identify possible conflicts between historic preservation objectives and the proposed activity, and to resolve those conflicts in the public interest through consultation. The Section 106 process does not require that all historic properties be preserved. It only requires the agency to consider the effects of the proposed undertaking on those properties and fulfill the procedural requirements for NHPA prior to implementation.

Failure to comply with Section 106 may result in formal notification from ACHP to the head of the federal agency of foreclosure of ACHP's opportunity to comment on the undertaking pursuant to NHPA. Litigation or other forms of redress can be used against the federal agency in a manner that can halt or delay critical activities or programs.

The procedures followed in Section 106 review are referred to as the "Section 106 process" and are set forth in regulations 36 CFR Part 800. Detailed procedures for the Section 106 process can be found at the ACHP website (http://www.achp.gov/; also see Figure 5-3 and Chapter 6, SOP 1).

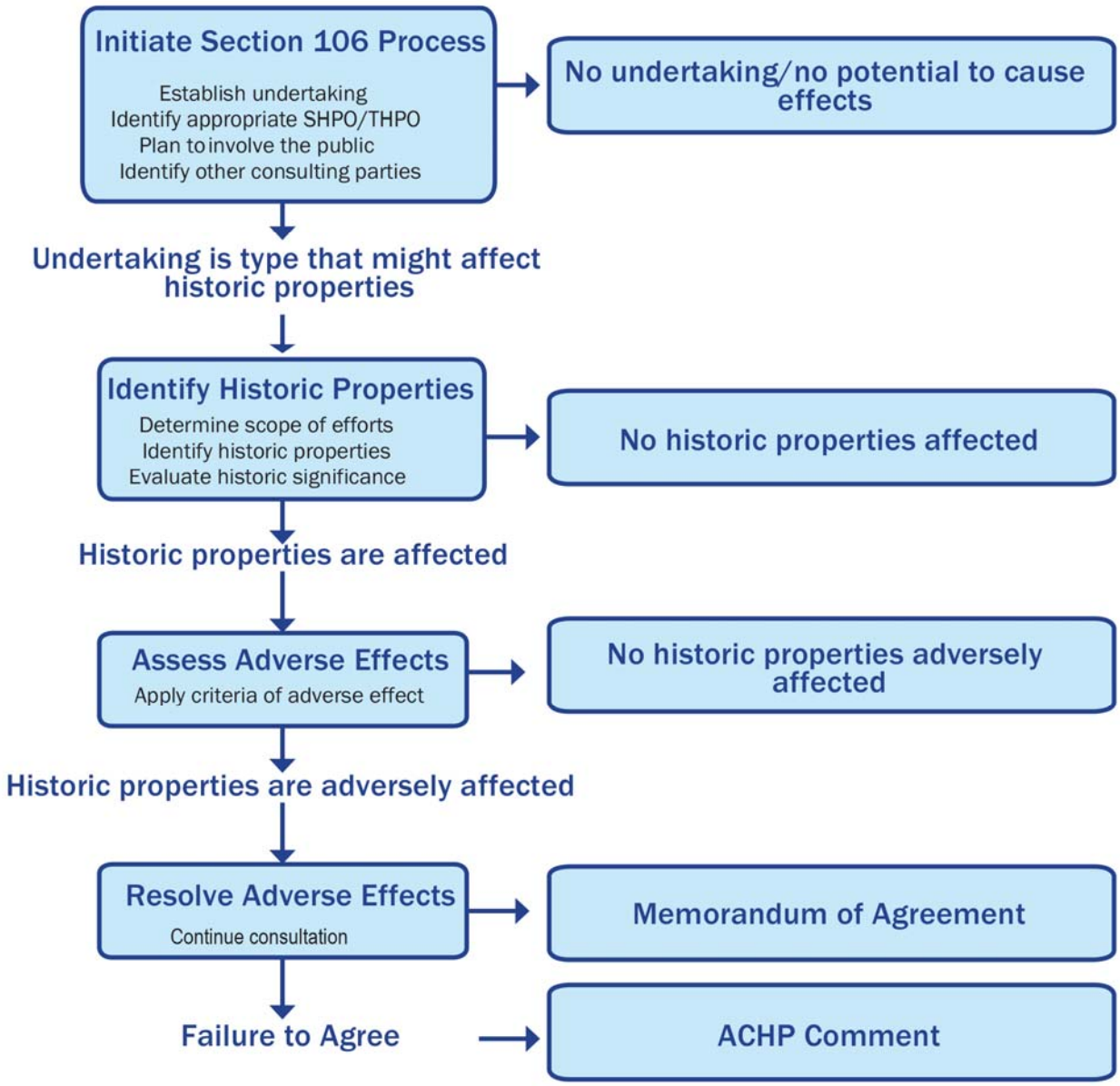
The Section 106 process is depicted in Figure 5-3 and consists of four primary steps:

Step 1: Initiate Section 106 Process

- No undertaking/no potential to cause effects, or
- Undertaking is type that might affect historic properties, proceed to Step 2.

Step 2: Identify Historic Properties

- No historic properties affected, or
- Historic properties are affected, proceed to Step 3.



The steps of the process are included within the four boxes, and NASA's findings and determinations that lead to conclusion of the Section 106 process are in the column to the right.
http://www.achp.gov/regsflow.html

Figure 5-3
Section 106 Process Flowchart

Step 3: Assess Adverse Effects

- No adverse effects to historic properties, or
- Historic properties are adversely affected, proceed to Step 4.

Step 4: Resolve Adverse Effects

- Memorandum of Agreement, or
- Failure to agree, proceed to ACHP Comment.

Timing: The timing for Section 106 surveys and evaluations will vary depending on the size and nature of the undertaking. The HPO can anticipate 4 to 6 months for completion of the Section 106 process for projects depending on the size and complexity of the project as well as the historic properties affected. Not all projects will need to be reviewed in accordance with all the steps in the Section 106 process. For example, if no historic properties are present or will be affected by the undertaking, NASA would need to complete only the first two steps in the process.

Resolution of adverse effects (mitigation) on a historic property may require an additional 6 to 12 months, depending on the complexity of the situation, and the development of an MOA.

Stakeholders in the process include the public and federally recognized Tribes.

5.4.2 Emergencies

36 CFR Part 800.12 provides for expedited NHPA review of actions taken to respond to immediate threats to life or property from emergencies or disasters declared by the president, a tribal government, or the governor of a state. These actions must occur within 30 days of the emergency or disaster but may be extended an additional 30 days under certain circumstances. Some actions by the Department of Homeland Security may meet this definition. Other examples include floods, hurricanes, earthquakes, and other disasters.

The HPO will ensure that all reasonable efforts are made to avoid or minimize disturbance of significant cultural resources during emergency operations and will communicate with NASA personnel regarding potential effects to significant cultural resources. The HPO must notify ACHP, SHPO, THPO/federally recognized Tribes, and any other interested parties of the emergency actions. These parties then have 7 days rather than the traditional 30 days to comment on the undertaking. Actions occurring 30 days following the emergency are not accorded expedited review but are reviewed in accordance with 36 CFR Part 800.3-6. Federally recognized Tribes do not have approval authority unless the emergency occurs on or affects the federally recognized Tribe's lands. Notification may be verbal, followed by written communication.

This applies only to undertakings that will be implemented within 30 days after the disaster or emergency. An agency may request an extension of the period of applicability prior to the expiration of the 30 days. The HPO will ensure that the heads of all units involved in the project are briefed regarding the protocol to be followed in the case of the inadvertent discovery of cultural resources during emergency operations. As a proactive measure, NASA could also work

with ACHP, SHPO, THPO/federally recognized Tribes, and interested parties to develop a PA outlining streamlined procedures in advance of emergency situations.

5.4.3 Section 106 Review Periods and Other Scheduling Considerations

The Section 106 process involves ongoing consultation with SHPO, federally recognized Tribes, and interested parties, and submission of documentation to support the consultation on findings or determinations. If a historic property may be adversely affected, NASA also consults with SHPO, federally recognized Tribes, and interested parties, as well as ACHP. Identification, evaluation, and determination of effect tasks have no specific time frames in the Section 106 review process; efficient and timely completion of them is a matter for NASA. 36 CFR Part 800 does provide specific time frames for review by the consulting parties at various steps in the ongoing Section 106 process.

Note that NASA may confer with the consulting parties on multiple steps in the process at the same time, which will substantially reduce the time involved in complying with Section 106.

Step 1: Initiate the Section 106 Process:

1) Internal project review by the HPO to determine if an undertaking has the potential to affect historic properties (note: no external review required)(variable timing)

Step 2: Identify Historic Properties

- The HPO to establish APE and scope of identification efforts (SHPO has 30 days to respond)
- Identification efforts, potentially including survey and evaluation (variable timing)
- If the NRHP status of the subject building(s)/facility(s) is not known, SHPO consultation for Determination of Eligibility, or finding of no historic properties present (SHPO has 30 days to respond)

Step 3: Assess Adverse Effects:

- Preparation of Determination of Effect (variable timing)
- SHPO consultation on Determination of Effect (SHPO has 30 days to respond)

Step 4: Resolve Adverse Effects:

- Consultation with consulting parties to resolve Adverse Effects (variable timing)
- ACHP is notified (ACHP has 15 days to respond)
- Consultation to develop MOA (variable timing)
- Termination of consultation without MOA (ACHP has 45 days to provide advisory comment)
- If NASA finds that no historic properties are present or affected, it may proceed with the undertaking after NASA has not received an objection from SHPO or has addressed ACHP's opinion on disagreements regarding determinations of effect.

- If NASA finds that historic properties are present and will be adversely affected, it must implement the agreement in Step 4 before proceeding with the undertaking. The results of mitigation efforts are reported to SHPO and other authorized parties involved in the agreement. Allow SHPO a 30-day review period to concur that the agreement has been implemented. This concludes the Section 106 process, and the undertaking may proceed.

Consulting parties are afforded 30 days from receipt of adequate documentation to complete reviews of particular NASA findings and determinations. Although the regulations provide for 30 days, it is recommended that the HPO provide for 40 days to allow for mail time, etc. If no response is received from SHPO within that time, NASA may assume that SHPO concurs with the NASA's finding or determination, and proceed with the next steps in the Section 106 process as appropriate for that project.

If additional information is needed by SHPO, the 30-day review period begins anew. Thus, the HPO always should provide adequate documentation to SHPO and other consulting parties. Documentation requirements are outlined in Section 5.4.4 of this ICRMP and are derived from 36 CFR Part 800.11. If there is disagreement between NASA and SHPO, there is an additional process involving review by ACHP that requires about 45 days.

5.4.4 Section 106 Required Documentation

NASA is required to prepare documentation in support of its findings and determinations at various steps in the Section 106 process and to provide that documentation to SHPO and other consulting parties. 36 CFR Part 800.11 details this documentation. In general, documentation should be sufficient to enable an independent reviewer to understand the basis by which NASA made its findings and determinations. Inadequate documentation could delay the review process and NASA's projects.

Step 1: Initiate Section 106 Process

- If the HPO determines that an undertaking has no possibility of causing effects to historic properties, internal documentation of that decision and the basis for that decision are required and the Center has no further obligations under Section 106.

Step 2: Identify Historic Properties

- If there is a potential for effect, project-related documentation must be sent to SHPO.
- In consultation with SHPO, NASA establishes the APE specific to the subject undertaking.
- All properties identified in the APE that have not been previously evaluated will be evaluated for NRHP eligibility, and the evaluations and supporting documentation will be submitted to SHPO for concurrence. If SHPO and NASA disagree on NRHP eligibility, NASA will submit documentation to the Keeper of the NRHP for an official decision.

Step 3: Assess Adverse Effects

- If NASA makes a finding of "No Historic Properties Affected" or "No Adverse Effect," NASA notifies SHPO of its finding and provides the documentation outlined in 36 CFR

Part 800.11(e). Note that NASA should not disclose information about archaeological sites and properties of religious and cultural significance to the public.

Step 4: Resolve Adverse Effects

- If NASA makes a finding of adverse effect, or if SHPO does not concur with a finding of "No Adverse Effect," NASA must submit documentation specified in 36 CFR Part 800.11(e) to ACHP to notify them of the adverse effect finding. From this information, ACHP will determine if it chooses to be involved in the consultations to resolve adverse effects and develop an MOA.
- NASA will make information available to consulting parties and the public, including the documentation specified in 36 CFR Part 800.11(e), and provide an opportunity for comment about resolving the adverse effects and the development of the MOA. Note that NASA should not disclose information about archaeological sites and properties of religious and cultural significance to the public.
- If ACHP is not involved in the development of the MOA, NASA will file the MOA with ACHP and provide the documentation specified in 36 CFR Part 800.11(f) along with a copy of the signed MOA.
- If consultation to develop an MOA has been terminated, e.g., NASA has been unable to develop an MOA to which the other parties will agree, NASA complies with 36 CFR Part 800.7. ACHP's advisory comments will be provided to the head of the agency. The head of the agency must take the ACHP comments into account, is responsible for making the decision to implement the comments, and may not delegate his or her responsibilities pursuant to Section 106. The head of the agency will document the final decision in accordance with 36 CFR Part 800.7 (c) (4). The documentation will include a summary of the decision that contains the rationale for the decision and evidence of consideration of ACHP's comments and providing it to ACHP prior to approval of the undertaking. All consulting parties and the public are notified of decision and provided a copy of the summary record. All documentation and correspondence regarding the process will be kept on file in the HPO.

5.4.5 Cultural Landscape Approach to Cultural Management

The cultural landscape approach analyzes the spatial relationship among all cultural resources within their natural setting. This approach should be included as the basis of Center-wide planning surveys and evaluation, and can be facilitated with GIS.

Analysis of spatial relationships of known cultural resources can assist in determining nonrandom patterns of prehistoric land use. Sensitivity models where archaeological surveys have not been completed can be useful for planning purposes to determine sensitive areas and additional project needs for avoidance or mitigation, prediction of future impacts and alternative development, tribal consultation, and development of training scenarios that avoid sensitive resources. Also, archaeological surveys can be stratified to focus more (not exclusively) on high sensitivity areas when 100 percent intensive surveying and testing is cost- and/or time-prohibitive.

For specific archaeological surveys, include language in task orders for use of the cultural landscape approach and existing predictive models during surveys and to include a conclusion in the report about the accuracy of the model.

Areas surveyed and survey results should also be illustrated in a GIS layer.

It is recommended to refer to GIS data spatial standards for the development of GIS layers for this model. In most cases, the models will not replace the requirement for surveys, but as more data are collected about actual archaeological or cultural site distribution, these models can be tested and refined to assist with planning, reduce the level or amount of surveying, and provide a more effective use of program funding.

For specific projects, if parameters already exist, the addition of this requirement to the research and reports should add a negligible amount of time to the project. The GIS component could add 2 weeks to 6 months depending on available baseline GIS data and the extent of the area to be mapped.

In addition, each year other surveys on or near NASA property may be conducted, new discoveries may be made, and information and theories may be developed regarding former inhabitants and their lifeways. The GIS data must be updated as new information becomes available in order to stay current and remain a useful management tool. Therefore, the model will need periodic review to determine its validity and to keep data current.

5.4.6 Geographic Information System

Geographical data will be tied to current maps or GIS files showing locations of all cultural resources. Only general location information of archaeological sites and sacred places should be depicted. Restricted access files should be used for GIS overlays that specifically locate archaeological sites and sacred places.

Site forms that include location data are kept separate from the report. The site forms are placed in a separate appendix that can be detached from the primary report. The primary report is available to the public and confidential site locations are removed and kept in the HPO's office. The following procedures should be used.

- The HPO will control access to cultural resource reports.
- If the report indicates that no archaeological sites or sacred sites were found, and the structures are ineligible for the NRHP, there are no restrictions.
- If the report identifies archaeological sites or structures, site forms and map locations should be detached from the report.
- If the report has confidential information concerning sacred or sensitive sites, the document is restricted from public view, has a restricted circulation on base, and can be viewed only on a need-to-know basis.
- Reports must be kept in a secure location.

5.4.7 Integration of Cultural Resources Management with Other Environmental Requirements

36 CFR Part 800 states that, to streamline the process, the public involvement requirements under NEPA should be incorporated into cultural resource planning and projects when activities require the development of an EA or an EIS.

Construction or mission activities may adversely affect cultural resources. Each NASA staff member involved with planning, construction, building repair, or maintenance, or involved with management of training or other mission activities coordinates with the HPO in the planning process. Analysis of effects is normally done through development of the appropriate NEPA document. The HPO should review all work orders generated for compliance. The HPO should also review EAs and EISs to ensure appropriate analysis of cultural resources impacts and that Section 106 procedures were fully implemented.

5.4.8 Development of the ICRMP

According to NPR 8510.1, Chapter 2:

> A key component of a Center's management responsibilities is the ICRMP. Each NASA Center and Component Facility is responsible for implementing NASA CRM and stakeholder engagement practices, as described in a Center or Component Facility ICRMP. The ICRMP establishes cultural resources management practices and procedures pursuant to Section 110 of NHPA for historic properties. The ICRMP should be developed in coordination with the Center or Component Facility's other significant planning documents, such as Master Plans.

As a component of the planning process, the ICRMP outlines cultural resources management actions and specific compliance procedures. This ICRMP is an internal NASA compliance and management plan that integrates the CRM Program requirements with ongoing mission activities. It also allows for the identification of potential conflicts between ARC's mission activities and the CRM Program, and identifies necessary compliance actions. It is recommended that this document be reviewed and/or updated every 5 years.

5.4.9 Archaeological Site Monitoring

ARPA prohibits the excavation, removal, damage, alteration, or defacement of archaeological resources located on public lands or Native American lands, unless activities are pursuant to a permit issued by the federal land manager.

Violators of ARPA may be charged with a federal criminal offense, as well as civil charges (PL 96-95, ARPA).

The HPO and EMD should conduct periodic visits to archaeological sites that are eligible or listed in the NRHP to ensure that sites are not damaged due to facility use and/or maintenance, erosion, or vandalism. A regular presence at sensitive site(s) (1) helps deter potential vandals and catch active vandals, (2) increases chances of identifying potential problems before harm is done

to the site(s), (3) provides the opportunity to remedy problems that are in their infancy, and (4) provides an opportunity for education and stewardship. No such resources have been previously recorded on the campus at the time of ICRMP preparation. However, if any are identified in the future, HPO site monitoring will be required.

5.4.10 Maintenance of Historic Properties

Consultation with SHPO on maintenance of historic properties is subject to review under Section 106 for the potential to affect historic properties. Failure to maintain historic properties may also cause an adverse effect. Ideally, a PA would be put in place for routine operations and maintenance to reduce the need to consult regularly with SHPO on potential effects. Upon being advised by the project proponent of proposed maintenance activities to a historic property or a resource considered a historic property, the HPO should recommend that maintenance activities adhere to the Secretary of the Interior's Standards for the Treatment of Historic Properties to avoid or minimize adverse effects to historic properties. Maintenance activities would not generally result in an adverse effect on historic properties, if undertaken in accordance with the standards. For example, maintenance activities to clean historic buildings and structures with nonabrasive techniques (using little or no chemicals, no sandblasting, etc.) would avoid damage to historic surfaces. The Secretary of Interior's Standards for the Treatment of Historic Properties provide guidance on appropriate maintenance of historic properties. The standards can be viewed online at http://www.nps.gov/history/hps/TPS/standguide/.

It is recommended that the HPO prepare Maintenance and Treatment Plans for historic properties and use the plans as the basis for Section 106 compliance to expedite the process for maintenance undertakings. These plans can be incorporated into a future PA. If the undertaking does not have the potential to have an effect on historic properties, then the HPO can simply follow Step 1 in the process outlined in Section 5.4.4. above.

The HPO may determine that certain maintenance activities meet the Secretary of Interior's standards and will result in "No Historic Properties Affected" or "No Adverse Effect." An expanded list of maintenance and repair activities is not exempt from Section 106 unless there is an agreement document executed among NASA, SHPO, and other consulting parties that specifically and categorically exempts those activities. Agreement documents to streamline the Section 106 process are explored further in Section 5.4.12. Section 5.4.11 contains a list of general maintenance, repair and leasing activities that do not have the potential to adversely affect historic properties.

5.4.11 General Maintenance, Repair, and Leasing Activities

The following maintenance, repair, and leasing activities generally do not result in adverse effects to historic properties, if they adhere to the Secretary of Interior's standards and do not diminish character-defining features of the properties. A list of specific maintenance and repair activities are included in Chapter 6, SOP No. 5.

Building Maintenance

- Repair of existing historic and non-historic features of historic properties (e.g., doors, windows, hardware; architectural elements including framing, joints, stairs, roofs; and interior and exterior finishes including siding, trim, verandas, flooring) by improving operable function, patching, splicing, consolidating, or otherwise reinforcing to match existing materials or original specifications, if adequately documented.
- In-kind replacement of existing historic and non-historic features of historic properties (e.g., doors, windows, hardware; architectural elements including framing, joints, stairs, roofs; and interior and exterior finishes including siding, trim, verandas, flooring) to match the material, color, texture, form and profile of a deteriorated element that is beyond repair (e.g., rotted structure and termite/ant damaged wood components, corroded metal elements). No change in the exterior or interior dimensions, appearance, or operation of these features may result from replacement, and no substitute materials may be used.
- In-kind replacement of broken or cracked glass panes to match thickness and historic characteristics (texture, sheen, waviness) of the existing or historic glass materials. Temporary boarding of broken glass to seal enclosures immediately should not compromise the framing or surrounding materials.
- Repainting historic and non-historic surfaces that have been previously painted using similar paint type to match existing or historic colors. Paint removal will be conducted with nondestructive methods (no chemical use or sandblasting).
- Repointing or mortar repair for historic and non-historic masonry using mortar mixes to match existing or historic materials, color, and texture.
- Installation of impermanent carpet, other coverings and equipment over existing non-character-defining flooring (e.g., vinyl and/or vinyl asbestos flooring). Historic terrazzo, stone, and tile floors and stairs will not be altered.
- Energy conservation actions to meet standard reductions in energy use that do not compromise the integrity of historic properties, including replacement or installation of compatible caulking or weather-stripping at doors, windows, and other penetrations that require weatherproofing.
- Hazardous material (e.g., lead paint, asbestos, and mold) testing, remediation, and abatement that does not require the removal of historic materials or alteration of visible contributing elements of historic property.
- Removal of pests, such as termites, insects, rodents, and animal debris without damaging adjacent surfaces. Ventilation systems of the improvements (including but not limited to wire screen, metal or wooden louvers) will be maintained to the greatest extent possible in such a manner as to prevent birds, bees, rodents, and other wildlife from entering the improvements.
- Removal of vines and other vegetation that are potentially damaging to building materials.

- Replacement of non-character-defining insulation (ceilings, attics, basement spaces), plumbing, heating, ventilation, and air conditioning (HVAC) equipment, electrical systems, telecommunications equipment, security systems, or fire suppression systems with upgraded systems that do not require physical, visual, or noise intrusion that could compromise the historic property's integrity.
- Repair or renovation of interior spaces of buildings determined not eligible for the NRHP.
- Demolition of buildings or structures determined not eligible for the NRHP where no historic properties are within the APE.
- Rehabilitation work to historic properties in accordance with approved reuse guidelines established by historic preservation professionals who meet the Secretary of Interior's Professional Qualification Standards in 36 CFR Part 61, Appendix A (see Section 3.4.2).

Site and Landscape Maintenance

- Repair or in-kind replacement of existing signs, fences, walkways, driveways, and parking areas to match existing design, form, texture, and materials.
- Repair or in-kind replacement of existing above-ground fuel, propellant, and chemical storage facilities.
- Placement of temporary barriers.
- Ongoing maintenance of existing landscaping, including grass cutting; hedge trimming; tree pruning; and removal of dead, diseased, or hazardous vegetation. Historic landscape themes will be maintained and continued in historic settings and districts.
- Removal of pests, such as termites, insects, rodents, and animal debris without damaging adjacent surfaces.

Leasing

- Leasing or licensing for events less than 45 days that will make no permanent alterations to facilities. The lessees will be made aware of historic preservation requirements.

