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Project name:
FY19 Maintenance Project

Project reference:
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From:
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Date:
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To:
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Memo

Subject: Section 106 Consultation on FY19 Maintenance Project, NASA Ames Research Center, Moffett Field, Santa Clara County, California

1. Introduction

The National Aeronautics and Space Administration (NASA) Ames Research Center (ARC) proposes the Fiscal Year 2019 (FY19) Maintenance Project (project or undertaking) at ARC, Moffett Field, Santa Clara County, California. As the lead federal agency, NASA is responsible for compliance with Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended (54 United States Code 300101 et seq.), which requires federal agencies to take into account the effects of their activities and programs on historic properties, and its implementing regulations in 36 Code of Federal Regulations (CFR) Part 800. This memorandum provides necessary information for compliance with Section 106, including a description of the undertaking and the Area of Potential Effects (APE), the methodology used to identify and evaluate historic properties within the APE, a description of the affected historic properties, and an assessment of potential effects resulting from the undertaking.

1.1 Project Location

The project is located at ARC, Moffett Field, Santa Clara County, California (see Appendix A; Map Figures 1 and 2). The project includes or is adjacent to 16 separate facilities.

1.2 Project Personnel

This study was conducted by cultural resources professionals who meet the Secretary of the Interior's Professional Qualifications Standards (48 Federal Register 44738). Trina Meiser, M.A., Senior Architectural Historian, served as the Principal Investigator; Jay Rehor, RPA, Senior Archaeologist, reviewed archaeological resource information; Lauren Downs, M.A., RPA, provided map figures; and Kirsten Johnson, M.A., served as the lead verifier of this document.

2. Description of the Undertaking

The project includes maintenance activities to repair and/or improve the functionality of 16 facilities, including replacement and/or minor upgrades to equipment. NASA ARC has determined that the project constitutes an

undertaking per 36 CFR § 800.3(a). The FY19 Maintenance Project was deferred until the present due to budgetary constraints. The following describes activities that would occur at or adjacent to each facility. Additional information for each facility is provided in Appendix B.

- Building 15 (M015, Security Station) (pages B1-4)
  - Room N108 (mechanical room) – Replace the existing double check valve assembly with an approved reduced pressure (RP)-type backflow assembly for boiler/chiller to meet code requirements and provide the appropriate level of protection based on degree of hazard.
  - Room N108 (mechanical room) – Remove and replace 35 corroded boiler tube studs. Weld new studs and perform weld inspection.
  - Room N108 (mechanical room) – Remove and replace existing water heater in kind.
- Building 17 (M017, Administration and Telephone Exchange/Admirals Building) (pages B5-8)
  - Room R102 (restroom) – Install an appropriate air gap to existing sink.
  - Room 010 (mechanical room) – Install new domestic hot water recirculation pump, expansion tank, and associated piping.
- Building 20 (M020, Bachelor Officer Quarters) (pages B9-18)
  - Room R141 (restroom) – Install an atmospheric vacuum breaker (AVB) on flushometer of urinal for appropriate backflow protection.
  - Room 202 (restroom) – Install an AVB on flushometer of toilet for appropriate backflow protection.
  - Room 207 (office) – Install an appropriate air gap to existing dishwasher drain.
  - Room 238 (restroom) – Install an AVB on flushometer of toilet for appropriate backflow protection.
  - Room 240 (restroom) – Install an AVB on flushometer of toilet for appropriate backflow protection.
- Building 23 (M023, Dispensary/Carnegie Mellon University) (pages B19-20)
  - Elevator mechanical space – Perform 5-year load test on elevator; perform elevator repairs, as necessary.
- Building 25 (M025, Administration and Auditorium) (pages B21-24)
  - Room R211 (restroom) – Install an AVB on flushometer of toilet for appropriate backflow protection.
  - Room R212 (restroom) – Install an AVB on flushometer of toilet for appropriate backflow protection.
- Shenandoah Plaza Flagpole (M040) (pages B25-26)
  - Replace concrete flagpole base in kind to stabilize the flagpole.
- Building 55 (M055, Boiler House) (pages B27-30)
  - Install an appropriate air gap to existing interior boiler drain.
  - Disconnect existing eyewash stand equipment from an industrial water service line and reconnect to a domestic water source.
- Building N200 (Administration Building) (pages B31-36)
  - Room 212 (executive restroom) – Install an AVB on flushometer of toilet for appropriate backflow protection.
  - Room Q016 (mechanical room) – Install an appropriate air gap to existing interior sump pump tank drain lines.
  - Room 224 (office) – Replace 200 square feet of interior ceiling tiles in kind.