5.4.12 Develop Agreement Documents

In some cases, streamlining regulatory compliance under NHPA, NAGPRA, and EO 13175, and the Section 106 consultation process can be accomplished through the use of an MOA, PA, CA, or plan of action and MOU. The following describes in general terms the types of agreement documents and their use.

An MOA is an agreement document for compliance with Section 106 for specific undertakings on how the effects of the project will be taken into account (36 CFR Part 800.5(e)(4)), and, in general, is used as a mitigation agreement document for the adverse effects of a single undertaking. The federal agency, ACHP, SHPO, THPO/federally recognized Tribes, and

possibly other consulting parties, negotiate MOAs. These agreement documents govern the implementation of a particular project and the resolution of the particular effects of that project.

PAs are, in general, used to govern the implementation of a particular program or the resolution of adverse effects from certain complex projects or multiple undertakings, such as routine operations and maintenance, for compliance with Section 106. PAs are negotiated among the federal agency (NASA), ACHP, SHPO, THPO/federally recognized Tribes, and possibly other consulting parties (36 CFR Part 800.14(b)).

These agreement documents may be used when:

- Effects on historic properties are similar and repetitive in scope.
- Effects on historic properties cannot be fully determined prior to approval of an undertaking.
- Nonfederal parties are delegated major decision-making responsibilities.
- Routine maintenance activities are undertaken at federal properties, facilities, or other land management units.
- Circumstances warrant a departure from the normal Section 106 process.

CAs are similar in structure to PAs and are used to establish the repatriation process under NAGPRA. CAs are negotiated among the federal agency (NASA), SHPO, THPOs/Tribes, and possibly other claimant groups or parties. These agreement documents can govern the notification process, reburial procedures, limitations, custody procedures, and monitoring plans. CAs are particularly useful when it is known upfront that remains or funerary objects are likely to be encountered on-site, or in the APE for a specific project.

A NAGPRA plan of action is prepared after an inadvertent discovery is made (i.e., human remains and/or cultural items) and after a consultation meeting(s) with the appropriate Native Americans is conducted. The plan is a presentation of the verbal agreements that are made during the consultation regarding (1) the extraction of the remains, (2) the length of time out of the ground, (3) the disposition while out of the ground, (4) who the remains will be repatriated to and in what manner, (5) information about the public notice that must be published (in the newspaper 30 days prior to repatriation in two notices a week apart), and (6) the description of the repatriation process (see SOP No. 8, Inadvertent Discovery of Archaeological Materials, and SOP No. 9, Treatment of Human Remains and Funerary/Sacred Objects).

An MOU is generally used to clarify protocols and roles and responsibilities. The federal agency (NASA), SHPO, THPO/federally recognized Tribes, and other consulting parties can negotiate MOUs. These documents are used as a tool to ensure that all involved parties are informed of, and agree upon, the details of a particular cultural resources management program. An MOU is not considered legally binding in the manner of MOAs, PAs, and CAs.

Development of agreement documents requires public and stakeholder involvement.

Timing: Preparation and review time for agreement documents will vary with the type of document, complexity of issues, and number of parties involved. In general, for an MOA or PA, the review process is as follows:

- NASA drafts the agreement document in consultation with the consulting parties (SHPO, federally recognized Tribes, etc.).
- NASA sends the agreement to SHPO for concurrence.
- SHPO signs the agreement.
- The Center Director or NASA administrator signs.
- Other signatories (federally recognized Tribes, other consulting parties, etc.) sign for PAs or MOAs.

Note: SHPO and ACHP do not review or sign CAs or plans of action.

At a minimum, anticipate the following for completion:

- MOA – 4 to 6 months
- PA – 6 to 12 months
- CA – 6 to 12 months
- Plan of Action – 6 to 12 months
- MOU – 4 to 6 months

5.4.13 Sustainability in Cultural Resources Management

The federal government encourages agencies to take the lead in being stewards of the environment and to preserve today's resources for the future. EO 13101, Greening the Government through Waste Prevention, Recycling, and Federal Acquisition, and EO 13123, Greening the Government through Efficient Energy Management, advocate a variety of approaches to assist agencies in reducing waste, saving resources, and promoting environmentally friendly design.

One primary focus of stewardship is the concept of sustainability. This concept applies to design, construction, operations, and resource conservation. Sustainability is responsible stewardship of the nation's natural, human, and financial resources through a practical and balanced approach. Sustainable practices are an investment in the future. Through conservation, improved maintainability, recycling, reduction and reuse of waste, and other actions and innovations, NASA can meet today's needs without compromising the ability of future generations to meet their own.

In applying sustainability principles to cultural resources management, Chapter 4 of the NPS publication *Guiding Principles of Sustainable Design* (1993) notes that "sustainability has often been an integral part of the composition of both tangible and intangible cultural resources. Ecological sustainability and preservation of cultural resources are complementary. In large part,

the historic events and cultural values that are commemorated were shaped by humankind's response to the environment. When a cultural resource achieves sufficient importance that it is deemed historically significant, it becomes a nonrenewable resource worthy of consideration for sustainable conservation. Management, preservation, and maintenance of cultural resources should be directed to that end."

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6.0 STANDARD OPERATING PROCEDURES

6.1 SOPs Overview

Requirements for the development of SOPs in the ICRMP are outlined in NPR 8510.1. Among the topics addressed in SOPs are identifying and evaluating historic resources, reassessment of previously evaluated resources, the treatment of buildings and structures, analyzing effects on historic properties through Section 106 consultation, protection and discovery of archaeological resources, treatment of human remains and funerary objects, Native American consultation, curation of collections and records, and emergency procedures. The following is a list of the SOPs that specifically relate to ARC as required in NPR 8510.1 and as established by the HPO:

1. Section 106 Consultation
2. Identifying and Evaluating Resources
3. Reassessing Resources that Turn 50 Years of Age
4. Nominating Exceptionally Significant Historic Properties to the NRHP
5. Maintaining, Repairing, Altering, Demolishing, Leasing, or Transferring Existing Buildings or Structures
6. Coordination of Tenant/Lessee Projects with CRM Program
7. Protecting Archaeological Resources
8. Inadvertent Discovery of Archaeological Resources
9. Treatment of Human Remains and Funerary/Sacred Objects
10. Native American Consultation
11. Curating Archaeological Collections
12. Emergency Procedures in the Event of Natural or Other Disasters

6.1.1 SOP No. 1: Section 106 Consultation

Section 106 of NHPA requires federal agencies to take into account the effects of their undertakings on historic properties, and afford ACHP a reasonable opportunity to comment. The historic preservation review process mandated by Section 106 is outlined in regulations issued by ACHP, "Protection of Historic Properties" (36 CFR Part 800). Coordination and consultation with SHPO, appropriate THPOs, and ACHP is a key aspect of Section 106 cultural resource compliance at ARC. Technical information regarding undertakings and cultural resources must be provided to SHPO and THPOs in a timely manner to prevent foreclosure of a SHPO/THPO opportunity to comment

NPR 8510.1 requires an SOP for identifying, evaluating, and treating the effects of all undertakings on historic properties through Section 106 of NHPA consultation to include the public, Native Americans, SHPOs/THPOs, and other consulting parties in a manner that reflects the nature and complexity of the undertaking and its effects on historic properties. Note that NASA may confer with the consulting parties on multiple steps in the process at the same time,

which will substantially reduce the time involved in complying with Section 106. Appendix G contains a checklist of items to submit to SHPO as part of the Section 106 process.

Applicable Laws/Regulations/Procedural Requirements

- National Historic Preservation Act
- National Environmental Policy Act
- NASA Policy Directive 8500.1
- NASA Procedural Requirements 8510.1 and 8553.1

Policy

- The HPO in the Facilities Engineering Division is designated as the point of contact for the Section 106 process, including those projects proposed by organizations that are subject to the Section 106 process, to maintain and foster relationships with the FPO; SHPO; THPO, for activities affecting tribal lands; Native Americans; ACHP; other consulting and interested parties; and the public, for activities related to the CRM Program.
- ARC personnel, contractors, and project managers must consult with the HPO to determine whether a proposed action constitutes an undertaking that may affect historic properties.
- The HPO will ensure that identification and evaluation of historic properties, including properties of traditional religious and cultural importance to Native Americans, are completed in compliance with Section 106 of NHPA prior to an undertaking.
- The HPO will ensure that impacts of proposed actions and undertakings that might affect cultural resources are considered pursuant to NEPA and NHPA.
- Avoidance of adverse effects to NRHP-eligible historic buildings will be proactively incorporated into the planning process.
- Until such time as SHPO has concurred with NASA's determination that a historic building is ineligible for inclusion to the NRHP, it will be treated as potentially eligible.
- Procedures covered herein apply to in-house work, contracted work, and work conducted by outside agencies or tenants/lessees to ARC facilities.
- Persons who meet the Secretary of the Interior's guidelines for professional qualifications (36 CFR Part 61, Appendix A) will conduct all identification and evaluation activities.

Procedures

I. General Information:

A. The Section 106 process must be completed for undertakings that affect historic properties prior to starting work. Initiating the Section 106 process in a project's early planning stages allows the fullest range of options to minimize or mitigate any adverse

effects on historic properties. The goal of NHPA is to preserve historic properties for future generations to the extent possible. Historic properties are nonrenewable resources that illustrate the history of the U.S.

B. Eligible historic architectural properties include (but are not limited to) districts, individual buildings, and test stands. If a property has been surveyed and SHPO has concurred with the determination that the property is not eligible for listing in the NRHP prior to the undertaking, then the Section 106 review is generally streamlined.

C. The HPO will determine the presence or absence of historic properties in the APE. The HPO has the final responsibility for making the "determination of effects" that a project or undertaking may have on historic properties. There are three possible outcomes:

- "No Historic Properties Affected,"
- "No Adverse Effect," or
- "Adverse Effect."

The Section 106 Process is outlined below:

Step 1: Initiate the Section 106 Process:

A. Establish undertaking. ARC personnel, contractors, and project managers must consult with the HPO to determine whether a proposed action constitutes an undertaking. An undertaking is defined as a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a federal agency (36 CFR Part 800.16(y)). The HPO will coordinate with EMD to review all actions proposed or planned by ARC and/or tenant/lessee that may affect historic properties. These include missions; plans, specifications, and work orders; specifications for maintenance, repair, and alterations; demolition to any buildings or structures; and lease agreements of ARC properties. If the HPO determines that there is no undertaking with potential to affect historic properties, the Center has no further Section 106 obligations. If the HPO determines that there is an undertaking, the HPO must then determine whether it is a type of activity that has the potential to cause effects on historic properties.

B. Potential to cause effects. An undertaking will have an effect on a historic property when the action has the potential to result in changes to the character or use of the historic property, such as diminished or loss of historic integrity. The HPO will review proposed actions to determine if an undertaking has the potential to affect historic properties.

1. If the HPO determines that the undertaking has no potential to affect historic properties, the HPO must document the decision for internal information and to provide information should an outside interest make inquiry. The Center has no further obligations under Section 106 and the action may proceed.

2. If the HPO determines that the undertaking has the potential to affect historic properties, then the HPO will initiate the Section 106 consultation

process. The HPO must consult with SHPO, and should also plan to involve the public, and identify other potential consulting parties. If the undertaking affects federally recognized Tribes, then the THPO of those Tribes that have a THPO may also be consulted. The Section 106 review should be coordinated with any other required reviews (i.e., NEPA and NAGPRA). The HPO may use information from other review documents to meet Section 106 requirements. The Section 106 process proceeds to Step 2 (below).

Step 2: Identify Historic Properties

A. Area of Potential Effects. If the undertaking could affect historic properties, the HPO will determine the scope of appropriate identification efforts. The HPO will establish the APE for the undertaking in conjunction with SHPO (SHPO has 30 days to respond). The APE is defined as "the geographic area(s) within which an undertaking may directly or indirectly cause changes in the historic character or use of historic properties, if any such properties exist" (36 CFR Part 800.16(d)).

B. Identification efforts. The HPO will review background information, consult with SHPO and other consulting parties, seek information from knowledgeable parties, and conduct additional studies, as necessary, to determine whether historic properties are located within the APE. If the APE has not been surveyed, the HPO will take steps necessary to ensure a reasonable and good faith effort to carry out appropriate efforts to identify resources (see SOP Nos. 2 and 3, and Section 5.2.1 of this ICRMP for further details on cultural resources identification methodology). Professionals who meet the Secretary of Interior's Professional Qualification Standards in 36 CFR Part 61, Appendix A, will perform all identification efforts.

C. Evaluation. Districts, sites, buildings, structures, and objects listed in or eligible for the NRHP are considered historic properties. If the NRHP eligibility status of resources within the APE is unknown or requires further evaluation, then the HPO will ensure completion of an evaluation by appropriate, qualified personnel. The evaluator will consult archival information, consulting parties, and other records, as appropriate, to assess the NRHP eligibility status of the property that may be affected. Resources will be evaluated against the NRHP criteria (see SOP Nos. 2 and 3, and Section 5.2.2 of this ICRMP for further details on cultural resources evaluation). The HPO will seek a formal Determination of Eligibility from SHPO on resources evaluated in the APE, to which SHPO will have 30 days to respond.

1. If the HPO finds that there are no historic properties present in the APE and SHPO concurs or has previously concurred with a Determination of Eligibility, then the HPO may make a finding of "No Historic Properties Affected." Or, if the HPO finds that there are historic properties present, but determines that the undertaking will not affect the historic properties, the HPO may also make a finding of "No Historic Properties Affected." The HPO will provide documentation of this finding to SHPO as set forth in 36 CFR Part 800.11(d). The HPO also notifies consulting parties of the decision and makes the documentation available to the public (for example, via the Center website). If

SHPO does not object within 30 days, ARC's responsibilities under Section 106 are fulfilled and the undertaking may proceed. However, if SHPO disagrees with the finding of "No Historic Properties Affected," and SHPO considers that the proposed undertaking will affect historic properties, the Section 106 process continues to Step 3 (below).

2. If the HPO, in consultation with SHPO and consulting parties, finds that historic properties are present in the APE and will be affected by the undertaking, the Section 106 process continues to Step 3 (below).

Step 3: Assess Adverse Effects

A. Criteria of Adverse Effect. The HPO, in consultation with SHPO and consulting parties, will assess the effects on historic properties in the APE by applying the criteria of adverse effect (36 CFR Part 800.5).

1. If the HPO finds that the proposed undertaking or action does not meet the criteria of adverse effect and will not adversely affect historic properties, then the HPO may make a finding of "No Adverse Effect." The HPO will provide documentation of this finding to SHPO as set forth in 36 CFR Part 800.11(e). The HPO also notifies consulting parties of the decision and makes the documentation available to the public for comment (for example, via the Center website). If SHPO does not object within 30 days, ARC's responsibilities under Section 106 are fulfilled and the undertaking may proceed.

However, if any objections in writing are received during that review period, consultation will continue to resolve the disagreement, and/or ACHP will be requested to review the finding in accordance with 36 CFR Part 800.5(c)2-3. If the consulting parties find that there is an adverse effect, or if the parties cannot agree and ACHP determines within 15 days that there is an adverse effect, the Section 106 process continues to Step 4 (below).

2. If the HPO finds that the proposed undertaking meets the criteria of adverse effect and will result in adverse effects on historic properties, the Section 106 process continues to Step 4 (below).

Step 4: Resolve Adverse Effects

A. Ongoing consultation. The HPO will continue consultation with SHPO and consulting parties to develop and evaluate alternatives or modifications to the proposed undertaking that could avoid, minimize, or mitigate the adverse effects on historic properties. The HPO will make information available to the public and provide an opportunity for comment about resolving the adverse effects of the proposed undertaking.

B. Design alternatives. Depending on the urgency of the undertaking, the Center may redesign or consider alternatives to the proposed undertaking to avoid any adverse effect, taking into account feasibility and economic analyses for demolition of historic properties. Alternatively, the Center may proceed with a mitigation plan. Mitigation plans

will take into account cost and mission requirements and will be based on a balancing of economics, public interest, and the feasibility of alternatives. A finding of "No Adverse Effect" may result if the undertaking is modified or conditions are imposed, such as subsequent review of plans for rehabilitation by SHPO to ensure consistency with the Secretary of Interior's standards, thereby avoiding adverse effects. Implementation of the undertaking in accordance with the conditions as documented would fulfill the Center's responsibilities under Section 106.

C. Memorandum of Agreement. NASA will develop an MOA with SHPO and consulting parties in accordance with 36 CFR Part 800.6, specifying the scope and level of effort required to mitigate the adverse effects of the undertaking on historic properties. Once the MOA has been signed by all parties, it is sent to ACHP for filing, and the undertaking may proceed, subject to the terms and stipulations of the MOA. The Section 106 process is then concluded.

D. ACHP Participation. The HPO will submit documentation to ACHP to notify them of the adverse effect finding. If consultation between ARC and SHPO fails to result in an agreement, the HPO may request ACHP participation and provide ACHP with documentation specified in 36 CFR Part 800.11(g). ACHP can decide to enter consultation proceedings and has 15 days to notify the HPO and consulting parties whether it will participate in adverse effect resolution. If ACHP joins the consultation, ARC will proceed with consultation to reach an MOA. If ACHP decides not to join the consultation, ACHP will notify ARC and proceed to comment (see Section F below).

E. Failure to resolve adverse effect. ARC, SHPO, or ACHP may determine that further consultation will not be productive and will terminate Section 106 consultation by notifying all consulting parties in writing and specifying reasons for termination.

1. If NASA terminates consultation, the head of the agency or an Assistant Secretary or other officer with major department-wide or agency-wide responsibilities requests an ACHP comment pursuant to 36 CFR Part 800.7(c) and notifies all consulting parties of the request (see Section F below). Once the ACHP comment is received, the undertaking may proceed subject to the terms and stipulations of the ACHP comment. The Section 106 process is then concluded.

2. If SHPO terminates consultation, ARC and ACHP may execute an MOA without SHPO's involvement. The undertaking may proceed subject to the terms and stipulations of the MOA. The Section 106 process is then concluded.

3. If ACHP terminates consultation, the ACHP will notify the FPO and all consulting parties and provide comments to the FPO under 36 CFR Part 800.7(c). The ACHP may consult with NASA's FPO prior to terminating consultation to seek to resolve issues concerning the undertaking and its effects on historic properties.

F. ACHP Comment. The ACHP has 45 days after receipt of request for comment to provide comments. The ACHP will allow an opportunity for NASA, consulting parties, and the general public to provide their views. The ACHP will provide its comments to the head of the agency with copies to NASA, the FPO, and all consulting parties. The head of the agency must take the ACHP comments into account, is responsible for making the decision to implement the comments, and may not delegate his or her responsibilities pursuant to Section 106. The head of the agency will document the final decision in accordance with 36 CFR Part 800.7 (c) (4), and will provide it to ACHP prior to approval of the undertaking. Documentation will include a summary of the decision, the rationale for the decision, and evidence of consideration of the ACHP's comments. All consulting parties and the public are notified of decision and provided a copy of the summary record. All documentation and correspondence regarding the process will be kept on file by the HPO.

6.1.2 SOP No. 2: Identifying and Evaluating Resources.

Effective management of historic properties requires that they first be identified and evaluated. The level of identification needed can vary depending on the nature of the property or property type, and the possible effects on the property. In compliance with Section 110 of NHPA and its implementing regulations, this SOP specifies procedures to identify and evaluate cultural resources. Every federal agency is responsible for establishing historic preservation programs for the identification, evaluation, and protection of historic properties.

NPR 8510.1 requires an SOP for identifying and evaluating resources 45 years of age or older (in anticipation of their turning 50) and resources less than 50 years old that may have exceptional significance in accordance with Section 110 of NHPA. This SOP is applicable to all resources located at ARC and in areas where ARC mission-related undertakings may affect historic properties.

Applicable Laws/Regulations/Procedural Requirements

- National Historic Preservation Act
- NASA Procedural Requirement 8510.1

Policy

- NASA will proactively protect and maintain NRHP-eligible historic buildings, structures, and districts.
- NASA will ensure that the HPO has the authority and resources to carry out his or her role and responsibilities to comply with applicable CRM regulations and NPR 8510.1 and has funding to conduct periodic inventory and evaluation of historic facilities. (See NHPA and EO 11593.)
- The HPO will implement NASA CRM Program activities in compliance with NPR 8510.1 and Sections 106 and 110 of NHPA.

- Periodic inventory and evaluation of historic facilities will be conducted as directed by the HPO following the Secretary of the Interior's Standards for Identification and Evaluation, as set forth in *The Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation* (48 FR 44720-44726), which should be used to ensure that the CRM Program's identification and evaluation procedures will be appropriate.
- Persons who meet the Secretary of the Interior's guidelines for professional qualifications (36 CFR Part 61, Appendix A) (see Chapter 5.2.3 for professional qualification standards) will conduct all identification and evaluation activities of historic properties.
- The HPO will ensure that identification and evaluation of historic properties, including properties of traditional religious and cultural importance to Native Americans, are completed in compliance with Section 106 of NHPA prior to an undertaking.
- Avoidance of adverse effects to NRHP-eligible historic buildings will be proactively incorporated into the planning process.
- Until such time as SHPO has concurred with NASA's determination that a historic building is not eligible for inclusion to the NRHP, it will be treated as potentially eligible.

Procedures

I. Identification activities are undertaken to gather information about historic properties in an area. The scope of these activities will depend on existing knowledge about properties; goals for survey activities developed in the planning process; and current management needs. The Secretary of Interior's Standards for Identification should be followed.

   a. Standard I. Identification of Historic Properties Is Undertaken to the Degree Required to Make Decisions – Archival research and survey activities should be designed to gather the information necessary to achieve defined preservation goals. The objectives, chosen methods and techniques, and expected results of the identification activities are specified in a research design. These activities may include archival research and other techniques to develop historic contexts, sampling an area to gain a broad understanding of the kinds of properties it contains, or examining every property in an area as a basis for property-specific decisions. Where possible, use of quantitative methods is important because it can produce an estimate, whose reliability may be assessed, of the kinds of historic properties that may be present in the studied area. Identification activities should use a search procedure consistent with the management needs for information and the character of the area to be investigated. Careful selection of methods, techniques and level of detail is necessary so that the gathered information will provide a sound basis for making decisions.

   b. Standard II. Results of Identification Activities Are Integrated Into the Preservation Planning Process – Results of identification activities are reviewed for their effects on previous planning data. Archival research or field survey may refine the understanding of one or more historic contexts and may alter the need for additional survey or study of particular property types. Incorporation of the

results of these activities into the planning process is necessary to ensure that the planning process is always based on the best available information.

c. Standard III. Identification Activities Include Explicit Procedures for Record-Keeping and Information Distribution – Information gathered in identification activities is useful in other preservation planning activities only when it is systematically gathered and recorded, and made available to those responsible for preservation planning. The results of identification activities should be reported in a format that summarizes the design and methods of the survey, provides a basis for others to review the results, and states where information on identified properties is maintained. However, sensitive information, like the location of fragile resources, must be safeguarded from general public distribution.

II. Evaluation is the process of determining whether identified properties meet defined criteria of significance and therefore should be included in an inventory of historic properties determined to meet the criteria. The criteria employed may vary depending on the inventory's use in resource management, but generally are those criteria for eligibility to the NRHP.

a. Standard I. Evaluation of the Significance of Historic Properties Uses Established Criteria – The evaluation of historic properties employs criteria to determine which properties are significant. Criteria should therefore focus on historical, architectural, archaeological, engineering, and cultural values, rather than on treatments. A statement of the minimum information necessary to evaluate properties against the criteria should be provided to direct information gathering activities. Because the NRHP is a major focus of preservation activities on the federal, state and local levels, the NRHP criteria have been widely adopted not only as required for federal purposes, but for state and local inventories as well. The NHL criteria and other criteria used for inclusion of properties in state historic site files are other examples of criteria with different management purposes.

b. Standard II. Evaluation of Significance Applies the Criteria within Historic Contexts – Properties are evaluated using a historic context that identifies the significant patterns that properties represent and defines expected property types against which individual properties may be compared. Within this comparative framework, the criteria for evaluation take on particular meaning with regard to individual properties.

c. Standard III. Evaluation Results in a List or Inventory of Significant Properties That Is Consulted in Assigning Registration and Treatment Priorities – The evaluation process and the subsequent development of an inventory of significant properties is an ongoing activity. Evaluation of the significance of a property should be completed before registration is considered and before preservation treatments are selected. The inventory entries should contain sufficient information for subsequent activities such as registration or treatment of

properties, including an evaluation statement that makes clear the significance of the property within one or more historic contexts.

d. Standard IV. Evaluation Results Are Made Available to the Public – Evaluation is the basis of registration and treatment decisions. Information about evaluation decisions should be organized and available for use by the general public and by those who take part in decisions about registration and treatment. Use of appropriate computer-assisted data bases should be a part of the information dissemination effort. Sensitive information, however, must be safeguarded from general public distribution.

6.1.3 SOP No. 3: Reassessing Resources that Turn 50 Years of Age

Identification of historic properties is an ongoing process. As time passes, events occur, or scholarly and public thinking about historical significance changes. Therefore, even when an area has been completely surveyed for historic properties of all types, it may require reinvestigation if many years have passed since the survey was completed. Such follow-up studies should be based upon previously obtained information, may focus upon filling information gaps, and should consider reevaluation of properties based upon new information or changed historical understanding.

NPR 8510.1 requires an SOP for reassessing resources to address the passage of time, changing perceptions of significance, subsequent changes to the property, or incomplete prior evaluations. This SOP is applicable to all resources located at ARC and in areas where ARC mission-related undertakings may affect historic properties.

Applicable Laws/Regulations/Procedural Requirements

- National Historic Preservation Act
- NASA Procedural Requirement 8510.1

Policy

- NASA will reassess resources that have previously been determined eligible or ineligible for listing in the NRHP prior to their turning 50 years of age to address the passage of time, changing perceptions of significance, subsequent changes to the property, or incomplete prior evaluations.
- NASA will proactively protect and maintain NRHP-eligible historic buildings, structures, and districts.
- NASA will ensure that the HPO has the authority and resources to carry out his or her role and responsibilities to comply with applicable CRM regulations and NPR 8510.1 and has funding to conduct periodic inventory and evaluation of historic facilities. (See NHPA and EO 11593.)
- The HPO will implement NASA CRM Program activities in compliance with NPR 8510.1 and Sections 106 and 110 of NHPA.

- The HPO will ensure that identification and evaluation of historic properties, including properties of traditional religious and cultural importance to Native Americans, are completed in compliance with Section 106 of NHPA prior to an undertaking.
- Avoidance of adverse effects to NRHP-eligible historic buildings will be proactively incorporated into the planning process.
- Until such time as SHPO has concurred with NASA's determination that a historic building is ineligible for inclusion to the NRHP, it will be treated as potentially eligible.

Procedures

Reevaluation of historic facilities will be conducted as directed by the HPO following the Secretary of the Interior's standards for identification and evaluation of historic properties, as set forth in *The Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation* (48 FR 44720-44726), which should be used to ensure that the CRM Program's identification and evaluation procedures will be appropriate. Identification and evaluation of historic properties must be conducted by professionally qualified individuals (Sec. 101(g), Sec. 101(h), and Sec. 112) (see Chapter 5.2.3 for Professional Qualification Standards). The procedures to identify and evaluate historic facilities for eligibility for listing in the NRHP and other significance are described in Chapter 6, SOP 2.

6.1.4 SOP No. 4: Nominating Exceptionally Significant Historic Properties to the NRHP

Section 110 of NHPA and EO 11593 direct federal agencies to locate, inventory, and evaluate all NRHP-eligible sites, buildings, districts, and objects under their control. Federal agencies may prepare and submit NRHP nominations to the Secretary of the Interior.

Although optional, the HPO has included an SOP for nominating exceptionally significant properties under Criteria Consideration G to the NRHP. The HPO, in conjunction with the Center Director, will determine whether an ARC property or properties within a district will be nominated to the NRHP. This SOP is applicable to all resources located at ARC and/or under ARC jurisdiction.

Applicable Laws/Regulations/Procedural Requirements

- National Historic Preservation Act
- NASA Procedural Requirement 8510.1

Policy

- ARC will prepare NRHP nomination forms for exceptionally significant eligible historic properties, as determined necessary by the HPO and the Center Director, and as personnel and budgetary constraints permit.
- The FPO will submit the NRHP nomination to the Keeper of the NRHP.

- Ensure that personal property is considered when evaluating historic properties. Personal property, as defined by NPR 4200.1G, NASA Equipment Management Procedural Requirements, such as equipment, can be eligible for the NRHP as objects.
- Account for heritage personal property in the NASA Personal Property, Plant, and Equipment System when valuation meets the Agency accountability threshold in accordance with NPR 4200.1G, NASA Equipment Procedural Requirements and NPR 9250.1, Property, Plant, and Equipment and Operating Material and Supplies.
- Persons who meet the Secretary of the Interior's guidelines for professional qualifications (36 CFR Part 61, Appendix A) will conduct all nomination activities.

Procedure

The HPO will annually review and report the status of inventory, testing, and nomination and will develop priorities for these programs based on integration with Section 110 responsibilities and funding availability.

I. Archaeological and architectural research and reevaluations will be designed to ensure collection of sufficient archaeological, architectural, and historical information with which to make a determination of eligibility for inclusion in the NRHP, according to the significance criteria outlined in Section 5.2.2 of this ICRMP.

II. For each archaeological or architectural resource inventoried and evaluated as eligible, the HPO will seek a Determination of Eligibility from SHPO.

III. For each "exceptionally significant" historic property recommended as eligible for inclusion in the NRHP, with concurrence by SHPO, the HPO may submit NRHP nomination forms to SHPO for comment and concurrence, and then to the FPO to forward to the Keeper of the NRHP.

IV. Participate in the identification and disposition of artifacts with appropriate Center and Component Facility organizations and Property Disposal Officers, especially as they relate to the management of these artifacts as potential historic properties.

6.1.5 SOP No. 5: Maintaining, Repairing, Altering, Demolishing, Leasing, or Transferring Existing Buildings or Structures.

Maintenance, repair, alteration, demolition, or leasing of buildings can result in adverse effects under Section 106 to historic properties. Reducing or withdrawing maintenance from a historic building may result in an adverse effect, and the leasing of historic buildings may cause adverse effects due to changed management procedures. In compliance with Section 106 of NHPA and its implementing regulations, this SOP specifies procedures to implement in planning such undertakings.

NPR 8510.1 requires an SOP for maintaining, repairing, altering, demolishing, leasing, or transferring existing buildings or structures. This SOP is applicable to NRHP-listed, eligible, and potentially eligible properties located at ARC and/or under ARC jurisdiction.

Applicable Laws/Regulations/Procedural Requirements

- National Historic Preservation Act
- National Environmental Policy Act
- NASA Policy Directive 8500.1
- NASA Procedural Requirements 8510.1

Policy

- NASA will proactively protect and maintain NRHP-eligible historic buildings, structures, and districts. The HPO will periodically inspect the condition of all NRHP-eligible buildings, structures, and districts to monitor the compliance of undertakings and to ensure that deterioration through neglect or natural disasters has not adversely affected the properties.
- Avoidance of adverse effects to NRHP-eligible historic buildings will be proactively incorporated into the planning process.
- Until such time as SHPO has concurred with NASA's determination that a historic building is ineligible for inclusion to the NRHP, it will be treated as potentially eligible.
- All buildings and structures listed in or considered eligible for the NRHP will receive priority and regular maintenance to prevent deterioration through neglect.
- Maintenance, repair, alterations, and demolition of historic buildings should comply with the Secretary of the Interior's Standards and Guidelines for the Treatment of Historic Properties, unless such actions are otherwise in compliance with Section 106 of the NHPA.
- Maintenance, repair, alteration, or demolition activities that would disturb soils at a historic site must undergo an archaeological survey before the activity may proceed.
- Procedures covered herein apply to in-house work, contracted work, and, to the extent required for tenants/lessees to comply with the law, work conducted by outside agencies or tenants/lessees to ARC facilities.

Procedures

ARC personnel, contractors, and project managers must consult with the HPO to determine whether a proposed action constitutes an undertaking. An undertaking is defined as a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a federal agency (36 CFR Part 800.16(y)). The HPO will coordinate with EMD to review all actions proposed or planned by ARC and/or tenant/lessee that may affect historic properties. These include missions; plans, specifications, and work orders; specifications for maintenance, repair, and alterations; demolition to any buildings or structures; and lease agreements of ARC properties. If the HPO determines that there is no undertaking, the Center has no further Section 106 obligations. If the HPO determines that there is an undertaking, the HPO must then determine the potential of the activity to cause effects on historic properties through the Section 106 process (see SOP No. 1 for procedures in compliance with Section 106 of NHPA).

After review of the planned activities, the HPO may determine that these activities result in no potential to affect historic properties, "No Historic Properties Affected," or "No Adverse Effect," and will document the decision per the Section 106 process (see SOP No. 1 for further details of the Section 106 process).

Maintenance and Repair

The following activities generally result in "No Adverse Effect," if they adhere to the Secretary of Interior's Standards for the Treatment of Historic Properties and do not diminish character-defining features of the properties.

Painted Surfaces

- All interior and exterior painted surfaces will be painted, as needed.
- Painted surfaces will be maintained in such a manner as to ensure that painted surfaces are free of peeling, blistering, and excessive wear.
- Paint materials will be of a "good quality" from a major manufacturer and a type and color that matches existing colors.
- Any paint materials will be stored in fire-proof cabinets or disposed of in compliance with all applicable laws.

Floors and Floor Coverings

- Floors and floor coverings will be maintained in such a manner as to ensure that floors and floor coverings are free of excessive wear and deterioration.
- Hardwood floors, tile, and linoleum coverings will be maintained using proper sealants and waxes.

Heating, Ventilating, and Air Conditioning Systems

- The HVAC systems will be kept and maintained in operational conditions in accordance with the manufacturer's instructions and all applicable laws.
- HVAC systems will be installed or repaired in accordance with the manufacturer's recommended requirements.
- HVAC system repair will be made by a technician licensed to do business in the State of California.
- Any adjacent areas to HVAC systems will be free of litter, dirt accumulation, and unnecessary storage.

Electrical Systems

- Electrical lines and equipment (including but not limited to conduits, fuses, panels, and switches) will be maintained from the electric meter.
- All work will be equipped with properly functioning safety equipment, overload protective devices, and switches.

- Any high voltage (220 volts and higher) contact points will be marked as such in accordance with all applicable laws, including but not limited to National Safety Council standards.
- Any new installation of electrical systems (including but not limited to additions of electric panels or subpanels, new circuits or meter boxes, renovations or rewiring of existing electrical systems) will be conducted by an electrician, licensed to do business in the State of California, in compliance with all applicable laws, including but not limited to National Electrical Code requirements.

Water Systems

- The water distribution system will be maintained from water meter and throughout.
- The water distribution system will be maintained in such a manner as to show no evidence of leaks.
- Any new installation or major renovation of water distribution systems will be conducted by a plumber and/or contractor licensed to do business in the State of California.

Sewage Systems

- The internal building fixtures attached to the sewage disposal system (including sinks, toilets, urinals, and dish washing equipment) as well as lateral piping will be maintained from the point of connection to the sewer main into and throughout.
- Grease traps (interceptors) will be maintained and cleaned. Any heavy grease accumulation cause clogging within the main sewage system will be cleared from the line.
- Any effluent discharged will be treated and removed in accordance with all applicable laws, including but not limited to State of California Water Quality Control Board standards.

Natural and Liquefied Petroleum Gas Systems

- Natural and liquefied petroleum gas (LPG) systems will be maintained from the meter or tank into and throughout, and any installation of such systems will comply with all applicable laws, including but not limited to the National Fire Protection Association standards for the installation of gas appliances and gas piping and for storage and handling of liquefied petroleum gases.

Food Service Equipment

- Any and all equipment used in food service operations (including but not limited to dishwashers, refrigerators, freezers, and serving counters) will be

kept and maintained in compliance with all applicable laws, including but not limited to U.S. Public Health Service standards.

Roof System

- Roofing materials will be maintained to ensure that such materials are intact and are free of deterioration that would affect the structural qualities and are not jeopardized by adjacent tree limbs and other vegetation.
- Roof repairs will be made using the same type, size, style, and color of existing roofing materials.
- Any overhanging tree limbs and other vegetation that may cause roof deterioration will be trimmed and pruned. Such trimming or pruning will include any fungi or moss accumulation in or on roofing materials.
- Gutters, downspouts, and roof drains will be cleaned and maintained in such a manner as to ensure that such gutters, downspouts, and roof drains are free of obstructions and that all openings are clear and fully operational.
- Gutter and downspout surfaces will be maintained to prevent deterioration of or structural damage to the improvements.

Foundation and Exterior Surfaces

- The foundation and exterior surfaces will be maintained in such a manner as to prevent differential settlement or lateral, vertical, or longitudinal displacement.
- Exterior surfaces will be maintained in such a manner as to prevent water and moisture from entering or causing other deterioration of or damage to the buildings.
- Exterior surfaces of the improvements will be kept free of encroaching tree limbs or other vegetative growth.
- Exterior surfaces of the improvements will be repaired using the same size, style, type, and grade of material as exists.
- Any repaired or replaced exterior surfaces will be painted with a minimum of one coat of primer and two coats of paint to match existing color and type.
- Doors and windows will be maintained to prevent water or moisture from entering and causing deterioration of or damage.
- In-kind replacement of broken or cracked glass panes to match thickness and historic characteristics (texture, sheen, waviness) of the existing or historic glass materials. Temporary boarding of broken glass to seal enclosures immediately should not compromise the framing or surrounding materials.
- Repainting historic and non-historic surfaces that have been previously painted using similar paint type to match existing or historic colors. Paint removal will be conducted with nondestructive methods (no chemical use or sandblasting).

- Repointing or mortar repair for historic and non-historic masonry using mortar mixes to match existing or historic materials, color, and texture.
- Installation of impermanent carpet, other coverings and equipment over existing non-character-defining flooring (e.g., vinyl and/or vinyl asbestos flooring). Historic terrazzo, stone, and tile floors and stairs will not be altered.
- Energy conservation actions to meet standard reductions in energy use that do not compromise the integrity of historic properties, including replacement or installation of compatible caulking or weather-stripping at doors, windows, and other penetrations that require weatherproofing.
- Hazardous material (e.g., lead paint, asbestos, and mold) testing, remediation, and abatement that does not require the removal of historic materials or alteration of visible contributing elements of historic property.
- Removal of pests, such as termites, insects, rodents, and animal debris without damaging adjacent surfaces. Ventilation systems of the improvements (including but not limited to wire screen, metal or wooden louvers) will be maintained to the great extent possible in such a manner as to prevent birds, bees, rodents, and other wildlife from entering the improvements.
- Removal of vines and other vegetation that is potentially damaging to building materials.
- Replacement of non-character-defining insulation (ceilings, attics, basement spaces), plumbing, HVAC equipment, electrical systems, telecommunications equipment, security systems, or fire suppression systems with upgraded systems that do not require physical, visual, or noise intrusion that could compromise the historic property's integrity.
- Repair or renovation of interior spaces of buildings determined not eligible for the NRHP.
- Demolition of buildings or structures determined not eligible for the NRHP where no historic properties are within the APE.
- Rehabilitation work to historic properties in accordance with approved reuse guidelines established by historic preservation professionals who meet the Secretary of Interior's Professional Qualification Standards (see Section 5.2.3).

Fire Alarms and Sprinklers; Fire Protection Systems, Fire Escapes and Emergency Exits

- Fire alarms and sprinkler systems will be kept and maintained in full operating condition at all times in accordance with all applicable laws, including but not limited to the National Fire Protection Association requirements.
- Fire protection systems, fire escapes, and emergency exits will be maintained to ensure a safe and expedient exit at all times in accordance with all applicable laws.
- Fire exit doors with fully operable panic hardware will be maintained in fully operating condition at all times and will be identified by illuminated fire exit signs.
- For any new installation of fire alarms, sprinklers, fire protection systems, fire escapes, and emergency exits, such installation will be conducted by a licensed contractor.

Exterior Lighting

- Exterior lighting will be kept and maintained in full operational condition. Installations will be done by a California-licensed electrician/contractor and will be energy efficient with dusk-to-dawn controls or timers to provide energy conservation.

Site and Landscape Maintenance

- Repair or in-kind replacement of existing signs, fences, walkways, driveways, and parking areas to match existing design, form, texture, and materials.
- Repair or in-kind replacement of existing above-ground fuel, propellant, and chemical storage facilities.
- Placement of temporary barriers.
- Ongoing maintenance of existing landscaping, including grass cutting; hedge trimming; tree pruning; and removal of dead, diseased, or hazardous vegetation. Historic landscape themes will be maintained and continued in historic settings and districts.
- Removal of pests, such as termites, insects, rodents, and animal debris without damaging adjacent surfaces

Alteration or Demolition

- The HPO must review the activity through the Section 106 process (see SOP No. 1).

Leasing

- The HPO must review the activity through the Section 106 process (see SOP No. 1). Leasing or licensing for events less than 45 days that will make no permanent alterations to facilities will not be considered an adverse effect. The lessees will be made aware of historic preservation requirements (see SOP No. 6).

Transferring Existing Buildings or Structures

- The HPO must review the activity through the Section 106 process (see SOP No. 1).

6.1.6 SOP No. 6: Coordination of Tenant/Lessee Projects with CRM Program

In compliance with Section 106 of NHPA and its implementing regulations, this SOP specifies procedures to coordinate tenant/lessee projects with the requirements of NASA's CRM Program for such undertakings on behalf of ARC. This SOP is applicable to historic properties that are listed in the NRHP, eligible for the NRHP, or potentially eligible for the NRHP and may be impacted by actions proposed by tenants/lessees.

Applicable Laws/Regulations/Procedural Requirements

- National Historic Preservation Act
- National Environmental Policy Act

- NASA Policy Directive 8500.1
- NASA Procedural Requirement 8510.1

Policy

- NASA will proactively protect and preserve NRHP-eligible historic buildings, structures, and districts. The HPO will periodically inspect the condition of all NRHP-eligible buildings, structures, and districts to monitor the compliance of undertakings and to ensure that deterioration through neglect or natural disasters has not adversely affected the properties. Deterioration will be documented in writing and photographs and will be reported to SHPO.
- Avoidance of adverse effects to NRHP-eligible historic buildings will be proactively incorporated into the planning process.
- Until such time as SHPO has concurred with NASA's determination that a historic building is ineligible for inclusion to the NRHP, it will be treated as potentially eligible.
- All buildings and structures listed in or considered eligible for the NRHP will receive priority and regular maintenance to prevent deterioration through neglect.
- Maintenance, repair, alterations, and demolition of historic buildings should be performed in accordance with the Secretary of the Interior's Standards and Guidelines for the Treatment of Historic Properties or other provisions under Section 106.
- Maintenance, repair, alteration, or demolition activities that would disturb soils at a historic site must undergo an archaeological survey before the activity may proceed.
- Procedures covered herein apply to in-house work, contracted work, and work conducted by outside agencies or tenants to ARC facilities.

Procedures

Any leasing/licensing of historic properties must follow the same guidelines for cultural resources management and Section 106 consultation as required for ARC-initiated federal undertakings. The tenant/lessee will notify the HPO of any proposed action that may impact historic properties, including rehabilitation or structural alteration or changes to the landscape/landscape features, and will provide a detailed description of the undertaking prior to any action. Supporting documentation submitted to the HPO should include, at a minimum:

- A written description of the proposed action in as much detail as known at the time of the submittal. Describe which physical features will be modified and how the action will modify the original design and character-defining features of the property, the methods for conducting the work, and the materials that will be used.
- Visual representation of the proposed action, including photos of the location of proposed work, architectural drawings (e.g., site plan, floor plans, and elevations), and sample materials (if known).

- A written description of efforts to incorporate the Secretary of the Interior's Standards for the Treatment of Historic Properties, as well as alternative solutions that were explored to reduce or avoid impacts to the character-defining features of the historic property.

Within 30 days of receipt of such notification and adequate supporting documentation (including a completed Environmental Checklist), the HPO will notify the lessee/licensee in writing that the action:

- results in "No Historic Properties Affected" or "No Adverse Effect," and that the lessee/ licensee may proceed, or
- results in "Adverse Effect," and that the lessee/licensee may not proceed until the requirements of Section 106 discussed below are met.

If the HPO determines that the action results in "Adverse Effect," the HPO may, with the assistance of the tenant/lessee, fulfill the requirements of Section 106 (see SOP No. 1 for an explanation of the Section 106 process). The lessee/licensee will not undertake the proposed action until the HPO notifies the lessee/licensee that the requirements of the Section 106 process have been fulfilled and the lessee/licensee may proceed.

6.1.7 SOP No. 7: Protecting Archaeological Resources

Every undertaking that disturbs the ground surface has the potential to adversely affect known archaeological deposits. Construction, demolition, utility maintenance and upgrades, road repair, etc. are typical Center activities that could disturb soil and archeological resources. Additionally, natural resource management activities such as habitat management (e.g., food plots, cover plantings, and pond construction)and land rehabilitation activities (e.g., erosion control, restoration, and remediation) are activities that have the potential to adversely affect known and unknown archaeological sites.

NPR 8510.1 requires an SOP for protecting archaeological resources. In compliance with Section 106 of NHPA, NEPA, NAGPRA, AIRFA, and ARPA, this SOP outlines the policies and procedures to be followed when planning such undertakings.

Applicable Laws/Regulations/Procedural Requirements

- National Historic Preservation Act
- National Environmental Policy Act
- Native American Graves Protection and Repatriation Act
- American Indian Religious Freedom Act
- Archaeological Resources Protection Act
- NASA Procedural Requirement 8510.1
- Executive Order 11593

Policy

- The HPO in the Facilities Engineering Division is designated as the point of contact for the Section 106 process, including those projects proposed by organizations that are subject to the Section 106 process.
- EMD, as delegated by HPO, implements the CRM Program for archaeological resources, and coordinates with external regulatory agencies that regulate environmental and cultural resource programs in regard to Tribal properties and resources, and to archaeological resources (e.g., sites, artifacts, features, or other archaeological indications of past human activities).
- Until such time as NASA has determined an archaeological site to be ineligible for inclusion in the NRHP, all known sites will be treated as eligible; therefore, they will be avoided wherever possible.
- All machine-aided excavations or other earth-moving projects will be designed to avoid damage to archaeological sites or other historic properties, including landscapes that may be eligible for the NRHP.
- The avoidance or mitigation of adverse impacts to NRHP-eligible sites will be proactively incorporated into the design and planning process and included in project cost estimates, rather than deferred until archaeological deposits may be discovered during actual construction.
- It is the responsibility of the digging contractor to contact any cable, optical fiber, or telephone company before beginning excavation.
- The digging is event specific and permits cannot be reused at another work site or reused at the same site at another time after the original work has been completed.
- NASA will consult with federally recognized Tribes as sovereign nations, as afforded them in the Section 106 process when an undertaking is found to affect properties having historic value to that federally recognized Tribe (see 36 CFR Part 800.1(c)(2)(iii) and 36 CFR Part 800.2(c)(2)(ii)(b)(c).
- NASA will afford other, nonfederally recognized tribes the opportunity to participate as interested persons in the Section 106 process when an undertaking is found to affect properties having historic value to that tribe (see 36 CFR Part 800.1(c)(2)(iii)).

Procedure

I. All planned activities that may result in disturbance to the ground surface will be reviewed by the HPO, EMD, and/or contracted archaeologist. To ensure compliance with Section 106 of NHPA, NEPA, NAGPRA, AIRFA, and ARPA, the following procedures should be followed:

A. Prior to beginning any digging, the excavation proponent will obtain a dig permit from the NASA Contracting Officer. If the HPO/EMD/contracted archaeologist determines that the project is located within an area of elevated archaeological sensitivity, the EMD will determine the appropriate level of caution in order to avoid impacts to

potential significant cultural resources, including those that have not yet been identified. Such levels of caution include, but are not limited to, avoidance and archaeological monitoring.