- Building N215 (7x10 foot [ft] Wind Tunnel) (pages B37-38)
  - Roof Section A – Repair existing roof access ladder due to deterioration to meet safety requirements.
- Building N220 (Technical Services Building) (pages B39-40)
  - Roof Section B – Remove deteriorated roofing material; infill cracks to minimize risk of structural failure and water intrusion; and replace roofing material in kind.
- Building N221 (40x80 ft Wind Tunnel) (pages B41-50)
  - Replace the existing AVBs on irrigation main (two locations) with an approved RP-type backflow assembly.
  - Replace the 8-inch gate valve and remove the 1-inch service of the irrigation main.
  - Room MR108 (restroom) – Replace existing hot water heater in kind.
  - Roof Sections 1 and 2 – Repair roof and install two locations of roof access with fall protection equipment, including stanchions and cables, to roof and existing rooftop equipment.
- Building N226 (6x6 ft Supersonic Wind Tunnel) (pages B51-52)
  - Room 217A – Ceiling duct cleaning.
- Building N227 (Unitary Plan Wind Tunnel) (pages B53-67)
  - Oil Houses #1 and #2 – Assess and prepare a Preliminary Engineering Report (PER) to gather all available information regarding the existing system; canvass stakeholders for suggested improvements and additional instrumentation; and identify multiple solutions to the aging oil house issues, analyze their strengths and weaknesses, and provide cost estimates for each option. No construction or demolition included.
  - Room 206A – Replace two heating/ventilation/air conditioning (HVAC) systems. Install two access panels through ceiling to access the HVAC systems.
  - Building N227A (11 ft Transonic Wind Tunnel), Room 152 – Install appropriate air gaps to existing drain lines (currently connected directly to the sewer) used to cool laser equipment.
  - Building N227B (9x7 ft Supersonic Wind Tunnel), Room 155 – Install an RP-type backflow prevention assembly to cooling equipment.
  - Building N227B (9x7 ft Supersonic Wind Tunnel), Room 157 – Replace the existing double check valve assembly with an approved RP-type backflow assembly for boiler to meet code requirements and provide the appropriate level of protection based on degree of hazard. Install an RP-type backflow prevention assembly to cooling water for vacuum equipment.
  - Building N227C (8x7 ft Supersonic Wind Tunnel) parking lot – Locate and repair damaged underground sewer line in paved area serving the facility.
- Building N238 (Arc Jet Laboratory) (pages B68-71)
  - Room N022 (basement) – Remove existing obsolete facility control panel for HVAC system and replace with new panel; reprogram new panel.
  - Replace exterior/rooftop air conditioning compressor that serves Room 103 in kind.
- Building N242 (Systems Development Facility) (pages B72-73)
  - Locate and repair damaged underground sewer line in paved area serving the facility.
- Building N243 (Flight and Guidance Simulation Laboratory) (pages B74-79)
  - Room 049 (Video Infrastructure Room) – Repair/upgrade electrical distribution, HVAC, electrical infrastructure, and safety elements of the room.

- Room 226 - Replace outdated Vertical Motion Simulator (VMS) tower electrical panel.
- Room 129 – Repair fire damper by replacing the fusible link.