B. The personnel doing the digging will contact the occupants of the surrounding buildings to determine what cable, optical fiber, or telephone lines are being used in order to locate underground services.

C. The personnel doing the digging will contact any cable, optical fiber, or telephone company before beginning excavation.

D. When digging on NASA property, proceed with utmost caution. If unidentifiable material that is unrelated to utilities is discovered, digging should stop and the EMD should be notified to provide assistance in identifying the material.

II. If the proposed undertaking's effect is not known, then the HPO, EMD, and/or consulting archaeologist will determine whether the project APE has been archaeologically inventoried and concurred with by SHPO.

A. If the proposed undertaking involves removing or remediating buried hazardous waste or other potentially dangerous materials, then no pedestrian or ground intrusive inventory is to be conducted within the project APE, except as may be warranted for the emergency discovery of archaeological deposits. The EMD should identify the APE associated with the remediation, etc., and notify SHPO and federally recognized Tribes of the proposed undertaking and situation while working within the regulations set forth under 36 CFR Part 800. Since further identification is not possible, the EMD will consult accordingly.

1. NASA personnel or their contractors who work in an APE that has not been surveyed because of the potential for buried hazardous waste or other potentially dangerous materials must use the minimum amount of excavation to uncover and assess the waste or other hazardous material.

B. If an area must be surveyed where there is the potential for buried hazardous waste or other potentially dangerous materials, and the undertaking does not involve removal or remediation, NASA or its contractor must prepare a safety and health plan in accordance with NASA guidelines.

C. If an archaeological inventory has not been completed and concurred with by SHPO for the project APE, the EMD will ensure that professional archaeologists complete an inventory. Further planning of the undertaking may proceed while the inventory is being completed with the understanding that the discovery of archaeological sites will require Section 106 consultation and may require a change in the plans or further archaeological testing. When the inventory is completed, the report of findings will be submitted to SHPO for concurrence. If there are no archaeological sites in the project area and SHPO has concurred with the report findings, as well as the finding of "No Historic Properties Affected," the project may proceed.

D. If an archaeological inventory has been completed and accepted by SHPO for the APE, the HPO, EMD, and/or consulting archaeologist will determine whether the undertaking will affect a known archaeological site.

1. If no archaeological site has been recorded within the APE, or if all archaeological sites that may be affected by the undertaking have been determined by NASA to be not eligible for inclusion in the NRHP and SHPO has concurred, the HPO will propose a "No Historic Properties Affected" finding to SHPO and THPOs, notify consulting parties, and provide documentation specified in 36 CFR Part 800.4(d), allowing 30 days for review.

a) If there are no objections from SHPO or other consulting parties after the review period, the EMD may allow the excavation to proceed without further action, except responding to the discovery of inadvertent archaeological deposits.

2. For those occasions where eligibility is not yet known but impacts will still occur, NASA will develop a testing plan in coordination with SHPO for the purpose of determining eligibility. Excavation and other disturbances in the vicinity of the site will be suspended until an agreed testing procedure has been carried out and sufficient data have been gathered to allow a determination of eligibility and SHPO has concurred with NASA's determination of eligibility.

3. If any archaeological sites that may be affected by the undertaking have been determined by NASA to be eligible for inclusion in the NRHP, then the EMD will coordinate to determine if the undertaking can be redesigned or relocated to avoid adverse impact to historic properties.

a) If the undertaking is redesigned or relocated to avoid adverse effects, new locations will also be inventoried and tested for eligible properties if they have not been inventoried. If there are no objections from SHPO or other consulting parties after the review period, the HPO may determine "No Adverse Effect," and may allow the undertaking to proceed without further action, except as may be warranted for the emergency discovery of archaeological deposits.

b) If the undertaking cannot be redesigned or relocated and will result in an adverse effect, NASA will implement one of the following alternative actions, depending on the urgency of the undertaking being planned.

(1) NASA will enter into an MOA to resolve adverse effects in accordance with 36 CFR Part 800.6 with SHPO, federally recognized Tribes, and other consulting parties as appropriate including tenants. The MOA will specify the scope and level of effort of data recovery or other measures required to mitigate the adverse impact of the project on the site in question.

(2) When the recovery of Native American human remains or funerary objects is deemed likely, NASA may initiate excavation in compliance with NAGPRA. Such excavations will be coordinated with identified and established Native American tribal groups, if Native American remains are found.

(3) NASA may request comments from ACHP and may develop and implement actions that take into account the effects of the undertaking and the comments of both SHPO and ACHP. If SHPO and ACHP both indicate that the property is significant and the effects of the undertaking on the property are serious, then NASA will make reasonable efforts to minimize harm to the property until such time as the Section 106 process is completed.

c) If the proposed undertaking is listed as "No Historic Properties Affected," then the HPO, EMD, or consulting archaeologist will write a journal note to the work order, and the undertaking may proceed.

6.1.8 SOP No. 8: Inadvertent Discovery of Archaeological Resources

Regardless of whether an archaeological inventory has been completed and regardless of whether a planned undertaking has been assessed for its effect on known historic properties, every undertaking that disturbs the ground surface has the potential to discover buried and previously unknown archaeological deposits. NPR 8510.1 requires an SOP for responding to inadvertent discovery of archaeological resources. This SOP outlines the policies and procedures to be followed in such cases.

Applicable Laws/Regulations/Procedural Requirements

- National Historic Preservation Act
- National Environmental Policy Act
- Archaeological and Historic Preservation Act
- Archaeological Resource Protection Act
- Native American Graves Protection and Repatriation Act
- NASA Procedural Requirements 8580.1 and 8510.1

Policy

- The HPO in the Facilities Engineering Division is designated as the point of contact for the Section 106 process, including those projects proposed by organizations that are subject to the Section 106 process.
- EMD, as delegated by the HPO, implements the CRM Program for archaeological resources, and coordinates with external regulatory agencies that regulate environmental and cultural resource programs in regard to Tribal properties and resources, and to

archaeological resources (e.g., sites, artifacts, features, or other archaeological indications of past human activities).

- Archaeological deposits that are newly discovered during any undertaking will be evaluated for their NRHP eligibility.
- Until NASA has determined an archaeological site is ineligible, all known sites will be treated as eligible and will be avoided insofar as possible.
- In the event that an archaeological deposit is inadvertently discovered, work must cease, the HPO must be notified, and a professional archaeologist must be consulted. Prehistoric archaeological material may include flaked stone tools (projectile point, biface, scraper, etc.), debitage (flakes), groundstone milling tools and fragments (mortar, pestle, handstone, millingstone, etc.), faunal bones, fire-affected rock, and midden deposits. Historic archaeological material may include cut nails and other metal hardware, glass fragments, ceramic or stoneware fragments, milled or split lumber, structural remains, and trash dumps.
- If the professional archaeologist and NASA recommend that the archaeological deposit is eligible, the HPO will consult with SHPO and federally recognized Tribes on the need for further testing and/or data recovery.
- If the planned undertaking(s) may affect properties having historic value to any federally recognized Tribes with which NASA consults, the HPO will consult with the federally recognized Tribes and give them an opportunity to participate as interested persons during the consultation process.
- In the event that human remains are inadvertently discovered, work must cease in the area of the discovery and the HPO and EMD must be notified. If remains are determined to be human, federally recognized Tribes will be notified and SOP No. 9, Treatment of Human Remains and Funerary/Sacred Objects, will be followed.

Procedure

I. Workers will notify the EMD immediately upon the discovery of possible archaeological deposits. (Standard language will be placed in contracts requiring contractors to notify the HPO/EMD immediately upon discovery of possible archaeological deposits.)

II. When notified of the possible discovery of unexpected buried archaeological material, the EMD will arrange to have a professional archaeologist evaluate the site. Work will cease and the site will be protected pending the results of the evaluation.

   A. If fossils, natural stones, concretions, or other such items that are sometimes mistaken for archaeological materials are recovered, then the EMD may allow the excavation to proceed without further action.

   B. If disturbances to the deposit have been slight and the project can be relocated to avoid the buried site, the EMD will determine if recordation with DPR 523 forms is warranted. If warranted, the DPR forms will be submitted to SHPO, in a routine

manner, having avoided further adverse impact through relocation of the proposed undertaking.

C. If the location of the project cannot be changed, the EMD will contact SHPO by telephone or email, to report the discovery and initiate emergency consultation.

1. If the deposits are evaluated as ineligible for inclusion in the NRHP by a professional archaeologist, the EMD will have the site recorded and DPR 523 Inventory forms submitted to SHPO for concurrence. Upon concurrence by SHPO that the deposits are ineligible for the NRHP, NASA may allow the excavations to proceed and will advise the excavation foreperson(s) of the possibility and nature of additional discoveries that would require immediate notification of the EMD.

2. If, in the opinion of the professional archaeologist, the existing information is deemed insufficient to make a determination of eligibility, then an emergency-testing plan will be developed by NASA in coordination with SHPO and federally recognized Tribes. Further excavation in the vicinity of the site will be suspended until an agreed upon testing procedure has been carried out and sufficient data have been gathered to allow a determination of eligibility.

a) If SHPO and the EMD agree after testing that the site is ineligible for listing in the NRHP, then work on the project may resume.

b) If the site appears eligible for listing in the NRHP, or if NASA and SHPO cannot agree on the question of eligibility, then NASA will implement the following alternative actions, depending on the urgency of the action being delayed by the discovery of cultural material.

3. NASA may relocate the project to avoid adverse effect.

4. NASA may proceed with a data recovery plan under an MOA with ACHP, SHPO, and federally recognized Tribes. The MOA will specify the scope and level of effort of data recovery required to mitigate the adverse impact of the project on the site in question.

5. NASA may request comments from ACHP and may develop and implement actions that take into account the effects of the undertaking and the comments of SHPO, federally recognized Tribes, and ACHP. Interim comments must be provided to NASA (as soon as possible) and formal comments within 30 days.

III. If examination by a professional osteologist indicates the materials are of human origin, an archaeologist must make a field evaluation of the primary context of the deposit and its probable age and significance, record the findings in writing, and document the materials.

A. If at any time human remains, funerary objects, or Native American sacred objects are discovered, the EMD will ensure that the provisions of NAGPRA and/or AIRFA are implemented.

B. The EMD will begin consultation with federally recognized Tribes in accordance with NAGPRA.

6.1.9 SOP No. 9: Treatment of Human Remains and Funerary/Sacred Objects

NAGPRA requires the inventory of human remains, funerary objects, sacred objects, or objects of cultural patrimony recovered from federal lands that may be subject to claim by Native American tribal groups. NAGPRA also requires active consultation with such groups to determine the disposition of such remains and objects. No Native American human remains or sacred/funerary objects are currently known to exist on ARC property; however, previously undocumented excavations may have encountered human remains and/or sacred/funerary objects and future undertakings may inadvertently encounter these materials. NPR 8510.1 requires an SOP for the treatment of human remains and funerary objects. This SOP outlines the policies and procedures to be followed to ensure future compliance with NAGPRA.

Applicable Laws/Regulations/Procedural Requirements

- Native American Graves Protection and Repatriation Act
- American Indian Religious Freedom Act Policy
- NASA Procedural Requirement 8510.1

Policy

- The HPO in the Facilities Engineering Division is designated as the point of contact for the CRM Program.
- EMD, as delegated by the HPO, implements the CRM Program for archaeological resources, and coordinates with external regulatory agencies that regulate environmental and cultural resource programs in regard to Tribal properties and resources, and to archaeological resources (e.g., sites, artifacts, features, or other archaeological indications of past human activities).
- No Native American human remains, funerary objects, or sacred objects will be knowingly kept in government possession without preparation of an inventory and initiating consultation.
- Consultation regarding the disposition of Native American human remains, funerary objects, or sacred objects will be initiated in accordance with NAGPRA.

Procedure

The EMD will ensure that ARC complies with NAGPRA requirements and the implementing regulations (43 CFR Part 10).

I. The EMD will review all records to determine whether any human remains, funerary objects, sacred objects, or objects of cultural patrimony originating on ARC property are known to exist.

A. If no such objects are found, no consultation is required.

B. If any such objects are found to be not inventoried, the EMD will prepare an inventory of all such objects and will initiate consultation procedures with the Archaeological Assistance Division, National Park Service (Post Office Box 37127, Washington, D.C. 20013; telephone 202–343–4101; facsimile 202–523–1547) and federally recognized Tribes to determine appropriate disposition.

II. If human remains or artifacts that are not currently in government possession but that are suspected to be from ARC property are returned to the government, the EMD will arrange to have a qualified professional examine and evaluate them.

A. If the remains are not of human origin, then no further action by the EMD is necessary.

B. If the remains are not of Native American origin, then they will be treated as an inadvertent discovery of archaeological deposits (see SOP No. 8).

C. If the remains are of Native American origin, then the EMD will prepare an inventory of the remains and initiate consultation procedures with the Archaeological Assistance Division, NPS.

III. If human remains are discovered during the course of any undertaking, the following procedures will apply:

A. Work will immediately cease in the vicinity of the human remains.

B. The site supervisor will immediately notify NASA Law Enforcement/Center Protective Services and the EMD.

1. If NASA Law Enforcement/Center Protective Services officers determine that the remains are of recent origin, then no further action by the EMD is necessary.

2. If the remains are not recent, the EMD will arrange to have a professional archaeologist visit the site in a timely manner to examine and evaluate the recovered material.

a) If the remains are not of human origin, then they will be treated as an inadvertent discovery of archaeological deposits (see SOP No. 8).

b) If the remains are not of Native American origin, then the site will be treated as the discovery of inadvertent archaeology deposits. However, it should be noted that, although all human remains are to be treated with dignity, not all human remains, cemeteries, etc., are NRHP properties.

c) If the remains are of Native American origin, then further work in the vicinity will be suspended for 30 days to allow for consultation, as required by NAGPRA. If any photographs are taken of the undertaking, only general

photographs of the site area are to be taken. Prior to removal of any remains, the HPO will prepare an inventory of the remains and will immediately initiate emergency consultation procedures with the Archaeological Assistance Division, NPS, and federally recognized Tribes.

3. If consultation allows the remains to be removed, then the EMD will cause the remains to be treated and disposed in accordance with the consultation.

4. Notwithstanding the results of consultation, the EMD will ensure that Section 106 procedures are adhered to with regard to evaluating sites.

6.1.10 SOP No. 10: Native American Consultation

The following SOP is based on NHPA Section 106 implementing regulations, 36 CFR Part 800 in effect at the time of this ICRMP. NPR 8510.1 requires an SOP for consulting with Native Americans, and this SOP outlines the process.

Applicable Laws/Regulations

- National Historic Preservation Act
- 36 CFR Part 800
- Native American Graves Protection and Repatriation Act
- American Indian Religious Freedom Act
- NASA Procedural Requirement 8510.1

Policy

- The HPO in the Facilities Engineering Division is designated as the Point of Contact for the Section 106 process, including those projects proposed by organizations that are subject to the Section 106 process.
- EMD, as delegated by HPO, coordinates with external regulatory agencies that regulate environmental and cultural resource programs in regard to Tribal properties and resources, and to archaeological resources (e.g., sites, artifacts, features, or other archaeological indications of past human activities).
- Project managers are required to coordinate internally with EMD before they begin work on any projects or undertakings.
- All consultation required under Section 106 and NAGPRA must be completed prior to beginning the project.
- Historic properties include districts, buildings, sites, structures, or objects and landscapes that are listed in, or are eligible for listing in, the NRHP. Historic properties may also include TCPs or Native American sacred sites. A property that is eligible for listing in the NRHP receives all the regulatory protection of a property that is listed in the NRHP.

Procedure

The following SOP is based on the standard Section 106 procedure outlined in 36 CFR Part 800 (see SOP No. 1).

I. Once EMD initiates consultation under Section 106, NASA contacts consulting parties to confer on all steps of the Section 106 process, including identification and evaluation of potential historic properties within the APE, and potential effects on historic properties that are present within the APE. Consulting parties in the Section 106 process may include, as appropriate, SHPO, THPOs, federally recognized Tribes, representatives of local governments, individuals or organizations with a demonstrated interest in the effects of the undertaking on the historic properties, and the public. NASA must give ACHP an opportunity to become a consulting party in the case of a determination of "Adverse Effect," and ACHP may choose to be a consulting party.

II. EMD provides project-related information to consulting parties for review, including its determination of effect ("No Historic Properties Affected"; "No Adverse Effect"; or "Adverse Effect"). The length of SHPO review varies. The shortest length of review time is 30 days; however, there is no established timeline for an adverse effect. All consultation required under Section 106 must be completed prior to beginning the project.

III. Tribal representatives must be included in the scoping process for assessing environmental impacts. Other Native Americans, including traditional cultural leaders, may participate as interested parties. Impacts to treaty rights and resources important in sustaining Native American activities, such as plant harvesting, hunting, fishing, and water rights should, as appropriate, also be considered in the NEPA process. NEPA requires federal agencies to request comments of federally recognized Tribes (40 CFR Part 1503.l(a)(ii)).Review of proposed project plans will be coordinated with SHPO and appropriate THPOs through the submission of project information and draft reports.

A. Where SHPO and THPOs concur with NASA's determination of effect, the final report will reflect that concurrence.

B. Where SHPO or THPOs do not concur with NASA's determination of effect, NASA will continue to consult to reach agreement. When agreement cannot be reached, ACHP may be asked to resolve the disagreement and the disagreement will be so noted in the final report.

6.1.11 SOP No. 11: Curating Archaeological Collections

NASA is responsible for preservation of all archaeological collections and associated documents and photographs recovered on ARC property. Because ARC does not have an existing curation facility, it may be necessary to establish a curation facility or enter into an agreement with an existing curation facility. Collections may be the result of contracted and in-house compliance activity and inadvertent discovery on ARC. NPR 8510.1 requires an SOP for curating archaeological collections and records of historic properties. This SOP outlines guidelines and instructions to be followed by private consulting firms for the preparation of archaeological materials and associated documents, maps, and photographs.

Applicable Laws/Regulations/Procedural Requirements

- National Historic Preservation Act
- Curation of Federally Owned and Administered Archaeological Collections (36 CFR Part 79)
- NASA Procedural Requirement 8510.1

Policy

- Per NPR 8510.1, Centers and Component Facilities will "serve as the Federal Agency Official, as defined in 36 CFR Part 79, with management authority over the Center or Component Facility's archaeological collections" (NPR 8510.1.3e).
- The Center or Component Facility is responsible for ensuring that "funding is available to coordinate the disposition of archaeological collections and associated records in curation facilities that comply with the requirements in 36 CFR Part 79, NHPA, ARPA, and other applicable regulations" (NPR 8510.1.3f).
- All archaeological materials recovered from ARC will be curated in accordance with 36 CFR Part 79.
- All archaeological materials recovered from ARC will be curated at a repository that has the curatorial capabilities outlined in 36 CFR Part 79 (available online at http://www.cr.nps.gov/archeology/tools/36cfr79.htm).
- All archaeological materials will be prepared in accordance with this SOP prior to being sent to a curation facility.
- All archaeological contracts that may result in materials to be curated will contain requirements and provide funds in the contract that the contractor will prepare all archaeological materials according to the procedures in this SOP and will pay for and deliver the archaeological materials to the curation facility.

Procedure

EMD will ensure that all contracts for archaeological services include the following:

I. All artifacts should be cleaned and stabilized prior to shipment to the repository, except in instances where an uncleaned condition may facilitate a particular form of analysis (e.g., charcoal for C14). In such cases, appropriate documentation of the artifact's condition and the proposed analysis should be included in the artifact inventory and laboratory methods section in a technical report of the discovery.

   A. Cleaning:

      1. For material collected on ARC, use a plain water rinse with a little soft brushing as necessary.

2. Pottery sherds should be treated with particular care during brushing to prevent any abrasion of the surface by the brush.

3. Sherds should not be cleaned at all if any soot-like material remains on the exterior or interior surfaces.

4. Metal artifacts should not be washed but merely dry brushed as needed.

B. Stabilization: Items requiring specialized conservation measures should be stabilized on a case-by-case basis and further documented in the artifact inventory and laboratory methods section in a technical report of the discovery.

C. Sorting:

1. For Phase I Surveys, the collections are to be sorted by site number, project name, provenience, and number of artifacts.

2. If there are 100 or more artifacts such as in Phase II or Phase III testing, sort artifacts by artifact category (e.g., lithic, prehistoric ceramic, historic ceramic, metal, glass, other historic, ethnobotanical, or faunal).

3. All artifacts are put in 4-mil resealable plastic bags.

4. All bags are to be labeled with permanent ink, with the site number, project name, provenience, a count of the artifacts, and the field specimen number. Metal artifacts, prehistoric pottery, and any faunal material will be separated into separate individual smaller bags and placed inside the larger artifact bag.

5. Place acid-free tags labeled with the same information in the bags.

6. Place bagged material that has been organized by site and provenience in cardboard artifact boxes.

7. Make a catalog of the content of each box. On a sheet of paper, list the field specimen numbers for each bag.

8. Number each box (see D below) and enclose a box catalog (packing list or inventory control document) in the box.

9. Store all field and lab documentation in acid-free file folders.

10. Label all photographic material with acid-free permanent ink and place in archival-quality polypropylene sleeves.

11. Make a master box catalog that will list the project name, all artifacts recovered, their site number and provenience, and the contents of each bag in the box.

D. Boxes:

1. Site bags will be placed in numeric order in a standard, acid-free storage box (l0 inches high, 12.5 inches wide, and 15 inches long).

2. Box labels must be placed on the "width" end (below handle hole) of each sealed box.

   a) Labels include the site numbers and/or other relevant additional information.

   b) Labels should be typed or handwritten in large font and bold letters for easy reading.

   c) Box labels must be self-adhesive or securely attached to boxes with adhesive tape.

   d) The minimum label size for the standard storage box is 3 × 5 inches.

   e) Multiple boxes for each site or project collection should be marked on the label with sequential box numbers (Box 1 of 4, Box 2 of 4, etc.). Such numbers must be applied to all boxes, containers, or other packaged artifacts, samples, documents, records, etc., and cross-referenced to packing lists or similar inventory control documents.

E. Special Packaging

1. Particularly delicate items, such as ethnobotanical and faunal samples, should be wrapped in aluminum foil and placed in a solid-side container such as a small acid-free box or plastic film canister before packaging with the rest of the site collection.

2. Oversized artifacts must be securely tagged with appropriate information on acid-free poster board, and Mylar or Tyvek tags.

3. Soil samples should be completely dry before sealing in a 4-mil-thick bag and packed separately from the site collection.

F. Shipping

1. To pack artifacts for shipping, place Styrofoam peanuts at the bottom of the box to act as a buffer and reduce excess volume. Do not use newspaper.

2. Place materials in position, then fill the remaining volume with Styrofoam peanuts to keep the materials in an upright or stable position within the exterior storage box. The weight of boxed collections should be distributed as evenly as possible.

3. Standard acid-free storage boxes are suitable for shipping if the contents are appropriately packed.

4. Ship the boxes to the curation facility and pay the facility in accordance with their current collection management services fees.

6.1.12 SOP No. 12: Emergency Procedures in the Event of Natural or Other Disasters

NPR 8510.1 requires an SOP for emergency procedures in the event of natural or other disasters. This SOP should be initiated in the event of emergencies such as wildfires, hurricanes, tornadoes, flooding, and earthquakes, that affect NHLs; buildings and structures eligible for or listed in the NRHP either individually or as part of historic districts; buildings and structures that are over 50 years in age that have not been evaluated for NRHP eligibility; and buildings or structures that may have exceptional significance in accordance with Section 110 of NHPA.

Applicable Laws/Regulations/Procedural Requirements

- Section 106 of NHPA
- National Environmental Policy Act for federally supported actions that require it
- Secretary of the Interior's Standards and Guidelines for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings
- 36 CFR Part 800
- 40 CFR Part 1500–1508
- NASA Procedural Requirement 8510.1

Policy

- The overall goal is to work to protect standing built resources within an emergency response setting. If buildings are threatened by any number of potential natural or man-made disasters, responses to emergencies and all planning for emergency response related to built resources at ARC will be carried out in accordance with all statutory applications. Emergency procedures will be initiated as required by the situation. Emergencies include earthquakes, fire, flood, vandalism, and acts of nature, such as falling trees. Emergency personnel, including fire and police, should be contacted as appropriate to the situation, and the HPO should be informed of the nature and location of the emergency as soon as possible.
- It should be noted that immediate rescue and salvage operations conducted to preserve life or property are exempt from the provisions of NHPA.

Procedures

I. NASA Center organizational elements, including the Emergency Operations Center, tenants, and other parties identified by the Center Director must:

   A. Contact the HPO immediately to determine whether any built resources are present within the affected area.

B. Coordinate with the HPO if the area has resources so they can be identified and avoided or stabilized where possible. All reasonable efforts should be made to avoid or minimize disturbance to any significant built resources.

C. Coordinate with the HPO to implement emergency stabilization measures to protect the historic property and to preserve historic fabric and features. In general, emergency stabilization measures include short-term and reversible repairs that do not harm historic fabric or features.

D. Personnel conducting these activities should communicate with the HPO regarding potential effects to significant built resources that could occur in association with such activities.

E. Review SOP No. 8 for inadvertent discovery of cultural material.

II. To ensure salvage or avoidance of built resources to the maximum extent possible in an emergency situation, the HPO must:

A. Check immediately to determine what, if any, buildings could be affected by the emergency.

B. Provide the Center Director and the Emergency Operations Center with necessary information about buildings so they can be protected/avoided, etc.

C. If an inadvertent discovery of cultural material is found during the emergency, review Section 5.2.8 of this ICRMP and follow SOP No. 4. Follow these procedures to the maximum extent possible.

III. The HPO will inform SHPO of the nature of the emergency affecting historic properties and of stabilization measures.

IV. Once the building has been stabilized and the immediate emergency operation completed, the HPO will initiate permanent repairs to be carried out in accordance with the Secretary of the Interior's Standards for Treatment of Historic Properties.

Other Considerations

NHPA provides for expedited review for actions that an agency proposes within 30 days of an emergency, which is defined as "a disaster or emergency declared by the President, a tribal government, or the Governor of a State or which respond to other immediate threats to life or property." In such cases, the HPO can request that the agencies and parties to consultation reply in 7 days or less. Notification may be verbal, followed by written communication. ARC may request an extension of the period of applicability from ACHP prior to expiration of the 30 days. The HPO will ensure that all personnel involved in the project are briefed regarding the protocol to be followed in the case of the inadvertent discovery of cultural resources during emergency operations (SOP No. 8).

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APPENDIX A

ACRONYMS, ABBREVIATIONS, AND DEFINITIONS

Appendix A
Acronyms, Abbreviations, and Definitions

Acronyms and Abbreviations

ACHP	Advisory Council on Historic Preservation
AHPA	Archaeological and Historic Preservation Act
AIRFA	American Indian Religious Freedom Act
APD	Ames Policy Directive
APE	area of potential effects
APR	Ames Procedural Requirement
ARC	Ames Research Center
ARPA	Archaeological Resources Protection Act
B.P.	Before Present
BTU	backhoe test unit
CA	Comprehensive Agreement
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CRHR	California Register of Historical Resources
CRM	Cultural Resources Management
DCA	departmental consulting archaeologist
DPR	Department of Parks and Recreation
EA	Environmental Assessment
EIS	Environmental Impact Statement
EMD	Environmental Management Division
EMS	Environmental Management System
EO	Executive Order
FASRON	Fleet Aircraft Service Squadron
FPO	Federal Preservation Officer
FR	Federal Register
GIS	Geographic Information System
GRC	Glenn Research Center
HAER	Historic American Engineering Record
HPO	Historic Preservation Officer
HRPP	Historic Resources Protection Plan
HVAC	heating, ventilation, and air conditioning
ICRMP	Integrated Cultural Resources Management Plan
IMA	interagency management agreement
INRMP	Integrated Natural Resource Management Plan
ISS	International Space Station
LTA	lighter-than-air
MFR	memo for record
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
NACA	National Advisory Committee for Aeronautics

NAGPRA	Native American Graves Protection and Repatriation Act
NAHC	Native American Heritage Commission
NAS	Naval Air Station
NASA	National Aeronautics and Space Administration
NASM	National Air and Space Museum
Navy	U.S. Department of the Navy
NEPA	National Environmental Policy Act
NHL	National Historic Landmark
NHPA	National Historic Preservation Act
NPD	NASA Policy Directive
NPR	NASA Procedural Requirement
NPS	National Park Service
NRHP	National Register of Historic Places
NRP	NASA Research Park
NWTC	National Wind Tunnel Complex
PA	Programmatic Agreement
PL	Public Law
PM	Presidential Memorandum
SHPO	State Historic Preservation Office
SOP	Standard Operating Procedure
SSTP	Small Spacecraft Technology Program
TCP	Traditional Cultural Property
THPO	Tribal Historic Preservation Officer
TPS	Thermal Protection Systems
U.S.	United States
U.S.C.	United States Code

Definitions

Advisory Council on Historic Preservation. The independent federal agency charged by NHPA to advise the President, Congress, and federal agencies on matters related to historic preservation. The Council also administers Section 106 of NHPA through 36 CFR Part 800, Protection of Historic Properties.

Archaeological Resources. Material remains of human life or activities that are capable of providing understanding of behavior and cultural adaptation through the application of scientific or scholarly techniques such as controlled observation, contextual measurement, controlled collection, analysis, interpretation, and explanation.

Consultation. A reasonable and good faith effort to involve affected parties in the findings, determinations, and decisions made during the Section 106 of the NHPA process and other processes required under NAGPRA, NEPA, ARPA, and other statutes and regulations. Consultations with federally recognized Tribes will be on a government-to-government level to respect tribal sovereignty and to recognize the unique legal relationship between the U.S. Government and federally recognized Tribes set forth in the U.S. Constitution, treaties, statutes, and court decisions.

Cultural Resources. Archaeological, Native American, and built resources including, but not limited to, buildings, structures, objects, districts, and sites.

Cultural Resource Professional. A person who meets qualifications in anthropology, archaeology, history, historical architecture, preservation planning, or other preservation specialties set forth in Section 112 of NHPA, Archeology and Historic Preservation: Secretary of the Interior's Standards and Guidelines, and 36 CFR Part 61, Appendix A.

Enhanced Use Lease. The authority in the Space Act (42 U.S.C. § 2459j) that gives the Administrator the opportunity to lease NASA real property to other federal agencies and non-federal entities at fair market value, to use the amounts collected to cover the full costs to NASA in connection with the lease, and to use the net proceeds of the lease for other purposes.

Federal Preservation Officer. The Agency official that NHPA charges with coordinating the Agency preservation program including interactions with the other agencies, states, Indian Tribes, National Park Service, Advisory Council on Historic Preservation, and others.

Heritage Asset. Property, plant, or equipment that is unique for its historical or natural significance; cultural, educational, or artistic importance; and/or significant architectural characteristics. Consists of (1) collection types such as objects gathered and maintained for exhibition, for example, museum collections, art collections, and library collections; or (2) non-collection-types such as parks, memorials, monuments, and buildings. It is reported in Agency financial statements in accordance with the Federal Accounting Standards Advisory Board (FASAB), Statement of Federal Financial Account Standards 29, Heritage Assets and Stewards Land. Heritage assets are defined in FASAB 29, Heritage Assets and Stewardship Land. NASA's heritage assets include real properties that also are historic properties. These are reported by the Office of the Chief Financial Officer (CFO) in NASA's annual financial report.

Historic Preservation. Section 301(8) of NHPA, 16 U.S.C. Part 470 w(8), states that historic preservation ―includes identification, evaluation, recordation, documentation, curation, acquisition, protection, management, rehabilitation, restoration, stabilization, maintenance, research, interpretation, conservation, and education and training regarding cultural resources. The Secretary of the Interior's Standards for the Treatment of Historic Properties (NPS 1992) defines historic preservation as ―the act or process of applying measures necessary to sustain the existing form, integrity, and materials of an historic property.

Historic Preservation Officer. A NASA employee who is designated by the Center Director and given the responsibility to manage cultural resources at the Center or Component Facility, if any, pursuant to NHPA, ARPA, NAGPRA, and other legal authorities.

Historic Property. Any district, site, building, structure, or object included in or eligible for inclusion in the NRHP per the criteria provided in 36 CFR Part 60.4. It also includes cultural resources defined as any prehistoric or historic district, site, building, structure, or object that is included in or eligible for inclusion in the NRHP maintained by the Secretary of the Interior and has met the eligibility requirements in 35 CFR Part 60.4. The term includes artifacts, records, and remains related to and located within such properties and includes properties of traditional

religious and cultural importance to an Indian Tribe or Native Hawaiian Organization that meets the NRHP criteria.

Indian Tribe. An Indian or Alaskan Native tribe, band, nation, pueblo, village, or community that the Secretary of the Interior acknowledges to exist as an Indian tribe pursuant to the Federally Recognized Indian Tribe List Act of 1994, 25 U.S.C. 479a.

Integrated Cultural Resources Management Plan. A plan that defines the policies and standard operating procedures for managing cultural resources at a NASA Center or Component Facility and is integrated into property management and other applicable Agency plans.

Memorandum of Agreement. A legally binding form of agreement document, as described in 36 CFR Part 800.6, to mitigate adverse effects on historic properties.

NASA Artifacts. Unique objects that document the history of the science and technology of aeronautics and astronautics. Their significance and interest stem mainly from their relation to the following: historic flights, programs, activities, or incidents; achievements or improvements in technology; our understanding of the universe; and important or well-known personalities (see NPR 4310.1).

NASA Environmental Tracking System. A set of relational databases that houses environmental data across the Agency. The CRM module tracks cultural resources data and also connects to the CRGIS.

National Historic Landmark. A nationally significant historic place designated by the Secretary of the Interior because the property or site possesses exceptional value or quality in illustrating or interpreting the heritage of the United States. National Historic Landmarks are managed, in part, by the National Park Service's National Historic Landmark Program. All National Historic Landmarks are considered historic properties or sites.

National Park Service. The federal agency within the U.S. Department of the Interior tasked with overseeing the NRHP and NHL Programs. The National Park Service contains the offices of the Departmental Consulting Archaeologist, which provide technical assistance to federal agencies and coordinate the Federal Archeology Program.

National Register of Historic Places. The U.S. Government's official list of buildings, structures, districts, sites, and objects that are significant in American history, architecture, archaeology, engineering, or culture and are thereby considered for preservation. The NRHP is administered by the National Park Service.

Native Americans. For the purposes of this document, the term—Native Americans—refers to Eskimos, Aleuts, Alaskan Natives, Native North Americans, and Native Hawaiian organizations.

Personal Property. Any property except real property.

Programmatic Agreement. A legally binding document that records the terms and conditions agreed upon to mitigate the adverse effects associated with complex or phased undertakings

when the full range of historic properties that may be affected are not known or in other situations specified in 36 CFR Part 800.14(b).

State Historic Preservation Officer. The official appointed by the Governor of each State and territory to carry out the functions defined in NHPA and to administer the State Historic Preservation Program.

Tribal Historic Preservation Officer. The official appointed by an Indian Tribe in accordance with NHPA to administer a Tribal Historic Preservation Program and assume duties and functions for tribal lands similar to those that the State Historic Preservation Officer has for State lands.

Undertaking. Any project, activity, action, or program wholly or partly funded under the direct or indirect jurisdiction of a federal agency, including those carried out by or on behalf of a federal agency; those carried out with federal financial assistance; and those requiring a permit, license, or approval. A lease or transfer of agency property constitutes an undertaking under NHPA, and projects under the lease are to be handled as future undertakings for Section 106 review.

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APPENDIX B

FIGURE 3-1. ARCHAEOLOGICAL SITES

Confidential – Provided Under Separate Cover

APPENDIX C

FIGURE 3-2 (a-d). BUILT ENVIRONMENT RESOURCES

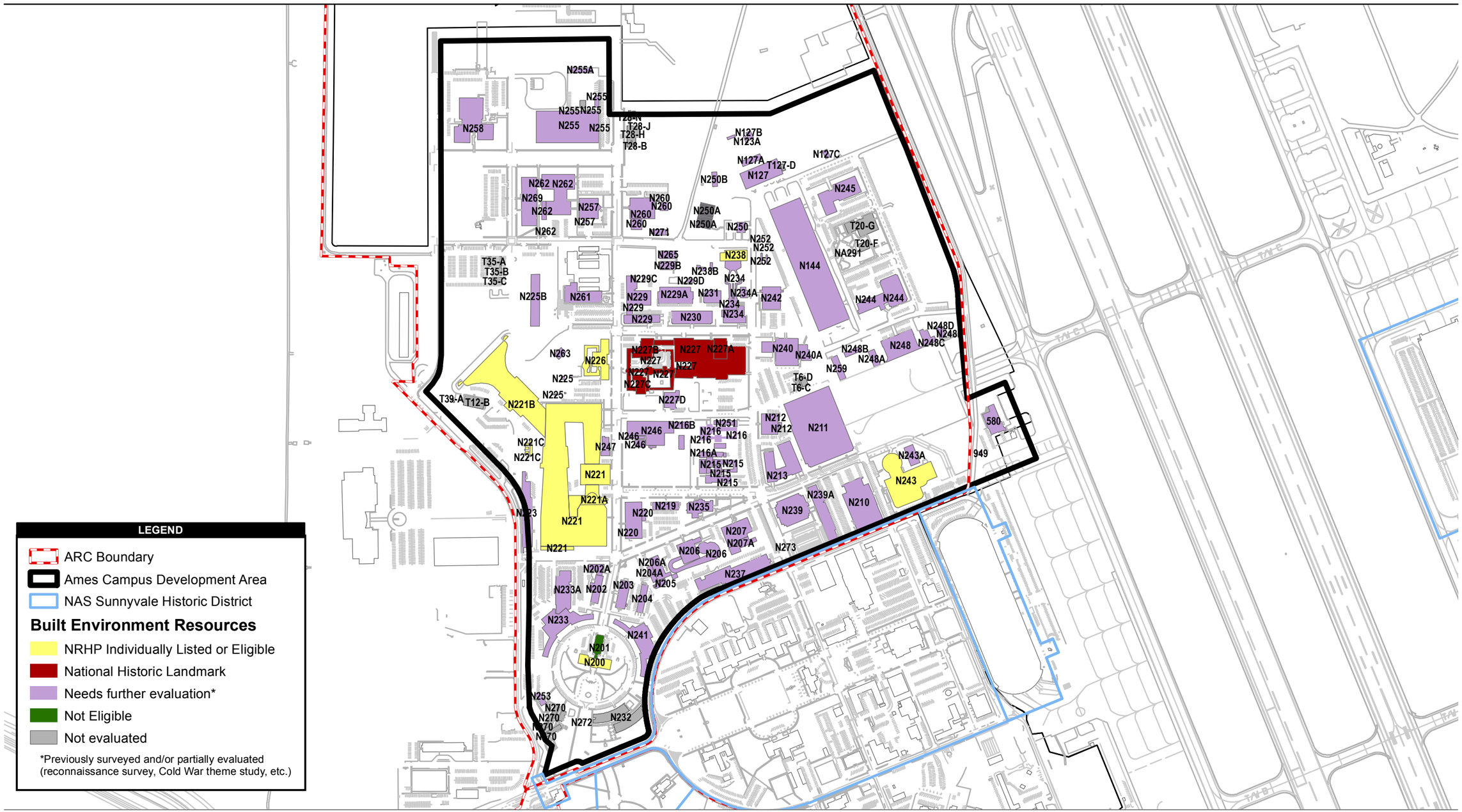

Figure 3-2a
Built Environment Resources Survey Results
- Ames Campus Development Area

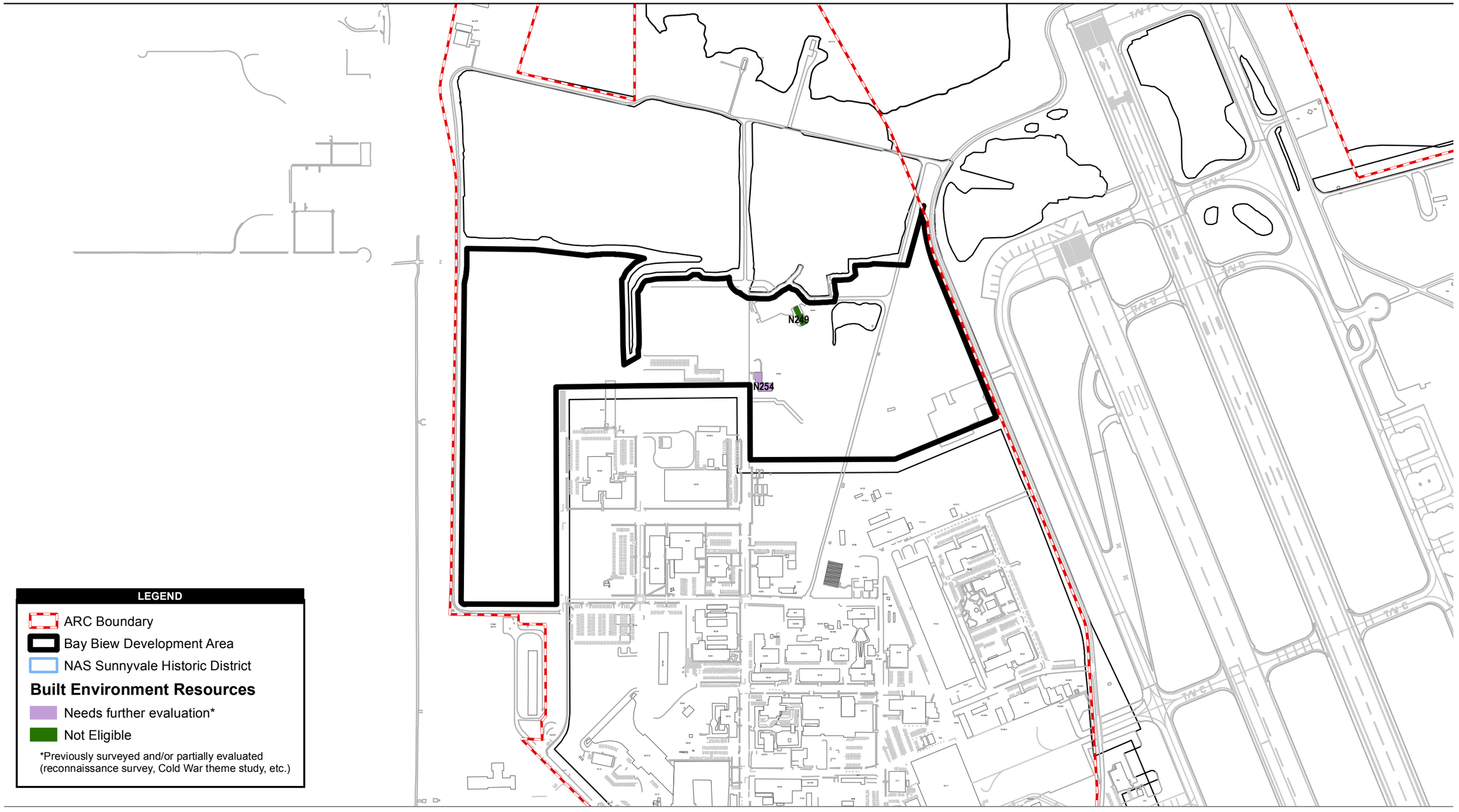

Figure 3-2b
Built Environment Resources Survey Results
- Bay Biew Development Area

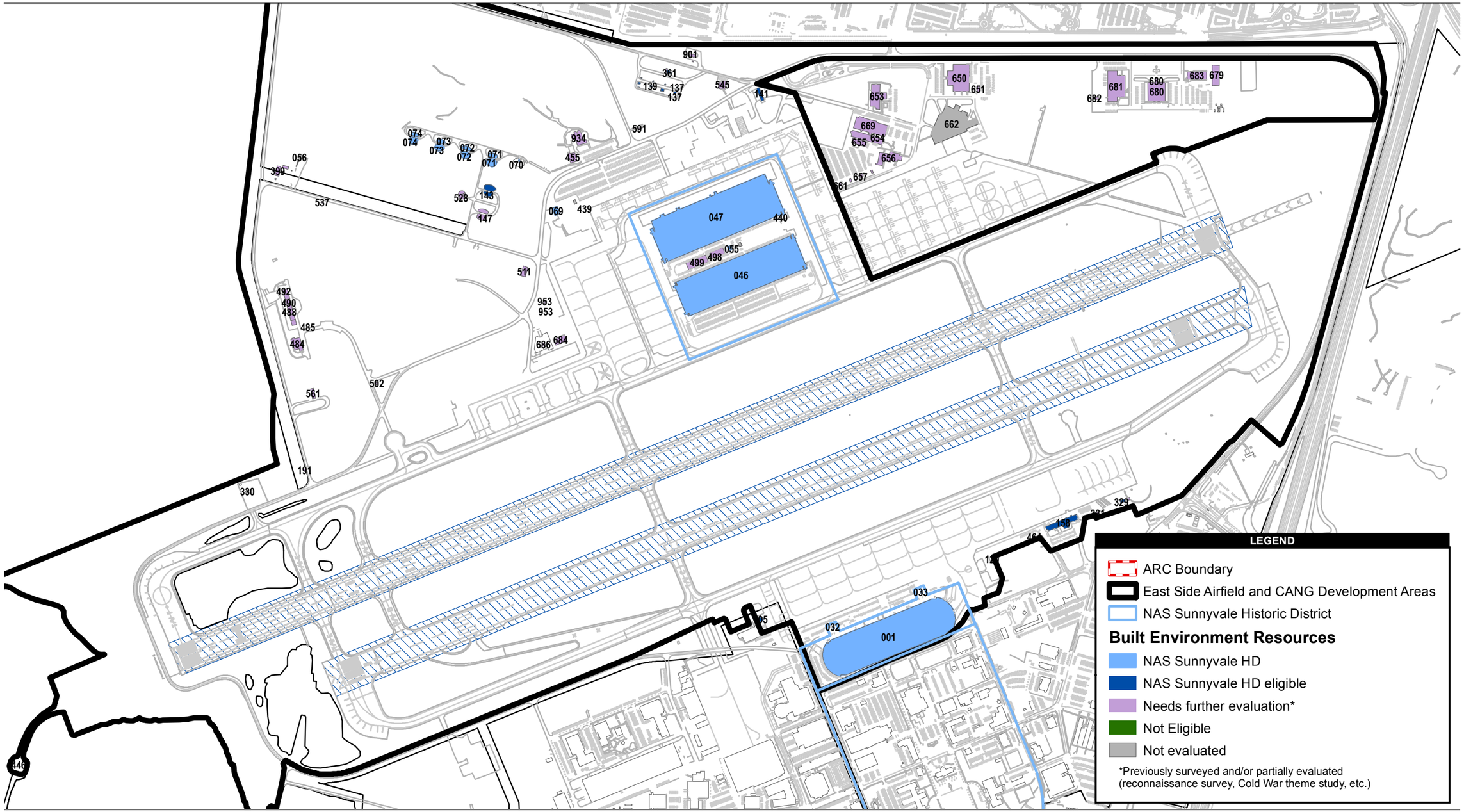

Figure 3-2c
Built Environment Resources Survey Results
- Eastside Airfield and California Air National Guard Development Areas

Figure 3-2d
Built Environment Resources Survey Results
- NASA Research Park Development Area