3. Area of Potential Effects

The APE is defined to address both direct and indirect impacts on historic properties. The APE encompasses areas that may be affected by both temporary and permanent construction activities. Indirect visual and/or atmospheric impacts resulting from the project pose very limited potential to impact adjacent historic properties; therefore, the APE is limited to the boundary of each facility and adjacent areas affected by the project (see Appendix A; Figure 3). Limited ground disturbance related to sewer repairs and valve and irrigation main replacements is included in the project. The vertical APE is limited to previously disturbed soils and fill associated with the original installation of those facilities.

4. Identification of Historic Properties

Historic properties are defined as any district, site, building, structure, or object that is listed in or is eligible for listing in the National Register of Historic Places (NRHP). The following sections address the methodology and efforts to identify historic properties in the APE.

4.1 Archaeological Resources

Project activities involve limited ground disturbance within previously disturbed areas. No archaeological resources have been previously identified in or adjacent to areas where ground disturbance would occur. In February 2017, AECOM prepared the *NASA Ames Research Center Archaeological Resources Study* (AECOM 2017) to provide guidance for archaeological resources management at ARC in support of NASA's obligations under the NHPA of 1966. The study included an extensive review of prior surveys, previously recorded resources, historic maps and photographs, Sacred Land Files from the Native American Heritage Commission, and hundreds of geotechnical investigations conducted at NASA ARC. According to the results of the study, the areas of ground disturbance for the current project are all contained within areas of "Low Archaeological Sensitivity," which are areas within NASA ARC that were determined to have a low potential for containing archaeological resources. The State Historic Preservation Officer (SHPO) reviewed the study and agreed that it could be used as the baseline study for future archaeological investigations (OHP Reference No. NASA_2015_0928_001). No additional archaeological investigations have occurred in the project areas of ground disturbance since the 2017 study. Given that the areas of proposed ground disturbance are very limited and completely paved, no field surveys were undertaken for this project. Based on the previous research, the limited areas of ground disturbance in the APE have a low potential for containing archaeological resources.

4.2 Architectural Resources

The discontiguous APE encompasses 16 facilities. All 16 facilities are listed in the NRHP or have been previously determined eligible for the NRHP. No further evaluation of the historic properties under the NRHP criteria is necessary for the purposes of this study. A brief description of each resource is listed below. For photos and project activities related to each facility, see Appendix B.

4.2.1 NAS Sunnyvale Historic District

Listed in the NRHP in 1994, the NAS Sunnyvale Historic District is significant under NRHP Criteria A and C, and originally included only the earliest Spanish Colonial Revival campus buildings around Shenandoah Plaza and Hangars 1, 2, and 3. The original periods of significance of the district were identified as 1930 through 1935 and 1942 through 1946. The utilitarian style of later buildings was noted in the NRHP nomination; however, at the time of the nomination, several buildings were not yet 50 years old and were not considered contributing under the statement of significance that focused on Spanish Colonial Revival-style architecture and the engineering

feat related to the airfield hangars. As stated in the 1994 district nomination, the interiors of the contributors are not considered significant.

In 2013, a historic property survey of Moffett Field was conducted to evaluate the significance of additional resources related to the airfield and concluded that the airfield and related resources are eligible for the NRHP under an expanded context for the NAS Sunnyvale Historic District (AECOM 2013). The SHPO concurred on expanding the boundary of the district on June 6, 2013 (NASA_2013_0417_001) with a revised period of significance of 1942 to 1961 for the airfield (see Appendix A, Map Figure 2 for expanded historic district boundary). The district's statement of significance was also revised to include the World War II and Cold War military missions. However, the 2013 study did not revisit the previously listed areas of the district or its contributing and non-contributing resources.

No major alterations to the district have occurred since it was listed in 1994, with the exception of removal of the exterior materials of Hangar 1 to remediate hazardous materials. The district retains its integrity and remains eligible for the NRHP.

4.2.1.1 Building 15 (M015, Security Station)

Built in 1933, Building 15 is a contributor to the NAS Sunnyvale Historic District and is located near Shenandoah Plaza. It is a one-story Spanish Colonial Revival building with stucco siding and a tile roof. Its character-defining features relate to its exterior Spanish Colonial Revival architecture. No major alterations to the building have occurred since it was listed in 1994, and it retains integrity.