APPENDIX D

NRHP EVALUATION STATUS OF ARC BUILDINGS

APPENDIX D
NRHP Evaluation Status of ARC Buildings

Development Area	Property No.	Name	Est. Date	NRHP Eligibility Status	Evaluation Notes
Eastside Airfield/ California National Guard	1	HANGAR ONE	6/1/1933	Listed	Contributing to NAS Sunnyvale Historic District; Used for P-3 Orion flight training (Cold War study)
NASA Research Park	2	GYMNASIUM	12/31/1933	Listed	Contributing to NAS Sunnyvale Historic District; Used for P-3 Orion maintenance (Cold War study)
NASA Research Park	3	TRAINING AND CONFERENCE CENTER	6/1/1933	Not Eligible; needs further evaluation for potential historic district	Non-contributing to NAS Sunnyvale Historic District; Used for P-3 Orion maintenance (Cold War study)
NASA Research Park	5	WATER TOWER AND STORAGE TANK	6/1/1932	Listed	Contributing to NAS Sunnyvale Historic District
NASA Research Park	6	RECYCLING & STORAGE	6/1/1933	Listed	Contributing to NAS Sunnyvale Historic District
NASA Research Park	10	BOILER PLANT FACILITY AND FACILITY MAINT SHOP	4/1/1932	Not evaluated	--
NASA Research Park	12	COMMISSARY/ADMINISTRATION	6/1/1933	Not Eligible	Non-contributing to NAS Sunnyvale Historic District
NASA Research Park	13	COMMISSARY STORAGE	6/1/1933	Not Eligible	Non-contributing to NAS Sunnyvale Historic District
NASA Research Park	14	INDUSTRY PARTNERS BUILDING	6/1/1933	Not Eligible	Non-contributing to NAS Sunnyvale Historic District
NASA Research Park	15	SECURITY STATION	3/1/1933	Listed	Contributing to NAS Sunnyvale Historic District
NASA Research Park	16	PUBLIC WORKS	3/1/1933	Listed	Contributing to NAS Sunnyvale Historic District
NASA Research Park	17	BLUMBERG ADMINISTRATION AND TELEPHONE EXCHANGE	6/1/1933	Listed	Contributing to NAS Sunnyvale Historic District
NASA Research Park	18	UAV RESEARCH BUILDING	6/1/1933	Listed	Contributing to NAS Sunnyvale Historic District
NASA Research Park	19	INDUSTRY PARTNERS BUILDING	6/1/1933	Listed	Contributing to NAS Sunnyvale Historic District
NASA Research Park	20	ADMINISTRATION BUILDING	3/1/1933	Listed	Contributing to NAS Sunnyvale Historic District
NASA Research Park	21	DETACHED GARAGES	6/1/1933	Listed	Contributing to NAS Sunnyvale Historic District
NASA Research Park	22	DETACHED GARAGES	6/1/1933	Listed	Contributing to NAS Sunnyvale Historic District
NASA Research Park	23	CARNEGIE MELLON UNIVERSITY	6/1/1933	Listed	Contributing to NAS Sunnyvale Historic District
NASA Research Park	24	CARNEGIE MELLON UNIVERSITY STORAGE FACILITY	6/1/1933	Listed	Contributing to NAS Sunnyvale Historic District
NASA Research Park	25	ADMINISTRATION AND AUDITORIUM	6/1/1933	Listed	Contributing to NAS Sunnyvale Historic District
NASA Research Park	26	VISITOR REGISTRATION AND EMPLOYEE BADGES (VREB)	6/1/1933	Listed	Contributing to NAS Sunnyvale Historic District
NASA Research Park	29	NASA BICYCLE DISTRIBUTION FACILITY	7/1/1933	Not Eligible	Non-contributing to NAS Sunnyvale Historic District
Eastside Airfield/ California National Guard	32	NORTH FLOODLIGHT TOWER	1/1/1934	Listed	Contributing to NAS Sunnyvale Historic District
Eastside Airfield/ California National Guard	33	SOUTH FLOODLIGHT TOWER	1/1/1934	Listed	Contributing to NAS Sunnyvale Historic District
NASA Research Park	34	STORAGE	7/1/1934	Not Eligible	Non-contributing to NAS Sunnyvale Historic District
NASA Research Park	36	SENTRY HOUSE/MAIN GATE	7/1/1934	Not Eligible	Non-contributing to NAS Sunnyvale Historic District
NASA Research Park	37	SCALE HOUSE	7/1/1933	Listed	Contributing to NAS Sunnyvale Historic District
NASA Research Park	38	TENNIS COURTS	6/30/1936	Not Eligible	Non-contributing to NAS Sunnyvale Historic District
NASA Research Park	40	FLAGPOLE	8/28/1933	Not Eligible	Non-contributing to NAS Sunnyvale Historic District
NASA Research Park	45	SMALL SATELLITE TEST FACILITY	12/31/1944	Not Eligible	Non-contributing to NAS Sunnyvale Historic District
Eastside Airfield/ California National Guard	46	AIRCRAFT MAINTENANCE HANGAR 2	6/1/1942	Listed	Contributing to NAS Sunnyvale Historic District
Eastside Airfield/ California National Guard	47	AIRCRAFT MAINTENANCE HANGAR 3	6/1/1942	Listed	Contributing to NAS Sunnyvale Historic District

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Eastside Airfield/ California National Guard	55	BOILER HOUSE, HANGARS 2 & 3	5/1/1943	Listed	Contributing to NAS Sunnyvale Historic District
Eastside Airfield/ California National Guard	56	SANITARY SEWER LIFT/PUMP STATION	6/1/1943	Not evaluated	--
NASA Research Park	67	UNITED STATES POST OFFICE	12/1/1943	Not Eligible	Non-contributing to NAS Sunnyvale Historic District
Eastside Airfield/ California National Guard	69	INERT AMMUNITION STORAGE	6/1/1943	Recommended Eligible	Contributing to NAS Sunnyvale Historic District (Airfield study)
Eastside Airfield/ California National Guard	70	FUSE & DETONATOR MAGAZINE	3/1/1943	Recommended Eligible	Contributing to NAS Sunnyvale Historic District (Airfield study)
Eastside Airfield/ California National Guard	71	HIGH EXPLOSIVE MAGAZINE	8/1/1943	Recommended Eligible	Contributing to NAS Sunnyvale Historic District (Airfield study)
Eastside Airfield/ California National Guard	72	HIGH EXPLOSIVE MAGAZINE	8/1/1943	Recommended Eligible	Contributing to NAS Sunnyvale Historic District (Airfield study)
Eastside Airfield/ California National Guard	73	HIGH EXPLOSIVE MAGAZINE	8/1/1943	Recommended Eligible	Contributing to NAS Sunnyvale Historic District (Airfield study)
Eastside Airfield/ California National Guard	74	HIGH EXPLOSIVE MAGAZINE	8/1/1943	Recommended Eligible	Contributing to NAS Sunnyvale Historic District (Airfield study)
NASA Research Park	76	LOCKSMITH SHOP	6/1/1944	Not Eligible	Non-contributing to NAS Sunnyvale Historic District
NASA Research Park	77	SOUTH GATE SENTRY HOUSE	12/1/1944	Not evaluated	--
NASA Research Park	78	SOUTH MACON ROAD SENTRY HOUSE	3/18/2002	Not evaluated	--
NASA Research Park	80	SOUTH GATE BUS SHELTER	5/31/2000	Not evaluated	--
NASA Research Park	81	SECURITY GENERAL STORAGE	12/1/1944	Not Eligible	Non-contributing to NAS Sunnyvale Historic District
NASA Research Park	82	GENERAL/ATHLETIC STORAGE	5/1/1944	Not evaluated	--
Eastside Airfield/ California National Guard	98	FIRE PROTECTION RESERVOIR	1/1/1943	Not evaluated	--
NASA Research Park	104	12/2.4 KV WESTSIDE SUBSTATION	6/1/1943	Not evaluated	--
Eastside Airfield/ California National Guard	105	AIRFIELD LIGHTING VAULT/TRANSFORMER VAULT	12/1/1947	Recommended Eligible	Contributing to NAS Sunnyvale Historic District (Airfield study); Determined not individually eligible for NRHP under Criterion G (Cold War study)
Eastside Airfield/ California National Guard	106	AIRCRAFT COMPASS CALIBRATION PAD	12/1/1947	Recommended Eligible	Contributing to NAS Sunnyvale Historic District (Airfield study); Determined not individually eligible for NRHP under Criterion G (Cold War study)
NASA Research Park	107	NAVY ROICC ADMINISTRATION BUILDING	12/1/1948	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)
NASA Research Park	108	NASA EXCHANGE SWIMMING POOL	12/1/1948	Not evaluated	--
NASA Research Park	109	SWIMMING POOL DRESSING ROOMS	6/1/1948	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)
NASA Research Park	111	TRANSPORTATION STORAGE	12/1/1944	Not evaluated	--
Eastside Airfield/ California National Guard	120	HAZARDOUS MATERIAL STORAGE COMPOUND	9/25/1989	Not evaluated	--
NASA Research Park	126	MOFFETT FIELD HISTORICAL SOCIETY	12/1/1949	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)

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Eastside Airfield/ California National Guard	137	AIRCRAFT FUEL STORAGE TANK	12/1/1952	Recommended Eligible	Contributing to NAS Sunnyvale Historic District (Airfield study); Determined not individually eligible for NRHP under Criterion G (Cold War study)
Eastside Airfield/ California National Guard	138	AIRCRAFT FUEL STORAGE TANK	12/1/1952	Recommended Eligible	Contributing to NAS Sunnyvale Historic District (Airfield study); Determined not individually eligible for NRHP under Criterion G (Cold War study)
Eastside Airfield/ California National Guard	139	AIRCRAFT FUEL STORAGE TANK	12/1/1952	Recommended Eligible	Contributing to NAS Sunnyvale Historic District (Airfield study); Determined not individually eligible for NRHP under Criterion G (Cold War study)
Eastside Airfield/ California National Guard	140	AIRCRAFT FUEL STORAGE TANK	12/1/1952	Recommended Eligible	Contributing to NAS Sunnyvale Historic District (Airfield study); Determined not individually eligible for NRHP under Criterion G (Cold War study)
Eastside Airfield/ California National Guard	141	TANK TRUCK FILLING RACK	12/1/1952	Recommended Eligible	Contributing to NAS Sunnyvale Historic District (Airfield study); Determined not individually eligible for NRHP under Criterion G (Cold War study)
Eastside Airfield/ California National Guard	143	HIGH EXPLOSIVE MAGAZINE	5/1/1951	Recommended Eligible	Contributing to NAS Sunnyvale Historic District (Airfield study); Determined not individually eligible for NRHP under Criterion G (Cold War study)
NASA Research Park	146	TRANSPORTATION GARAGE	3/1/1952	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)
Eastside Airfield/ California National Guard	147	HIGH EXPLOSIVE MAGAZINE	5/1/1951	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)
NASA Research Park	148	ENLISTED MEN'S BARRACKS	7/1/1953	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)
NASA Research Park	149	ENLISTED MEN'S BARRACKS	7/1/1953	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)
NASA Research Park	150	ENLISTED MEN'S BARRACKS	7/1/1953	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)
NASA Research Park	151	ENLISTED MEN'S BARRACKS	7/1/1953	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)
NASA Research Park	152	CONFERENCE & ADMINISTRATION CENTER	10/1/1953	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)
NASA Research Park	153	ADMINISTRATION BUILDING	7/1/1953	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)
NASA Research Park	154	ADMINISTRATION BUILDING	7/1/1953	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)
NASA Research Park	155	ADMINISTRATION BUILDING	7/1/1953	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)
NASA Research Park	156	ADMINISTRATION BUILDING	7/1/1953	Not evaluated	--

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Eastside Airfield/ California National Guard	158	AIRFIELD FLIGHT/TOWER OPERATIONS BUILDING	5/1/1954	Recommended Eligible	Contributing to NAS Sunnyvale Historic District (Airfield study); Determined not individually eligible for NRHP under Criterion G (Cold War study)
NASA Research Park	161	SERVICE STATION/FUEL ISLAND 1 & 2	12/1/1952	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)
Eastside Airfield/ California National Guard	167	WHARF/FUELING PIER	7/1/1953	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)
Eastside Airfield/ California National Guard	168	VEHICULAR BRIDGE	12/1/1953	Not evaluated	Potentially eligible
Eastside Airfield/ California National Guard	169	VEHICULAR BRIDGE	12/1/1953	Not evaluated	Potentially eligible
NASA Research Park	184	MAINTENANCE STORAGE	8/1/1955	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)
Eastside Airfield/ California National Guard	191	STORM DRAIN PUMP HOUSE/LIFT STATION	8/1/1952	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)
Eastside Airfield/ California National Guard	328	CONTAMINATED FUEL STORAGE TANK	12/1/1938	Not Eligible; needs further evaluation for potential historic district	Potentially eligible
Eastside Airfield/ California National Guard	329	RECEIVER BUILDING	12/1/1958	Recommended Eligible	Contributing to NAS Sunnyvale Historic District (Airfield study); Determined not individually eligible for NRHP under Criterion G (Cold War study)
Eastside Airfield/ California National Guard	330	OPEN STORAGE COMPOUND	12/31/1958	Not evaluated	--
Eastside Airfield/ California National Guard	331	AIRFIELD STORAGE	12/1/1958	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)
NASA Research Park	343	PUBLIC WORKS RIGGERS SHOP	12/1/1942	Not evaluated	--
Eastside Airfield/ California National Guard	359	GOLF COURSE GROUNDS MAINTENANCE SHOP	4/1/1956	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)
Eastside Airfield/ California National Guard	360	FUEL ADDITIVE STORAGE TANK	12/1/1954	Recommended Eligible	Contributing to NAS Sunnyvale Historic District (Airfield study); Determined not individually eligible for NRHP under Criterion G (Cold War study)
Eastside Airfield/ California National Guard	361	CONTAMINATED FUEL STORAGE TANK	12/1/1954	Recommended Eligible	Contributing to NAS Sunnyvale Historic District (Airfield study); Determined not individually eligible for NRHP under Criterion G (Cold War study)
Eastside Airfield/ California National Guard	362	CONTAMINATED FUEL STORAGE TANK	12/1/1954	Recommended Eligible	Contributing to NAS Sunnyvale Historic District (Airfield study); Determined not individually eligible for NRHP under Criterion G (Cold War study)
NASA Research Park	380	BUS/PERSONNEL SHELTER	12/1/1957	Not evaluated	--
Eastside Airfield/ California National Guard	399	COVERED STORAGE GOLF COURSE LANDSCAPING EQUIPMENT	4/1/1956	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)

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Eastside Airfield/ California National Guard	400	AIR OPERATIONS STORAGE	12/31/1958	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)
Eastside Airfield/ California National Guard	409	ABOVE GROUND FUEL DISPENSING TANK	7/15/1994	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)
Eastside Airfield/ California National Guard	421	COMMUNICATIONS ANTENNAS	12/31/1958	Not evaluated	--
NASA Research Park	431	BULK LOADING AND UNLOADING DIESEL STORAGE TANK	12/1/1953	Not evaluated	--
NASA Research Park	432	BULK LOADING AND UNLOADING UNLEADED STORAGE TANK	12/1/1953	Not evaluated	--
Eastside Airfield/ California National Guard	439	AIRCRAFT WASH RACK	12/31/1942	Not evaluated	--
Eastside Airfield/ California National Guard	440	DRAINAGE LIFT STATION	3/1/1955	Not Eligible	Non-contributing to NAS Sunnyvale Historic District
Eastside Airfield/ California National Guard	442	ORDINANCE HANDLING PAD	4/1/1956	Recommended Eligible	Contributing to NAS Sunnyvale Historic District (Airfield study)
Eastside Airfield/ California National Guard	444	GENERAL PUMP/BERTHING WHARF	4/1/1956	Not evaluated	--
Eastside Airfield/ California National Guard	445	SMALL CRAFT BERTHING	12/1/1957	Not evaluated	--
Eastside Airfield/ California National Guard	446	COMMUNICATIONS TACAN FACILITY	5/1/1958; 1986	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)
NASA Research Park	454	TRANSMISSION BUILDING UHF/VHF	12/31/1960	Recommended Eligible	Contributing to NAS Sunnyvale Historic District (Airfield study); Determined not individually eligible for NRHP under Criterion G (Cold War study)
Eastside Airfield/ California National Guard	455	GOLF CART CHARGING AND MAINTENANCE FACILITY	1964; 7/15/1994	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)
NASA Research Park	459	RECREATION STORAGE	4/1/1950	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)
Eastside Airfield/ California National Guard	463	COMMUNICATIONS ANTENNA	12/31/1960	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)
Eastside Airfield/ California National Guard	464	OPERATIONAL STORAGE	12/31/1940; 1964	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)
Eastside Airfield/ California National Guard	468	AVIATION METEOROLOGICAL FACILITY	3/1/1961	Not evaluated	--
Eastside Airfield/ California National Guard	469	AVIATION METEOROLOGICAL FACILITY	3/1/1961	Not evaluated	--
Eastside Airfield/ California National Guard	471	HAZARDOUS MATERIAL STORAGE	1962; 7/1/1994	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)

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NASA Research Park	476	EXCHANGE/INTERNATIONAL SPACE UNIVERSITY (ISU)	10/1/1964	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)
NASA Research Park	480	RACQUETBALL COURTS	9/1/1963	Not evaluated	--
NASA Research Park	482	PAINTING/WASHING FACILITY; STORAGE FACILITY (JCM)	12/31/1963	Not Eligible; needs further evaluation for potential historic district	Non-contributing to NAS Sunnyvale Historic District; Determined not individually eligible for NRHP under Criterion G (Cold War study)
Eastside Airfield/ California National Guard	484	P-3 MUNITIONS MAINTENANCE SHOP; AIR/UNDERWATER SHOP	12/31/1965	Not Eligible; needs further evaluation for potential historic district	Used for P-3 Orion program; Determined not individually eligible for NRHP under Criterion G (Cold War study)
Eastside Airfield/ California National Guard	485	P-3 SENTRY HOUSE; GUARD & WATCH TOWERS	12/31/1965	Not Eligible; needs further evaluation for potential historic district	Used as P-3 Orion sentry house; Determined not individually eligible for NRHP under Criterion G (Cold War study)
Eastside Airfield/ California National Guard	486	P-3 AUW WEAPONS MAGAZINES/HIGH EXPLOSIVE MAGAZINE	5/1/1965	Not Eligible; needs further evaluation for potential historic district	Used as P-3 magazines; Determined not individually eligible for NRHP under Criterion G (Cold War study)
Eastside Airfield/ California National Guard	487	P-3 AUW WEAPONS MAGAZINES/HIGH EXPLOSIVE MAGAZINE	11/1/1965	Not Eligible; needs further evaluation for potential historic district	Used as P-3 magazines; Determined not individually eligible for NRHP under Criterion G (Cold War study)
Eastside Airfield/ California National Guard	488	P-3 AUW WEAPONS MAGAZINES/HIGH EXPLOSIVE MAGAZINE	11/1/1965	Not Eligible; needs further evaluation for potential historic district	Used as P-3 magazines; Determined not individually eligible for NRHP under Criterion G (Cold War study)
Eastside Airfield/ California National Guard	489	P-3 AUW WEAPONS MAGAZINES/HIGH EXPLOSIVE MAGAZINE	11/1/1965	Not Eligible; needs further evaluation for potential historic district	Used as P-3 magazines; Determined not individually eligible for NRHP under Criterion G (Cold War study)
Eastside Airfield/ California National Guard	490	P-3 AUW WEAPONS MAGAZINES/HIGH EXPLOSIVE MAGAZINE	11/1/1965	Not Eligible; needs further evaluation for potential historic district	Used as P-3 magazines; Determined not individually eligible for NRHP under Criterion G (Cold War study)
Eastside Airfield/ California National Guard	491	P-3 AUW WEAPONS MAGAZINES/HIGH EXPLOSIVE MAGAZINE	11/1/1965	Not Eligible; needs further evaluation for potential historic district	Used as P-3 magazines; Determined not individually eligible for NRHP under Criterion G (Cold War study)
Eastside Airfield/ California National Guard	492	P-3 AUW WEAPONS MAGAZINES/HIGH EXPLOSIVE MAGAZINE	11/1/1965	Not Eligible; needs further evaluation for potential historic district	Used as P-3 magazines; Determined not individually eligible for NRHP under Criterion G (Cold War study)
NASA Research Park	493	BLDG 20 SWIMMING POOL	8/1/1963	Not Eligible	Non-contributing to NAS Sunnyvale Historic District
Eastside Airfield/ California National Guard	498	HAZARD WASTE STORAGE AREA	1965; 12/31/1989	Not Eligible; needs further evaluation for potential historic district	Non-contributing to NAS Sunnyvale Historic District; Determined not individually eligible for NRHP under Criterion G (Cold War study)
Eastside Airfield/ California National Guard	499	GROUND SUPPORT EQUIPMENT SHED	12/31/1966	Not Eligible; needs further evaluation for potential historic district	Non-contributing to NAS Sunnyvale Historic District; Determined not individually eligible for NRHP under Criterion G (Cold War study)
Eastside Airfield/ California National Guard	502	GOLF COURSE RESTROOMS	6/1/1967	Not Eligible; needs further evaluation for potential historic district	Non-contributing to NAS Sunnyvale Historic District; Determined not individually eligible for NRHP under Criterion G (Cold War study)
NASA Research Park	503	PARTNERS MANUFACTURING & PROTOTYPE FACILITY	12/31/1966	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)

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NASA Research Park	510	ADMINISTRATIVE BUILDING	12/31/1967	Not Eligible; needs further evaluation for potential historic district	Non-contributing to NAS Sunnyvale Historic District; Determined not individually eligible for NRHP under Criterion G (Cold War study)
Eastside Airfield/ California National Guard	511	P-3 MISSILE INTEGRATION FACILITY/EQUIPMENT STORAGE FACILITY (JP)	12/31/1968	Not Eligible; needs further evaluation for potential historic district	Used for P-3 Orion Program; Determined not individually eligible for NRHP under Criterion G (Cold War study)
NASA Research Park	525	BOWLING ALLEY/STORAGE WAREHOUSE	12/31/1970	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)
NASA Research Park	526	EM CLUB STORAGE	12/31/1970	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)
Eastside Airfield/ California National Guard	528	HIGH EXPLOSIVE MAGAZINE	1951 or 10/1/1970	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)
NASA Research Park	529	EXCHANGE WAREHOUSE/STORAGE FACILITY	12/31/1970	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)
NASA Research Park	533	CHASE PARK RESTROOMS	7/1/1971	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)
NASA Research Park	534	BBQ SHELTER	7/1/1971	Not evaluated	--
Eastside Airfield/ California National Guard	537	GOLF COURSE RESTROOMS	1/1/1973	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)
NASA Research Park	542	INCINERATOR/STORAGE FACILITY	12/31/1973	Not Eligible; needs further evaluation for potential historic district	Non-contributing to NAS Sunnyvale Historic District; Determined not individually eligible for NRHP under Criterion G (Cold War study)
NASA Research Park	543	CRAFT HOBBY SHOP/RESEARCH LABORATORY BUILDING	12/31/1973	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)
NASA Research Park	544	AUTO HOBBY SHOP	12/31/1974	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)
Eastside Airfield/ California National Guard	545	FUEL FARM OFFICES	12/31/1973	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)
NASA Research Park	554	EXCHANGE/PARTNER TECHNOLOGY FACILITY	12/31/1975	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)
NASA Research Park	555	ADMINISTRATION BUILDING	12/31/1984	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)
NASA Research Park	556	CREDIT UNION/INDUSTRY PARTNERS BUILDING	12/31/1979	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)
Eastside Airfield/ California National Guard	561	P-3 MISSILE MAGAZINE & TORPEDO MAINTENANCE/MISSILE MAGAZINE	10/1/1976	Not Eligible; needs further evaluation for potential historic district	Used for P-3 Orion Program; Determined not individually eligible for NRHP under Criterion G (Cold War study)

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NASA Research Park	566	ADMINISTRATION BUILDING	2/9/1979	Not Eligible; needs further evaluation for potential historic district	Non-contributing to NAS Sunnyvale Historic District; Determined not individually eligible for NRHP under Criterion G (Cold War study)
NASA Research Park	567	FACILITIES MAINTENANCE WAREHOUSE	10/24/1978	Not Eligible; needs further evaluation for potential historic district	Non-contributing to NAS Sunnyvale Historic District; Determined not individually eligible for NRHP under Criterion G (Cold War study)
NASA Research Park	569	ADMINISTRATION/PROCUREMENT OFFICE	12/31/1978	Not Eligible; needs further evaluation for potential historic district	Non-contributing to NAS Sunnyvale Historic District; Determined not individually eligible for NRHP under Criterion G (Cold War study)
NASA Research Park	570	MAINTENANCE STORAGE (JCM)	12/31/1978	Not Eligible; needs further evaluation for potential historic district	Non-contributing to NAS Sunnyvale Historic District; Determined not individually eligible for NRHP under Criterion G (Cold War study)
NASA Research Park	571	TENNIS COURTS	9/13/1979	Not evaluated	--
NASA Research Park	572	HANDBALL COURTS/RACQUETBALL COURTS	1963 or 12/7/1979	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)
NASA Research Park	574	OIL, TIRE STORAGE/STORAGE WAREHOUSE B	10/15/1982	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)
Ames Campus	580	FIRE STATION/CRASH & STRUCTURAL FIRE STATION	2/25/1983	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)
NASA Research Park	581	SIGN BOARD/THEATER MARQUEE	9/30/1982	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)
NASA Research Park	582	SIGN BOARD/ELLIS GATE MARQUEE	10/30/1982	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)
NASA Research Park	585	VEHICLE WASH PLATFORM/FACILITY	12/7/1983	Not evaluated	--
NASA Research Park	590	12 KV SUBSTATION SWITCHGEAR	1/3/1986	Not evaluated	--
Eastside Airfield/ California National Guard	591	115/12KV MAIN ELECTRICAL SUBSTATION	7/1/1985	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)
NASA Research Park	596	MCDONALD'S RESTAURANT/LUNAR SCIENCE RESEARCH FACILITY	12/31/1985	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)
Eastside Airfield/ California National Guard	650	P-3 AIMD AVIONICS SHOP/ADMINISTRATION BUILDING	8/1/1975	Not Eligible; needs further evaluation for potential historic district	Used for P-3 Orion Program; Determined not individually eligible for NRHP under Criterion G (Cold War study)
Eastside Airfield/ California National Guard	651	BATTERY LOCKER/SHOP	1981 or 9/30/1982	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)
Eastside Airfield/ California National Guard	653	P-3 APPLIED INSTRUCTION/ADMINISTRATION BUILDING	12/31/1984	Not Eligible; needs further evaluation for potential historic district	Used for P-3 Orion Program; Determined not individually eligible for NRHP under Criterion G (Cold War study)
Eastside Airfield/ California National Guard	654	P-3 CLASSROOM/ADMINISTRATION BUILDING	12/31/1969	Not Eligible; needs further evaluation for potential historic district	Used for P-3 Orion Program; Determined not individually eligible for NRHP under Criterion G (Cold War study)

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Development Area	Property No.	Name	Est. Date	NRHP Eligibility Status	Evaluation Notes
Eastside Airfield/ California National Guard	655	P-3 CLASSROOM/MOBILITY WAREHOUSE A	3/1/1945	Not Eligible; needs further evaluation for potential historic district	Used for P-3 Orion Program; Determined not individually eligible for NRHP under Criterion G (Cold War study)
Eastside Airfield/ California National Guard	656	P-3 COMMUNICATIONS & TECHNICAL SUPPORT CENTER/129TH RESCUE OPERATIONS	1/1/1971	Not Eligible; needs further evaluation for potential historic district	Used for P-3 Orion Program; Determined not individually eligible for NRHP under Criterion G (Cold War study)
Eastside Airfield/ California National Guard	657	LINE OPERATIONS/WAREHOUSE F	12/1/1955	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)
Eastside Airfield/ California National Guard	658	LINE MAINTENANCE SHELTER/WAREHOUSE F	12/1/1955	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)
Eastside Airfield/ California National Guard	659	AMMUNITION SERVICE LOCKER/WAREHOUSE G	5/1/1956	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)
Eastside Airfield/ California National Guard	660	AMMUNITION SERVICE LOCKER/WAREHOUSE H	5/1/1956	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)
Eastside Airfield/ California National Guard	661	LINE OPERATIONS SHELTER/WAREHOUSE I	1956 or 12/1/1955	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)
Eastside Airfield/ California National Guard	662	AIRCRAFT MAINTENANCE HANGAR	5/1/2003	Not evaluated	--
Eastside Airfield/ California National Guard	669	P-3 CLASSROOM/PROPULSION/TRAINING FACILITY	6/1/1943	Not Eligible; needs further evaluation for potential historic district	Used for P-3 Orion Program; Determined not individually eligible for NRHP under Criterion G (Cold War study)
Eastside Airfield/ California National Guard	679	STORAGE/CIVIL ENGINERRING WAREHOUSE	1992 or 9/30/1994	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)
Eastside Airfield/ California National Guard	680	CANG HEADQUARTERS	12/31/1980	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)
Eastside Airfield/ California National Guard	681	CANG ADMINISTRATION & SUPPLY/BASE SUPPLY EQUIPMENT WAREHOUSE	12/31/1980	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)
Eastside Airfield/ California National Guard	682	CANG HAZARDOUS/FLAMMABLE MATERIAL STORAGE FACILITY	1/5/1980	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)
Eastside Airfield/ California National Guard	683	CANG CIVIL ENGINEERING	12/31/1980	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)
Eastside Airfield/ California National Guard	684	CANG EQUIPMENT STORAGE/GROUND SUPPORT MAINTENANCE	12/31/1984	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)
Eastside Airfield/ California National Guard	686	PARACHUTE & DINGHY REPAIR/PARACHUTE & SURVIVAL GEAR REPAIR SHOP	1984 or 4/22/1986	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)
Eastside Airfield/ California National Guard	780	TELEPHONE REMOTE SWITCH	12/31/1989	Not evaluated	--

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Eastside Airfield/ California National Guard	901	LIQUID OXYGEN STORAGE/CRYOGENICS FACILITY	6/1/1987	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)
Eastside Airfield/ California National Guard	934	GOLF COURSE CLUB HOUSE (19TH HOLE)	3/1/1940	Not evaluated	--
NASA Research Park	944	ENLISTED MENS CLUB	7/1/1941	Not evaluated	--
NASA Research Park	945	ATHLETIC FIELD DRESSING ROOMS	8/1/1941	Not evaluated	--
Ames Campus	949	HIGH EXPLOSIVES MAGAZINE/READY ISSUE MAGAZINE	5/1/1956	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)
NASA Research Park	950	HAZARDOUS MATERIAL STORAGE	9/25/1989	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)
NASA Research Park	951	INSECTICIDE MATERIAL STORAGE	6/1/1957	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)
Eastside Airfield/ California National Guard	953	AIRCRAFT READY FUEL DAY TANK AND PUMPING STATION	12/1/1956	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)
NASA Research Park	958	COVERED STORAGE	12/1/1956	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)
NASA Research Park	964	BASKETBALL COURT	12/1/1942	Not evaluated	--
NASA Research Park	965	VOLLEYBALL COURTS	12/1/1942	Not evaluated	--
NASA Research Park	966	SOFTBALL FIELD # 2	12/1/1957	Not evaluated	--
NASA Research Park	967	SOFTBALL FIELD # 1	12/1/1955	Not evaluated	--
NASA Research Park	992	TRANSPORTATION TRUCK REPAIR SHOP	12/1/1957	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)
NASA Research Park	010A	CHEMICAL FEED & STORAGE FOR BLDG. 010 BOILER	2/1/1996	Not evaluated	--
NASA Research Park	016A	GROUND WATER TREATMENT SYSTEM	11/15/2005	Not evaluated	--
NASA Research Park	017A	SHENANDOAH PLAZA MONUMENTS	4/30/2001	Not evaluated	--
NASA Research Park	045A	WESTERN-SIDE AQUIFER TREATMENT SYSTEM (WATS)	9/25/1999	Not evaluated	--
Eastside Airfield/ California National Guard	439A	EASTERN-SIDE AQUIFER TREATMENT SYSTEM (EATS)	7/4/1999	Not evaluated	--
NASA Research Park	512A	ENLISTED BARRACKS	12/31/1970	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)
NASA Research Park	512B	ENLISTED BARRACKS	12/31/1970	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)
NASA Research Park	512C	ENLISTED BARRACKS	12/31/1970	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)

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NASA Research Park	547B	LIVING QUARTERS/BEQ SERVICE BUILDING	12/31/1974	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)
NASA Research Park	547C	LIVING QUARTERS/BEQ	12/31/1974	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)
NASA Research Park	547D	LIVING QUARTERS/BEQ	12/31/1974	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)
NASA Research Park	547E	LIVING QUARTERS/BEQ	12/31/1974	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)
NASA Research Park	583A	LIVING QUARTERS/NASA EXCHANGE HOTEL	12/31/1985	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)
NASA Research Park	583B	LIVING QUARTERS/NASA EXCHANGE HOTEL	12/31/1985	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)
NASA Research Park	583C	LIVING QUARTERS/ADMINISTRATION BUILDING	12/31/1985	Not Eligible; needs further evaluation for potential historic district	Determined not individually eligible for NRHP under Criterion G (Cold War study)
NASA Research Park	943A	MARS EXPLORATION CENTER	6/1/1996	Not evaluated	--
Ames Campus	LAND	LAND	12/31/1939	Not evaluated	--
Eastside Airfield/ California National Guard	MF1000	RUNWAY 32L/14R	5/1/1944	Recommended Eligible	Contributing to NAS Sunnyvale Historic District (Airfield study)
Eastside Airfield/ California National Guard	MF1001	INSTRUMENT RUNWAY 32R/14L	12/31/1945	Recommended Eligible	Contributing to NAS Sunnyvale Historic District (Airfield study)
Eastside Airfield/ California National Guard	MF1002	AIRCRAFT PARKING APRON	5/1/1945	Recommended Eligible	Contributing to NAS Sunnyvale Historic District (Airfield study)
Eastside Airfield/ California National Guard	MF1003	HI-SPEED AIRCRAFT FUELING PITS	12/1/1955	Recommended Eligible	Contributing to NAS Sunnyvale Historic District (Airfield study)
Eastside Airfield/ California National Guard	MF1004	FUEL/POL DISTRIBUTION SYSTEM	6/1/1952	Not evaluated	--
Eastside Airfield/ California National Guard	MF1005	GAS DISTRIBUTION SYSTEM	6/1/1932	Not evaluated	--
Eastside Airfield/ California National Guard	MF1006	TELEPHONE AND COMMUNICATIONS DUCT BANK AND LINES	5/1/1932	Not evaluated	--
Eastside Airfield/ California National Guard	MF1007	AIRFIELD APPROACH LIGHTING	6/1/1945	Not evaluated	--
Eastside Airfield/ California National Guard	MF1008	AIRFIELD TAXIWAY LIGHTING	6/1/1945	Not evaluated	--
Eastside Airfield/ California National Guard	MF1009	PERIMETER AIRFIELD OBSTRUCTION LIGHTS	11/1/1965	Not evaluated	--
Eastside Airfield/ California National Guard	MF1010	LEVEES	12/31/1945	Not evaluated	--
Eastside Airfield/ California National Guard	MF1011	AIRFIELD RUNWAY LIGHTING	6/1/1945	Not evaluated	--

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Eastside Airfield/ California National Guard	MF1013	COMPRESSED AIR PLANT	3/1/1933	Not evaluated	--
Eastside Airfield/ California National Guard	MF1014	COMPRESSED AIR DISTRIBUTION SYSTEM	4/1/1933	Not evaluated	--
Eastside Airfield/ California National Guard	MF1015	STREET/FLOOD LIGHTING	2/1/1972	Not evaluated	--
Eastside Airfield/ California National Guard	MF1016	AIRCRAFT TAXIWAY PAVEMENT	6/1/1945	Recommended Eligible	Contributing to NAS Sunnyvale Historic District (Airfield study)
Eastside Airfield/ California National Guard	MF1017	GOLF COURSE	3/1/1940	Not evaluated	--
Eastside Airfield/ California National Guard	MF1018	ROADS	6/1/1932	Not evaluated	--
Eastside Airfield/ California National Guard	MF1019	SIDEWALKS	6/1/1932	Not evaluated	--
Eastside Airfield/ California National Guard	MF1020	STORM DRAIN DISTRIBUTION SYSTEM	5/1/1935	Not evaluated	--
Eastside Airfield/ California National Guard	MF1021	IRRIGATION SYSTEMS (SPRINKLER)	5/1/1948	Not evaluated	--
Eastside Airfield/ California National Guard	MF1022	ELECTRICAL DISTRIBUTION SYSTEM	6/1/1932	Not evaluated	--
Eastside Airfield/ California National Guard	MF1024	SANITARY SEWER DISTRIBUTION SYSTEM	6/1/1932	Not evaluated	--
Eastside Airfield/ California National Guard	MF1025	WATER DISTRIBUTION SYSTEM	12/1/1956	Not evaluated	--
Eastside Airfield/ California National Guard	MF1025A	DOMESTIC WATER STORAGE TANK	5/15/2013	Not evaluated	--
Eastside Airfield/ California National Guard	MF1026	PARKING AREAS	6/1/1947	Not evaluated	--
Eastside Airfield/ California National Guard	MF1027	RAILROAD	12/1/1986	Not evaluated	--
Eastside Airfield/ California National Guard	MF1028	OPEN DRAINAGE DITCHES	5/1/1952	Not evaluated	--
Eastside Airfield/ California National Guard	MF1029	PERIMETER,INTERIOR & BLAST FENCING	12/1/1952	Not evaluated	--
Eastside Airfield/ California National Guard	MF1032	UTILITY TUNNELS	6/1/1944	Not evaluated	--
Eastside Airfield/ California National Guard	MF1033	LANDSCAPING IMPROVED GROUNDS	6/1/1932	Not evaluated	--
Ames Campus	N123	MATERIAL/EQUIPMENT STORAGE (JCM)	12/1/1944	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Ames Campus	N123A	GENERATOR STORAGE (JCM)	1/1/1995	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Ames Campus	N127	WAREHOUSE	3/1/1950	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Ames Campus	N127A	COVERED STORAGE	12/01/1998	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Ames Campus	N127B	MAINTENANCE EQUIPMENT STORAGE SHED	1/11/2000	Not evaluated	--
Ames Campus	N127C	MAINTENANCE FACILITY	05/14/1999	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Ames Campus	N144	GENERAL WAREHOUSE	6/1/1952	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Ames Campus	N200	ADMINISTRATION BUILDING	12/31/1943	Eligible	Determined eligible for NRHP through Section 110 survey and by a consensus through Section 106 process. Listed in CRHR.

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Ames Campus	N201	CLARENCE A. SYVERTSON AUDITORIUM	12/31/1944	Not Eligible	Recommended not eligible (NACA and NASA reconnaissance)
Ames Campus	N202	AMINISTRATION BUILDING ANNEX/CHIEF TECHNOLOGIST, MISSION DESIGN & TECHNICAL LIBRARY	12/31/1950	Recommended Eligible	Appears contributing to a potential historic district (NACA and NASA reconnaissance)
Ames Campus	N202A	RESEARCH SUPPORT BUILDING	5/23/1966	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Ames Campus	N203	Phototechnology Lab, Financial Management Division, Documentation Technology Branch/ADMININISTRATION SUPPORT BUILDING	12/31/1942	Not evaluated	Potentially eligible along with monument (N203A)
Ames Campus	N203A	NACA MONUMENT & TIME CAPSULE	12/20/1979	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Ames Campus	N204	ADMININISTRATION SUPPORT BUILDING	12/31/1955	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Ames Campus	N204A	SPACE TECHNOLOGY BUILDING	12/31/1955	Recommended Eligible	Appears contributing to a potential historic district (NACA and NASA reconnaissance)
Ames Campus	N205	RESEARCH SUPPORT BUILDING	12/31/1957	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Ames Campus	N205 Cooltwrs	COOLING TOWERS AND GENERATORS FOR N205	Unknown	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Ames Campus	N206	12 FT PRESSURE WIND TUN.	12/31/1946	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Ames Campus	N206 shed	Corrugated Shed Southeast of N-206	Unknown	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Ames Campus	N206A	12 FT.PRESS. WT.AUX.BLDG./COMPRESSOR BUILDING	3/17/1969	Recommended Eligible	Appears contributing to a potential historic district (NACA and NASA reconnaissance)
Ames Campus	N207	ADMINISTRATIVE SUPPORT FACILITY	12/31/1946	Not Eligible; needs further evaluation under different theme/for potential historic district	Determined not eligible for NRHP, CRHR, or local designation (NACA and NASA reconnaissance)
Ames Campus	N207A	BALANCE CALIBRATION LABORATORY	12/31/1949	Not Eligible; needs further evaluation under different theme/for potential historic district	Determined not eligible for NRHP, CRHR, or local designation (NACA and NASA reconnaissance)
Ames Campus	N210	FLIGHT SYS.RESEARCH LAB.	1947 or 12/31/1941	Eligible (local)	Recommended eligible (NACA and NASA reconnaissance)
Ames Campus	N211	FLIGHT SUPPORT FACILITY	12/31/1945	Eligible (local)	Recommended eligible (NACA and NASA reconnaissance)
Ames Campus	N212	APPLIED MANUFACTURING DIVISION WELDING SHOP	12/31/1950	Recommended Eligible	Appears eligible (NACA and NASA reconnaissance)
Ames Campus	N213	RESEARCH SUPPORT BUILDING	12/31/1950	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Ames Campus	N215	NASA/ARMY AERODYNAMICS. 7FT X 10FT W.T. NO.1 & HEALTH UNIT	3/1/1941	Recommended Eligible	Appears eligible (NACA and NASA reconnaissance)
Ames Campus	N216	MACHINE SHOP	6/6/1941	Recommended Eligible	Appears eligible (NACA and NASA reconnaissance)
Ames Campus	N216A	MODEL PREPARATION BLDG.	12/07/1973	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Ames Campus	N216B	ARMY MODEL ASSEMBLY BLDG.	1969 or 12/10/1973	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Ames Campus	N217	MAGNETIC STANDARDS LAB	6/18/1969	Not evaluated	--
Ames Campus	N217A	MAGNETIC TEST FACILITY	5/8/1972	Not evaluated	--
Ames Campus	N218A	ELECTRICAL EQUIP.BUILDING	1984 or 8/17/1970	Not evaluated	Surveyed (NACA and NASA reconnaissance)

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Ames Campus	N219	AEROFLIGHTDYNAMICS DIRECTORATE	1940 or 12/31/1941	Recommended Eligible	Appears contributing to a potential historic district (NACA and NASA reconnaissance)
Ames Campus	N220	TECHNICAL SERVICES BLDG.	12/31/1940	Recommended Eligible	Appears contributing to a potential historic district (NACA and NASA reconnaissance)
Ames Campus	N221	40X80 WIND TUNNEL	12/31/1944	Eligible	Determined eligible for NRHP through Section 110 survey and by a consensus through Section 106 process. Listed in CRHR.
Ames Campus	N221A	20-G CENTRIFUGE	12/31/1964	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Ames Campus	N221B	80X120 FT.SUBSONIC WT.	9/4/1985	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Ames Campus	N221C	WIND TUNNEL SUBSTATION	1984 or 12/31/1944	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Ames Campus	N223	R&D RESEARCH SUPPORT	12/31/1955	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Ames Campus	N225	ELECTRICAL SUBSTATION (SOUTH)	12/31/1940	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Ames Campus	N225B	MAIN ELECTRICAL SUBSTATION (NORTH)	1975 or 6/30/1972	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Ames Campus	N226	ADMIN/EDUCATION FACILITY	12/31/1946	Eligible	Determined eligible for NRHP through Section 110 survey and by a consensus through Section 106 process. Listed in CRHR.
Ames Campus	N226 Cooltwr	Cooling tower behind N226	Unknown	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Ames Campus	N227	UNITARY PLAN WT.BUILDING	12/31/1955	Listed (National Historic Landmark)	National Historic Landmark (Determined eligible for NHL designation in "Man in Space" theme study); Individual property listed in NR; Listed in CR (Page & Turnbull 2005)
Ames Campus	N227 Cooltwr	Cooling tower behind (south) N227	Unknown	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Ames Campus	N227 NHL markings	Markings and plaques to commemorate NHL	--	--	--
Ames Campus	N227 sheds	Sheds	Unknown	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Ames Campus	N227A	11 FT.TRANSONIC WT	12/31/1955	Listed (National Historic Landmark)	Feature of National Historic Landmark (Determined eligible for NHL designation in "Man in Space" theme study); Individual property listed in NR; Listed in CR (Page & Turnbull 2005)
Ames Campus	N227B	9X7 FT.SUPERSONIC WIND TUNNEL	12/31/1955	Listed (National Historic Landmark)	Feature of National Historic Landmark (Determined eligible for NHL designation in "Man in Space" theme study); Individual property listed in NR; Listed in CR (Page & Turnbull 2005)
Ames Campus	N227C	8X7 FT.SUPERSONIC WIND TUNNEL (STORAGE)	12/31/1955	Listed (National Historic Landmark)	Feature of National Historic Landmark (Determined eligible for NHL designation in "Man in Space" theme study); Individual property listed in NR; Listed in CR (Page & Turnbull 2005)
Ames Campus	N227D	UNITARY PLAN WT.ELECT.AUX.BLDG. & SUBSTATION	12/31/1955	Not evaluated	--
Ames Campus	N229	EXPER.FLUID DYNAMICS FAC.	12/31/1961	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Ames Campus	N229A	3.5 HYPERSONIC WT.AUX.BLD	5/3/1976	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Ames Campus	N229B	HAZMAT OFFICE SPACE & W.T. STORAGE	3/29/1978	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Ames Campus	N229C	Relief Valve Test Facility	Unknown	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Ames Campus	N229D	ARCJET AUXILIARY COMPRESSOR	7/20/1980	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Ames Campus	N230	PHYS.SCI.RESEARCH LAB.	12/31/1960	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Ames Campus	N231	ARC JET LABORATORY	12/31/1960	Not evaluated	Surveyed (NACA and NASA reconnaissance)