4.2.1.2 Building 17 (M017, Administration and Telephone Exchange/Admirals Building)

Built in 1933, Building 17 is a contributor to the NAS Sunnyvale Historic District and is located adjacent to Shenandoah Plaza. It is a two-story Spanish Colonial Revival building with stucco siding and a tile roof. Its character-defining features relate to its exterior Spanish Colonial Revival architecture. No major alterations to the building have occurred since it was listed in 1994, and it retains integrity.

4.2.1.3 Building 20 (M020, Bachelor Officer Quarters)

Built in 1933, Building 20 is a contributor to the NAS Sunnyvale Historic District and is located adjacent to Shenandoah Plaza. It is a two-story Spanish Colonial Revival building with stucco siding and a tile roof. Its character-defining features relate to its exterior Spanish Colonial Revival architecture. No major alterations to the building have occurred since it was listed in 1994, and it retains integrity.

4.2.1.4 Building 23 (M023, Dispensary/Carnegie Mellon University)

Built in 1933, Building 23 is a contributor to the NAS Sunnyvale Historic District and is located adjacent to Shenandoah Plaza. It is a two-story Spanish Colonial Revival building with stucco siding and a tile roof. Its character-defining features relate to its exterior Spanish Colonial Revival architecture. The building underwent a major renovation in the 2000s; however, exterior alterations were performed in adherence to the Secretary of the Interior's Standards and reviewed through the Section 106 process, and it retains integrity.

4.2.1.5 Building 25 (M025, Administration and Auditorium)

Built in 1933, Building 25 is a contributor to the NAS Sunnyvale Historic District and is located adjacent to Shenandoah Plaza. It is a two-story Spanish Colonial Revival building with stucco siding and a tile roof. Its character-defining features relate to its exterior Spanish Colonial Revival architecture. The building is currently undergoing rehabilitation, which was previously reviewed through the Section 106 process (OHP Reference No. NASA_2018_0606_001) and will be performed in adherence to the Secretary of the Interior's Standards. The building retains integrity.

4.2.1.6 Shenandoah Plaza Flagpole, Grounds (M040)

Built in 1933, the Shenandoah Plaza flagpole is a contributor to the NAS Sunnyvale Historic District and is located adjacent to Shenandoah Plaza. It is a metal pole in a circular, concrete base. No major alterations to the flagpole have occurred since it was listed in 1994, and it retains integrity.

4.2.1.7 Building 55 (M055, Boiler House)

Built in 1943, Building 55 is a contributor to the NAS Sunnyvale Historic District and is located between Hangars 2 and 3 on the east side of Moffett Federal Airfield. It is a one-story utilitarian building with stucco walls and a prominent brick stack. Its character-defining features relate to is utilitarian architecture and its function and orientation to Hangars 2 and 3. No major alterations to the building have occurred since it was listed in 1994, and it retains integrity.

4.2.2 Building N200 (Administration Building)

Building N200, the Ames Administration Building, was listed in the NRHP in 2017. It is significant under Criteria A and B. Completed in 1943, the building served as the administrative headquarters for the intensive research and development efforts undertaken at the Ames Aeronautical Laboratory facility and later the NASA ARC. Smith J. De France, a pioneer in aeronautics research and development, was responsible for the initial development of the facility, served as its first director from 1940 to 1965, and was instrumental in establishing its reputation as a nationally significant scientific research facility. Building N200 is a two-story, Streamline Moderne-style building with concrete walls and a flat roof. Its character-defining features relate to its Streamline Moderne architecture and its function as the administrative headquarters for NASA ARC. No major alterations to the building have occurred since it was listed in 2017, and it retains integrity.

4.2.3 NASA Ames Wind Tunnel Historic District

The NASA Ames Wind Tunnel Historic District was listed in the NRHP in 2017. The district consists of five contributors, including wind tunnels and buildings that support the functions of the wind tunnels. Although many of the structures have their own building numbers, they are functionally related and connected, and are counted as one resource (for example, the Unitary Plan Tunnel includes Buildings N227, N227A, N227B, and N227C). The district is significant under Criterion A in the areas of science, invention, and engineering at the national level of significance because this district contributed greatly to advancements in the aeronautical and space industries, and under Criterion C as a significant work of engineering. The tunnels and their supporting buildings performed critical roles in aeronautical research and design and are among the most sophisticated scientific tools constructed and used by the U.S. government and commercial businesses. The research conducted within the wind tunnels was crucial to aircraft and spacecraft research and design. The period of significance extends from 1940 to 2011, the year that the Space Shuttle Program ended. It also meets the requirements of Criteria Consideration G because the facility is exceptionally significant as the leading research and development facility in the areas of aeronautics and space in the United States.

4.2.3.1 Building N215 (7x10 ft Wind Tunnel)

Building N215 was constructed in 1941 and is a contributor to the NASA Ames Wind Tunnel Historic District. It is a two-story building with a concrete foundation, exposed concrete walls, and a flat roof. Its character-defining features relate to its exterior Streamline Moderne architecture and its overall engineering as a wind tunnel with a test section that is 7 ft high and 10 ft wide. No major alterations to the building have occurred since it was listed in 2017, and it retains integrity.

4.2.3.2 Building N220 (Technical Services Building)

Building N220 was built in 1940 to serve as the production area for equipment used to support testing and research and is a contributor to the NASA Ames Wind Tunnel Historic District. It is a two-story building with a rectangular plan and concrete foundation. Its character-defining features relate to its exterior Streamline Moderne architecture and its interior function as a fabrication shop. No major alterations to the building have occurred since it was listed in 2017, and it retains integrity.

4.2.3.3 Building N221 (40x80 ft Wind Tunnel)

Building N221, along with Building N221B, is the National Full-Scale Aerodynamics Complex and is a contributor to the NASA Ames Wind Tunnel Historic District. The building was also determined eligible for individual listing in 2008. Building N221 was constructed in 1944. The enormous structure is composed of an exoskeleton with a

mix of corrugated metal and transite cement asbestos corrugated siding. The wind tunnel test section measures 40 ft high, 80 ft wide, and 80 ft long. Its character-defining features relate to its overall engineering as a wind tunnel with a test section that is 40 ft high and 80 ft wide. No major alterations to the building have occurred since it was listed in 2017, and it retains integrity.

4.2.3.4 Building N226 (6x6 ft Supersonic Wind Tunnel)

Building N-226 was built in 1948 and is a contributor to the NASA Ames Wind Tunnel Historic District. The building was also determined eligible for individual listing in 2008. It is a two-story building with concrete siding and a wind tunnel structure west of the building. It is a closed circuit, steel-framed wind tunnel. Its character-defining features include the Streamline Moderne architectural features and its engineering as a wind tunnel with a test section that is 6 ft high, 6 ft wide, and 14.4 ft long. The wind tunnel has been decommissioned and the remaining portion of the second story (incorporating the testing portion of the wind tunnel) has been converted for educational purposes. The building has undergone few exterior alterations, and it retains integrity.

4.2.4 Building N227 (Unitary Plan Wind Tunnel)

Constructed in 1956, the Unitary Plan Wind Tunnel was designated a National Historic Landmark in 1985. It is also a contributor to the NASA Ames Wind Tunnel Historic District. The Unitary Plan Wind Tunnel is a system of wind tunnels that has three test sections: the 11-by-11-ft Transonic Tunnel (N227A), the 9-by-7-ft Supersonic Tunnel (N227B), and the 8-by-7-ft Transonic Tunnel (N227C). Buildings N-227 and N-227A through C are interconnected, and although N-227D is functionally related, it is a separate building. In addition to the Unitary Plan Wind Tunnel, Building N-227 also contains a laboratory and offices. It is a two-story building with a three-story center section. Its character-defining features include the Streamline Moderne architectural features and its exceptional engineering as a unique wind tunnel facility. No major alterations to the facility have occurred since it was listed in 2017 as part of the NASA Ames Wind Tunnel Historic District, and it retains integrity.