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Ames Campus	N231 Shed	Shed behind N231	Unknown	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Ames Campus	N232	COLLABORATIVE SUPPORT FACILITY	12/05/2011	Not evaluated	--
Ames Campus	N233	CENTRAL COMPUTER FACILITY	12/31/1960	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Ames Campus	N233A	INST.FOR ADV.COMPUTATION	12/07/1973	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Ames Campus	N234	THERMAL PROTECTION LAB.	12/31/1962	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Ames Campus	N234A	THERMAL PROTEC.LAB.BOILER	12/7/1962	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Ames Campus	N235	CAFETERIA BUILDING	6/30/1964	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Ames Campus	N236 A, B, C, D, E	BIOSCIENCE LABORATORY	12/31/1964	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Ames Campus	N237	HYPERVELOCITY FREE-FLIGHT FAC.	6/30/1964	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Ames Campus	N238	ARC JET LABORATORY	12/31/1964	Eligible	Recommended eligible as an individual property (Space Shuttle theme)
Ames Campus	N238A	ARC JET STORAGE FACILITY	9/30/1991	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Ames Campus	N238B	ARCJET D.I. WATER PUMP DISTRIBUTION SUBSTATION	6/20/2005	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Ames Campus	N238C	ARCJET BATTERY HOUSE	3/3/2003	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Ames Campus	N239	LIFE SCIENCES LABORATORY/Center for Nanotechnology & Mars Exploration	12/31/1965	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Ames Campus	N239A	LIFE SCI.LAB.HIGH BAY/50' Diameter Low-G Simulator	12/31/1966	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Ames Campus	N240	CENTER FOR ENGINEERING INNOVATION	6/30/1965	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Ames Campus	N240A	ENGINEERING INTERGRATION FACILITY	6/2/1982	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Ames Campus	N241	ADMIN.MANAGEMENT BUILDING	11/15/1965	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Ames Campus	N242	SYSTEMS DEVELOPMENT FAC./Vestibular Research Facility; Facilities Utiliztion Group - Offices	6/30/1966	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Ames Campus	N243	FLT.&GUIDANCE SIMULA.LAB.	6/30/1967	Eligible	Recommended eligible as an individual property (Space Shuttle theme)
Ames Campus	N243A	SIMULATION EQUIP.BLDG.	12/31/1967	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Ames Campus	N244	SPACE PROJECTS FACILITY	12/31/1967	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Ames Campus	N245	SPACE SCIENCES RESEARCH LAB.	7/6/1970	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Ames Campus	N246	MODEL CONSTRUCTION FAC.	12/12/1973	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Ames Campus	N247	NASA ASTROBIOLOGY INSTITUTE & SPACE BIOSCIENCES	3/24/1975	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Ames Campus	N248	AIRCRAFT SERVICING FAC.	3/31/1973	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Ames Campus	N248A	GRD.SUPP.EQUIP.BUILDING	10/01/1973	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Ames Campus	N248B	GRD.SUPP.EQUIP.BLDG. NO. 2	12/3/1976	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Ames Campus	N248C	ROTORCRAFT MAINTENANCE FACILITY	10/16/1978	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Ames Campus	N248D	AIRCRAFT SVC.STORAGE BLDG	12/31/1987	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Ames Campus	N248E	AIRCRAFT WASHRACK	4/11/1995	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Bay View	N249/N249A	OUTDOOR AERODYNAMIC RESEARCH	3/24/1975	Not Eligible	Recommended not eligible (NACA and NASA reconnaissance)
Ames Campus	N250	HIGH PRESSURE AIR COMPRESSOR BUILDING #1	4/25/1974	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Ames Campus	N250A	HIGH PRESSURE AIR STORAGE FACILITY	11/07/1990	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Ames Campus	N250B	STORAGE SHED	9/30/1995	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Ames Campus	N251	MOTOR POOL	2/22/1977	Not evaluated	Surveyed (NACA and NASA reconnaissance)

APPENDIX D
NRHP Evaluation Status of ARC Buildings

Development Area	Property No.	Name	Est. Date	NRHP Eligibility Status	Evaluation Notes
Ames Campus	N252	NATURAL GAS REDUCING STATION	6/30/1970	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Ames Campus	N253	TEACHERS RESOURCE CENTER	7/5/1977	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Ames Campus	N253A	SECURITY STATION	6/30/1970	Not evaluated	--
Ames Campus	N253B	SENTRY HOUSE (GATE 18)	10/1/1965	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Bay View	N254	TELECOMMUNICATION GATEWAY FACILITY	1/21/1980	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Bay View	N254 windshield	N254 Windshield	Unknown	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Ames Campus	N255	SUPPLY SUPPORT FACILITY	10/16/1978	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Ames Campus	N255A	OXYGEN STORAGE FACILITY	7/31/1986	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Ames Campus	N255B	MAIL SERVICES CENTER	2/10/2006	Not evaluated	--
Ames Campus	N257	CREW VEHICLE SYSTEMS RESEARCH	8/31/1982	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Ames Campus	N258	NASA ADVANCED SUPERCOMPUTING FACILITY (NAS)	12/31/1986	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Ames Campus	N259	AIRCRAFT OPERATIONS SUPPORT FACILITY	2/29/1984	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Ames Campus	N260	FLUID MECHANICS LAB	5/27/1987	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Ames Campus	N261	BIOMEDICAL RESEARCH FACILITY	3/6/1989	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Ames Campus	N262	HUMAN PERFORMANCE RESEARCH LAB	12/31/1990	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Ames Campus	N263	TELECOMMUNICATIONS BUILDING	12/31/1989	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Ames Campus	N265	HAZARDOUS SUBSTANCE STORAGE	8/15/1988	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Ames Campus	N267	MAINTENANCE OPERATIONS BUILDING (DART)	6/30/1991	Not Eligible	Recommended not eligible (NACA and NASA reconnaissance)
Ames Campus	N267A	DART STORGE FACILITY	3/5/2007	Not evaluated	--
Ames Campus	N269	AUTOMATION SCIENCES RESEARCH FACILITY/Automation Sciences Research Facility	12/12/1990	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Ames Campus	N270	CHILD CARE FACILITY	6/21/2006	Not evaluated	--
Ames Campus	N271	INDUSTRIAL WASTEWATER PRE-TREATMENT PLANT	9/27/1999	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Ames Campus	N272	ARNOLD AVENUE SENTRY HOUSE	3/18/2002	Not evaluated	--
Ames Campus	N273	MARK AVENUE SENTRY HOUSE	3/18/2002	Not evaluated	Surveyed (NACA and NASA reconnaissance)
Ames Campus	NA280	HIGH PRESSURE AIR UNDERGROUND DISTRIBUTION LINES	5/15/1969	Not evaluated	--
Ames Campus	NA281	WATER DISTRIBUTION SYSTEM	6/30/1968	Not evaluated	--
Ames Campus	NA282	ROADS AND WALKS	7/1/1968	Not evaluated	--
Ames Campus	NA283	GAS DISTRIBUTION SYSTEM	9/25/1964	Not evaluated	--
Ames Campus	NA284	SEWAGE DISTRIBUTION SYSTEM	6/28/1968	Not evaluated	--
Ames Campus	NA285	LANDSCAPING	6/30/1968	Not evaluated	--
Ames Campus	NA286	TELEPHONE AND COMMUNICATIONS SYSTEM	6/30/1968	Not evaluated	--
Ames Campus	NA288	ELECTRICAL DISTRIBUTION SYSTEM	6/27/1968	Not evaluated	--
Ames Campus	NA289	STORM DRAIN DISTRIBUTION SYSTEM	3/31/1968	Not evaluated	--
Ames Campus	NA291	NASA RECREATIONAL AREA	3/15/2004	Not evaluated	--
Ames Campus	NA292	RAW MATERIAL STORAGE	6/30/1969	Not evaluated	--
Ames Campus	NA293	SIDEWALKS	7/26/2006	Not evaluated	--
Ames Campus	NA294	PERIMETER AND INTERIOR FENCING	6/30/1970	Not evaluated	--
Ames Campus	NA297	STREET LIGHTING	12/17/1992	Not evaluated	--
Ames Campus	NA300	STORAGE COMPOUND & REFUSE COLLECTION	12/1/1952	Not evaluated	--

APPENDIX D
NRHP Evaluation Status of ARC Buildings

Development Area	Property No.	Name	Est. Date	NRHP Eligibility Status	Evaluation Notes
Ames Campus	NA301	VOLLEYBALL COURTS 1& 2	1/5/1990	Not evaluated	--
Ames Campus	NA302	AIRCRAFT FUELING STATIONS 1,2 & 3	1/15/1997	Not evaluated	--
Ames Campus	NA303	BIOREMEDIATION PAD & STORAGE FACILITY	11/13/2001	Not evaluated	--
Ames Campus	NA304	FIRE PROTECTION SYSTEM	9/30/2004	Not evaluated	--
Ames Campus	NA305	ARMY HELICOPTER TOWER	2/2/2007	Not evaluated	--
Ames Campus	NA306	DART TRAINING TOWER	11/02/2005	Not evaluated	--
Ames Campus	NA307	AIR SPARGE BARRIER CURTAIN	1/30/2009	Not evaluated	--
Ames Campus	NA308	MICROWAVE ANTENNAS #1 & #2	7/1/2013	Not evaluated	--
Ames Campus	T127-D	RECYCLE OFFICE TRAILER	6/25/2001	Not evaluated	--
Ames Campus	T12-B	ADMINISTRATIVE MODULAR BUILDING	10/28/1988	Not evaluated	--
Ames Campus	T20-F	MODULAR OFFICE BUILDING	11/28/1989	Not evaluated	--
Ames Campus	T20-G	MODULAR OFFICE BUILDING	10/28/1988	Not evaluated	--
Ames Campus	T28-A	OFFICE TRAILER	6/15/1990	Not evaluated	--
Ames Campus	T28-B	OFFICE TRAILER	6/15/1990	Not evaluated	--
Ames Campus	T28-G	RESTROOM TRAILER	10/31/1992	Not evaluated	--
Ames Campus	T28-H	OFFICE TRAILER	5/27/1980	Not evaluated	--
Ames Campus	T28-J	OFFICE TRAILER	5/27/1980	Not evaluated	--
Ames Campus	T28-N	STORAGE TRAILER (AARC)	5/26/1978	Not evaluated	--
Ames Campus	T28-P	AMES AMATEUR RADIO CLUB (AARC)	10/21/1963	Not evaluated	--
Ames Campus	T35-A	MODULAR OFFICE TRAILER COMPLEX	4/3/2002	Not evaluated	--
Ames Campus	T35-B	MODULAR OFFICE TRAILER COMPLEX	4/3/2002	Not evaluated	--
Ames Campus	T35-C	MODULAR OFFICE TRAILER COMPLEX	4/3/2002	Not evaluated	--
Ames Campus	T36-A	OFFICE TRAILER	4/1/2002	Not evaluated	--
Ames Campus	T39-A	MARSCAPE TRAILER	8/4/2004	Not evaluated	--
Ames Campus	T6-C	OFFICE TRAILER	9/8/1980	Not evaluated	--
Ames Campus	T6-D	OFFICE TRAILER	3/12/1990	Not evaluated	--

APPENDIX E

POINTS OF CONTACT

Appendix E
Points of Contact

A. NASA CRM Program

NASA Federal Preservation Officer (FPO)

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ARC Historic Preservation Officer (HPO)

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ARC Environmental Management Division (EMD); Coordinator for Archeological Resources

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B. State Historic Preservation Officer (SHPO)

SHPO

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NASA Section 106 Compliance Reviewer

Mark Beason
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C. Advisory Council on Historic Preservation (ACHP, Council)

Executive Director

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Office of Federal Agency Programs Director

Reid Nelson
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fax: (202) 606-5072
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D. National Park Service Archeology Program

Departmental Consulting Archeologist (DCA)

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E. California Native American Heritage Commission (NAHC)

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1550 Harbor Blvd, Suite 100
West Sacramento, CA 95691
tel: (916) 373-3715
fax: (916) 373-5471
email: nahc@nahc.ca.gov

F. California Preservation Foundation

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APPENDIX F

ARCHAEOLOGICAL SENSITIVITY MODELS

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APPENDIX G

CALIFORNIA OFFICE OF HISTORIC PRESERVATION SECTION 106 CHECKLIST

California Office of Historic Preservation

Detailed Recommendations for Section 106 Consultation Submittals

This document provides additional explanatory information about the items identified on the Office of Historic Preservation's (OHP) Section 106 Consultation Submittal Checklist. This information is recommended for agencies consulting with the State Historic Preservation Officer (SHPO) under Section 106 of the National Historic Preservation Act and its implementing regulations at 36 CFR Part 800 (a summary of the regulations is also available).

Section I: General Information About the Undertaking

- ❑ Identify if submittal is a new undertaking (i.e., you are initiating consultation) or one that has already been submitted to the SHPO (i.e., you are continuing consultation).

  If you are providing more information related to a submittal already sent to the SHPO, provide the OHP reference number if available.

- ❑ Indicate under which regulatory process or agreement document you are consulting.

  For example, 36 CFR Part 800; 36 CFR Part 800.8(c); Programmatic Agreement; or Memorandum of Agreement.

  If consulting under an agreement document, indicate the document's name and date, and the specific stipulation under which you are consulting, if applicable.

  Note: Further guidance regarding submissions under 36 CFR Part 800.8(c) will be forthcoming Until that time, if you have questions, contact the OHP reviewer assigned to your agency and see NEPA and NHPA: A Handbook for Integrating NEPA and Section 106.

- ❑ Provide the name of the undertaking, street address (if applicable), city, and county.

  Indicate the name the agency is using to identify the undertaking and its location. Include street address and city if those are applicable to the location. If the undertaking crosses into more than one city and/or county, list all cities and counties associated with the undertaking's location.

- ❑ Indicate if the federal agency has begun its review process under the National Environmental Policy Act (NEPA).

  If NEPA review has begun, provide a description of what work has been done to date, which type of NEPA document is being prepared, and what the agency's schedule is for future NEPA compliance work.

Section II: Contact Information

- ❑ Provide the name of the federal agency responsible for the undertaking, and the agency representative's contact information.

  Include full contact information (i.e., the representative's name, mailing and street addresses, phone number, fax number, and email address).

Note: Every undertaking has a federal funding, licensing, or permitting agency. If you do not know your federal agency or the contact person, contact the party that is requiring you to request Section 106 consultation to obtain this information.

- ❑ If you have been delegated responsibility for consultation by a federal agency, provide a letter of delegation from the agency.
- ❑ If applicable, provide the state agency name and information regarding the contact person at that agency.

  Include full contact information (i.e., the representative's name, mailing and street addresses, phone number, fax number, and email address).
- ❑ If this consultation request is part of a grant program, include the name of the program.

  For example, Land and Water Conservation Fund (under the National Park Service), Regional Trails Program (under the Federal Highway Administration), etc.
- ❑ If different from the contact people referenced above, provide information regarding the contact person for this specific consultation request.

  Include full contact information (i.e., the representative's name, mailing and street addresses, phone number, fax number, and email address).

Section III: Description of Undertaking and Area of Potential Effects (APE)

- ❑ Provide a detailed, narrative Project Description.

  Describe in narrative form all the work that will be undertaken (plans, specifications, environmental documents, etc., are helpful but should be used to supplement, not replace, this description). Be sure to identify the undertaking's purpose (in brief), acreage, and location. Include any information about building removals, rehabilitation, and landscape alterations such as sidewalk or tree removals. The project description should include enough detail to fully communicate the action, especially with regard to its potential effects on historic properties.

  Note: The federal agency is mandated to assess the effects that an undertaking may have on historic properties only. Economic benefits and/or impacts to the natural and social environment are not relevant unless these bear some connection to the effects on historic properties.
- ❑ Provide a Project Location Map depicting where the undertaking is located within the state.
- ❑ Provide a narrative APE Description. (36 CFR Part 800.4(a)(1))

  Note: All federal undertakings have an APE.

  Include the horizontal and vertical extents of proposed work (including ancillary and support locations such as staging and lay down areas, access routes, and mitigation parcels), a description of the steps taken to identify the APE, and a justification for the APE boundaries chosen. The APE should also take indirect effects into account (e.g., visual

and auditory effects, land use changes, traffic patterns, public access, etc.). The indirect APE should be clearly described.

Note: The APE is defined in 36 CFR 800.16(d) as "the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The area of potential effects is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking." In most instances, the APE is not simply the undertaking's physical boundaries or right-of-way.

- ❑ Provide an APE Map on a 7.5-minute USGS topographic quad or another map showing the APE in appropriate detail and scale. More than one map may be advisable.

  Ensure the map(s) clearly outlines the APE and depicts and labels all work items discussed in the project description. Whatever type of map(s) is submitted, it needs to adequately portray the APE so that the OHP reviewer can understand the extent of the APE as well as the location of all items discussed in the project description. Consistency in mapping formats used is highly advisable.

  For example, if no historic properties are present, the project's APE map should simply be of sufficient scale to document the APE. However, if historic properties are present, the project's APE should be projected on aerial photos and be of sufficient scale (1 inch=200 feet is preferred) and have enough project detail to demonstrate the relationship of historic properties to the APE. This is especially important in order to document a finding of No Historic Properties Affected or a finding of No Adverse Effect. The map(s) should clearly show the APE, the location of all properties discussed, the boundaries of any eligible or listed historic properties, and the boundaries of any Environmentally Sensitive Areas (ESAs), if applicable.

  All maps and aerial photographs should include a scale, a North arrow, and clear labels.

  If using a USGS map that doesn't clearly show the name of the USGS quadrangle as well as the Township Number, Range, and Section number(s), include this information. The USGS quadrangle site is geonames.usgs.gov/pls/gnispublic/f?p=111:1:270765758809663.

Section IIIA: Ground-Disturbing Activity

Note: Ground-disturbing activities include excavation, grading, tree removal and planting, utility installation, etc.

If the undertaking involves ground-disturbing work:

- ❑ Provide a USGS 7.5 minute quadrangle map, or another map of an appropriate scale, with the location of the ground-disturbing activity clearly marked.

  Like with the APE map, this map needs to be of sufficient scale to allow the OHP reviewer to understand the extent (horizontal and vertical) and location(s) of proposed ground-disturbing activities.

If using a USGS map that doesn't clearly show the name of the USGS quadrangle as well as the Township Number, Range, and Section number(s), include this information.

- ❑ Describe, in narrative form, the proposed length, width, and maximum depth of ground-disturbing activity.

  For example, "The proposed trench line will be 4 feet long, 20 feet wide, 2 feet deep."

- ❑ Describe the current and previous use(s) of the land and any known previous ground disturbances.

  If previous ground disturbance is used to determine an absence of archaeological resources, provide supporting evidence for the determination, such as indicating the area has imported landfill, there was prior grading down to bedrock or into strata predating prehistoric occupation, etc.

Section IV: Identification of Historic Properties

Note: Historic properties are defined at 36 CFR Part 100.16(I)(1) as properties included in or eligible for inclusion in the National Register of Historic Places. The agency is responsible for making a reasonable and good faith effort to carry out appropriate identification efforts, which may include background research, consultation, oral history interviews, field investigations, and field surveys. The California Historical Resources Information System's Information Centers maintain an inventory of listed and previously identified cultural resources; however, simply conducting a records search at one of these centers does not fulfill your responsibility to identify historic properties. The OHP does not conduct research.

- ❑ Describe the archival research conducted in order to identify historic properties. Attach evidence of having completed a records search at the appropriate Regional Information Center(s) and attach the results of that search. (36 CFR Part 800.4(a)(2))

  The SHPO recommends that identification efforts include a recent (not more than two years old) CHRIS records search, in addition to research through other sources as appropriate to the undertaking's scale and location. More recent information should be included if there have been major impacts to the landscape in which the undertaking is located (e.g., development, fire, flooding, quarrying, etc.).

- ❑ Describe Native American consultation conducted and efforts to identify Native American resources. Attach copies of correspondence to and from tribal groups and the Native American Heritage Commission. (36 CFR Part 800.4(a)(4))

  You will need to provide the Native American Heritage Commission (NAHC) with an APE and project description, as well as locational information comparable to that discussed in Section III above. The NAHC uses a Sacred Lands File and Native American Contacts List Request Form for this purpose. We strongly advise that you consult with all contacts identified by the NAHC.

  Tribal consultation should be initiated prior to initiation of the Section 106 review process with the SHPO to ensure that tribal comments are taken into consideration during the

review process and to identify tribal resources in the APE. In rare instances, tribal consultation may be initiated at the same time as initiation of the process with the SHPO and the reason for this should be explained in the information submitted to the SHPO.

Letters to tribes or interested Native American individuals are adequate for the initial contact, but should be followed by telephone/email or other reasonable and appropriate attempts to engage responses. In addition to attaching correspondence to or from tribal groups, the agency should also describe these other attempts to contact tribal groups and summarize the responses received.

Additionally, the submittal should discuss meetings held with tribes and any studies that resulted from consultation. The agency's response to all comments received should also be included in the submittal, describing the issues that remain to be resolved, if any.

For more information about consulting with Native American tribes, see the ACHP's Consultation with Indian Tribes in the Section 106 Review Process: A Handbook.

- ❑ Describe consultation conducted with other consulting parties (such as representatives of local governments, project applicants, and additional consulting parties) and the public pursuant to 36 CFR Part 800.2(c)(3-5) and Part 800.2(d). Attach copies of correspondence to and from such agencies, organizations, and individuals. (36 CFR Part 800.4(a)(3))
- ❑ Identify any previously recorded historic properties. (36 CFR Part 800.4(a)(2))
- ❑ Describe the survey work completed to identify historic properties. (36 CFR Part 800.4(b)(1))

  Discuss, for example, any field surveys, excavation, building surveys, etc.

  Architectural surveys may need to be updated if they are more than five years old to ensure the identification efforts reflect the current state of the resources.

  Resources identified in field inventories that are more than two years old should be re-examined to determine site integrity and project effects. Archaeological property surveys less than two years old may require updating if there have been changes to the landscape such as fire, flooding, slides, etc.

  If the identification and evaluation efforts will be based on older surveys, the agency should provide justification for why those results remain valid.

  - ❑ For archaeological surveys, provide a map of the APE depicting the areas surveyed, types of survey coverage (e.g., intensive, reconnaissance), and survey methods and strategies.

    Archaeological survey reports must include the field methodology used and a reference to the state and/or federal standards under which the survey was conducted. Specify whether the survey was a pedestrian surface survey, a windshield survey, etc. Pedestrian surveys should be conducted using transects of 15 meters or less. If this was not possible due to topography or vegetation, discuss what the restrictions were and efforts to facilitate identification. Also include the percentage of surface visibility during the survey. If visibility was poor include what actions were taken to adapt identification efforts (e.g., raking surface leaves or vegetation at intervals along transects).

- ❑ Provide a site location map that depicts the location of all historic properties and isolated finds identified within the APE.
- ❑ Evaluate the potential eligibility of identified resources for listing on the National Register of Historic Places and provide substantive evidence of Determinations of Eligibility (DOEs) for each property evaluated (the DPR 523 form, or an appropriate agency form, may be used to provide this evidence). (36 CFR Part 800.4(c))

  If properties were previously determined eligible or ineligible, provide a copy of the letter indicating SHPO concurrence.

  DOEs should demonstrate that all four of the Criteria for Evaluation found at 36 CFR Part 60.4 have been applied and the historic integrity of the property assessed. DOEs should also evaluate eligibility of properties within the context of a potential historic district, as well as individual eligibility. Your submittal should indicate the reason(s) each resource meets or doesn't meet the criteria and if certain criteria are not applicable to the resource, as well as addressing the seven aspects of integrity found in National Register Bulletin 15: How to Apply the National Register Criteria for Evaluation (found at http://www.nps.gov/nr/publications/bulletins/nrb15/).

  For new DOEs, SHPO concurrence with the eligibility findings is required. In some instances and through consultation with the SHPO, a federal agency may assume that a property or site is eligible. In any case, the agency should provide a rationale for its findings.

Section V: Finding of Effect

- ❑ Based on the above information, identify which ONE of the findings of effect applies to this undertaking: No Historic Properties Affected pursuant to 36 CFR Part 800.4(d)(1); No Adverse Effect pursuant to 36 CFR Part 800.5(b); or, Adverse Effect pursuant to 36 CFR Part 800.5(d)(2).
  - ❑ Provide a justification for the finding of effect.

    To make a finding of No Historic Properties Affected, resources within the APE must have been evaluated. However, resources may be assumed eligible for the National Register of Historic Places for purposes of the project when they can be completely avoided by the project activities, in which case a finding of No Adverse Effect with Conditions would be appropriate.
  - ❑ For findings of Adverse Effect, describe the adverse effects to historic properties pursuant to 36 CFR Part 800.5(a)(1) and examples provided at 36 CFR Part 800.5(a)(2).

    Adverse effects result when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register. The assessment of effect should explain why and how historic properties will be adversely affected.

    Note: Further consultation will be required to resolve adverse effects if the SHPO concurs with a finding of adverse effects. If the undertaking results in an adverse

effect, the agency will consult on an agreement document (Memorandum of Agreement or Programmatic Agreement) with consulting parties, including the SHPO and the Advisory Council on Historic Preservation (ACHP), should the ACHP choose to participate.

The checklist above is specifically focused on documentation to submit for SHPO review of a federal undertaking. For information about the process of consultation under Section 106 of the NHPA, see the following resources:

Advisory Council on Historic Preservation's Archaeology Guidance

Section 106 Applicant Toolkit

Meeting the "Reasonable and Good Faith Identification Standard" in Section 106 Review

Tribal Consultation: Best Practices for Historic Preservation

Section 106 Assistance for Users (this page has links to many different types of information, including some of the resources noted above)

APPENDIX H

BIBLIOGRAPHY OF CULTURAL RESOURCES REPORTS

Appendix H
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