4.2.5 Building N238 (Arc Jet Laboratory)

Building N238 is part of the Arc Jet Complex, which was listed in the NRHP in 2017. Built in 1964, it is exceptionally significant for its association with advancements in arc jet technology and research and development of thermal protection systems for NASA's spaceflight programs. The complex meets Criteria Consideration G based on the exceptional significance of the facility's contributions to nationally and internationally important space science programs, including the Space Shuttle Program that ended in 2011. The one-story laboratory has modern, utilitarian design, with concrete and masonry exterior walls and a flat roof. Its character-defining features relate to its function as an arc jet laboratory, including features such as the control room, five bays for arc jet equipment, and connection to the rest of the Arc Jet Complex. No major alterations to the facility have occurred since it was listed in 2017, and it retains integrity.

4.2.6 Building N242 (Systems Development Facility)

Built in 1965, Building N242 is a two-story research facility with a rectangular plan and a prominent 100-foot pentagonal test chamber tower extending from the center of the building. The building has reinforced concrete walls that are scored with a grid pattern. It was determined eligible for listing in the NRHP as a highly specialized missile and spacecraft testing facility, and for its contributions to important scientific research related to space exploration under Criteria A and C. Its character-defining features relate to its concrete construction and unique design of the laboratory. Building N242 has had some alterations related to its repurposing for other scientific research since it was originally designed but retains sufficient integrity for eligibility.

4.2.7 Building N243 (Flight and Guidance Simulation Laboratory)

Building N243 was listed in the NRHP under Criteria A and C in 2017. Covering over 108,000 square feet of space, the large Brutalist-style building housed some of NASA ARC's most unique air and spacecraft research, testing, and training facilities, including the VMS, the world's largest and most sophisticated motion-based simulator. The VMS in particular is exceptionally significant within the context of the Space Shuttle Program for its contribution to the development and operation of the Space Shuttle orbiter by providing research and

essential astronaut training in an accurately simulated orbiter. Building N243's character-defining features relate to its Brutalist architecture and its engineering related to astronaut training programs, including equipment such as the VMS. No major alterations to the facility have occurred since it was listed in 2017, and it retains integrity.

5. Assessment of Effects

Per 36 CFR § 800.5(a)(1), an adverse effect results when an undertaking may alter, either directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the NRHP in a manner that would diminish the historic property's integrity.

There are no known archaeological resources in or adjacent to the areas of proposed ground disturbance. Furthermore, the APE has been previously assessed as having a low potential for containing archaeological resources, and the very limited project-related subsurface repair/replacement activities will be confined to areas/depths of prior disturbance. Nonetheless, there is always the potential that unanticipated archaeological resources could be encountered during ground disturbing activities. Should potential archaeological resources be encountered during project construction, contractors will immediately halt construction, secure the site, and notify NASA of the unanticipated discovery. NASA will follow the standard operating procedure for unanticipated discoveries as outlined in the Integrated Cultural Resources Management Plan (ICRMP) for ARC (AECOM 2014). Through implementation of mitigation measures outlined in the standard operating procedure for unanticipated discoveries, the undertaking would have no adverse effect on archaeological historic properties.

Sixteen significant facilities are in the APE, including contributors to the NRHP-listed NAS Sunnyvale and Ames Wind Tunnel historic districts and individually listed or eligible historic properties. The project activities affecting these historic properties are related to maintenance and equipment upgrades that would not detract from any historic characteristics of the buildings or the districts, or compromise the properties' integrity of location, design, setting, materials, workmanship, feeling, or association. Table 1 lists the historic properties in the APE and their established significance under NRHP criteria and includes a discussion of effects on each historic property.

Table 1. Historic Properties in the APE

Facility Name	Date	NRHP Significance	Effects Assessment
Building 15 (M015, Security Station)	1933	Listed in NRHP as contributor to NAS Sunnyvale Historic District under Criteria A and C; Spanish Colonial Revival building located near Shenandoah Plaza	Repairs to boiler and replacement of water heater in kind in interior mechanical room will not alter any character-defining features of the facility. No adverse effect.
Building 17 (M017, Administration and Telephone Exchange/Admirals Building)	1933	Listed in NRHP as contributor to NAS Sunnyvale Historic District under Criteria A and C; Spanish Colonial Revival building located at Shenandoah Plaza	Installation of air gap to existing restroom sink, and internal water pump and piping alterations will not alter any character-defining features of the facility. No adverse effect.
Building 20 (M020, Bachelor Officer Quarters)	1933	Listed in NRHP as contributor to NAS Sunnyvale Historic District under Criteria A and C; Spanish Colonial Revival building located at Shenandoah Plaza	Toilet and plumbing repairs/part installation in existing restrooms will not alter any character-defining features of the facility. No adverse effect.

Facility Name	Date	NRHP Significance	Effects Assessment
Building 23 (M023, Dispensary/Carnegie Mellon University)	1933	Listed in NRHP as contributor to NAS Sunnyvale Historic District under Criteria A and C; Spanish Colonial Revival building located at Shenandoah Plaza	Assessment and repair of the existing elevator will not alter any character-defining features of the facility. No adverse effect.
Building 25 (M025, Administration and Auditorium)	1933	Listed in NRHP as contributor to NAS Sunnyvale Historic District under Criteria A and C; Spanish Colonial Revival building located at Shenandoah Plaza	Toilet and plumbing repairs/part installation in existing restrooms will not alter any character-defining features of the facility. No adverse effect.
Shenandoah Plaza Flagpole (M040)	1933	Listed in NRHP as contributor to NAS Sunnyvale Historic District under Criteria A and C; Shenandoah Plaza feature	In-kind replacement of the deteriorated concrete base of the flagpole is consistent with the Secretary of the Interior's Standards for the Treatment of Historic Properties. No adverse effect.
Building 55 (M055, Boiler House)	1943	Listed in NRHP as contributor to NAS Sunnyvale Historic District under Criteria A and C; Utilitarian building located between Hangars 2 and 3 at Moffett Federal Airfield	Plumbing repairs/part installation to service existing equipment will not alter any character-defining features of the facility. No adverse effect.
Building N200 (Administration Building)	1943	Listed in NRHP individually under Criteria A and B; Streamline Moderne-style building, NASA ARC's Administration Building	Toilet and plumbing repairs/part installation in an existing restroom; plumbing repairs to drain lines in the mechanical room; and in-kind replacement of ceiling tiles will not alter any character-defining features of the facility. No adverse effect.
Building N215 (7x10 ft Wind Tunnel)	1941	Listed in the NRHP as contributor to Ames Wind Tunnel Historic District under Criteria A and C; wind tunnel	Repair of a deteriorated, existing roof access ladder will not alter any character-defining features of the facility. No adverse effect.
Building N220 (Technical Services Building)	1940	Listed in the NRHP as contributor to Ames Wind Tunnel Historic District under Criteria A and C; fabrication shop	Repair and in-kind replacement of deteriorated roofing material will not alter any character-defining features of the facility. No adverse effect.
Building N221 (40x80 ft Wind Tunnel)	1944	Listed in the NRHP as contributor to Ames Wind Tunnel Historic District under Criteria A and C; wind tunnel	Plumbing repairs/part installation to service existing irrigation main outside of the facility; in-kind replacement of a hot water heater; and roof repair and installation of fall protection at two roof access locations will not alter any character-

Facility Name	Date	NRHP Significance	Effects Assessment
			defining features of the facility. No adverse effect.
Building N226 (6x6 ft Supersonic Wind Tunnel)	1946	Listed in the NRHP as contributor to Ames Wind Tunnel Historic District under Criteria A and C; wind tunnel	Ceiling duct cleaning does not have the potential to cause effects on the historic property.
Building N227 (Unitary Plan Wind Tunnel)	1956	National Historic Landmark; Listed in the NRHP as contributor to Ames Wind Tunnel Historic District under Criteria A and C; wind tunnel	Preparation of a PER does not have the potential to cause effects on the historic property. Replacement of HVAC systems and installation of two interior access panels, and plumbing repairs/part installation to service existing equipment drain lines will not alter any character-defining features of the facility. No adverse effect. Repair of damaged underground sewer lines that serve the facility will require excavation to locate and reveal the existing sewer line. These repairs will not alter any character-defining features of the facility. Although excavations will be limited to previously disturbed soils and fill associated with the original installation of the sewer line, there is still a limited potential for disturbing unknown archaeological resources. If any archaeological resources are discovered, construction will be halted and NASA will follow the standard operating procedure for unanticipated discoveries as outlined in the ICRMP (AECOM 2014). No adverse effect.
Building N238 (Arc Jet Laboratory)	1964	Listed in the NRHP individually under Criteria A and C; arc jet laboratory housing unique research equipment	Replacement of interior HVAC control panel; in-kind replacement of exterior/rooftop air conditioning compressor will not alter any character-defining features of the facility. No adverse effect.
Building N242 (Systems Development Facility)	1966	Eligible for listing in the NRHP individually under Criteria A and C; laboratory facility	Repair of damaged underground sewer lines that serve the facility will require excavation to locate and reveal the existing sewer line. These

Facility Name	Date	NRHP Significance	Effects Assessment
			repairs will not alter any character-defining features of the facility. Although excavations will be limited to previously disturbed soils and fill associated with the original installation of the sewer line, there is still a limited potential for disturbing unknown archaeological resources. If any archaeological resources are discovered, construction will be halted and NASA will follow the standard operating procedure for unanticipated discoveries as outlined in the ICRMP (AECOM 2014). No adverse effect.
Building N243 (Flight and Guidance Simulation Laboratory)	1967	Listed in the NRHP individually under Criteria A and C; astronaut simulation training laboratory	Repair/upgrade of electrical distribution, HVAC, interior electrical infrastructure, and safety elements of the video room, which has been updated with new equipment frequently for its purpose; replacement of VMS tower electrical panel; and replacement of a fusible link on a fire damper in an office space, will not alter any character-defining features of the facility. No adverse effect.

6. Summary of Findings

The criteria of adverse effect were applied to assess potential adverse effects on 16 historic properties in the APE and undiscovered archaeological historic properties that may be present in the APE. The proposed undertaking would not alter, directly or indirectly, any of the characteristics of a historic property that qualify it for inclusion in the NRHP. Therefore, a finding of No Adverse Effect per 36 CFR § 800.5(b) would be appropriate for this undertaking.

7. References

AECOM, 2013. *Historic Property Survey Report for the Airfield at NASA Ames Research Center, Moffett Field, California*. Accessible online at *https://historicproperties.arc.nasa.gov/downloads/hpsr_airfield.pdf.*

AECOM, 2014. *Integrated Cultural Resources Management Plan for NASA Ames Research Center, Moffett Field, California*. Accessible online at *https://historicproperties.arc.nasa.gov/downloads/icrmp_nasa_arc_all.pdf.*

AECOM, 2017. *NASA Ames Research Center Archaeological Resources Study*. Accessible online (redacted) at *https://historicproperties.arc.nasa.gov/downloads/section106_achaeology_20170224_nasa_att.pdf.*

National Register of Historic Places (NRHP), 1994. U.S. Naval Air Station Sunnyvale, California, Moffett Field, Santa Clara County, California, NRHP # 94000045. Accessible online at *https://historicproperties.arc.nasa.gov/downloads/nrhp_registration.pdf.*

National Register of Historic Places (NRHP), 2017. NASA Ames Wind Tunnel Historic District, Moffett Field, Santa Clara County, California, NRHP #SG100000470. Accessible online at *https://historicproperties.arc.nasa.gov/downloads/nrhp_wthd_reg.pdf.*

Attachments

Appendix A: Map Figures 1–3 (Project Location, Project Site, and APE)

Appendix B: Project Information Sheets and Locator Maps

Appendix A
Map Figures 1–3 (Project Location, Project Site, and APE)

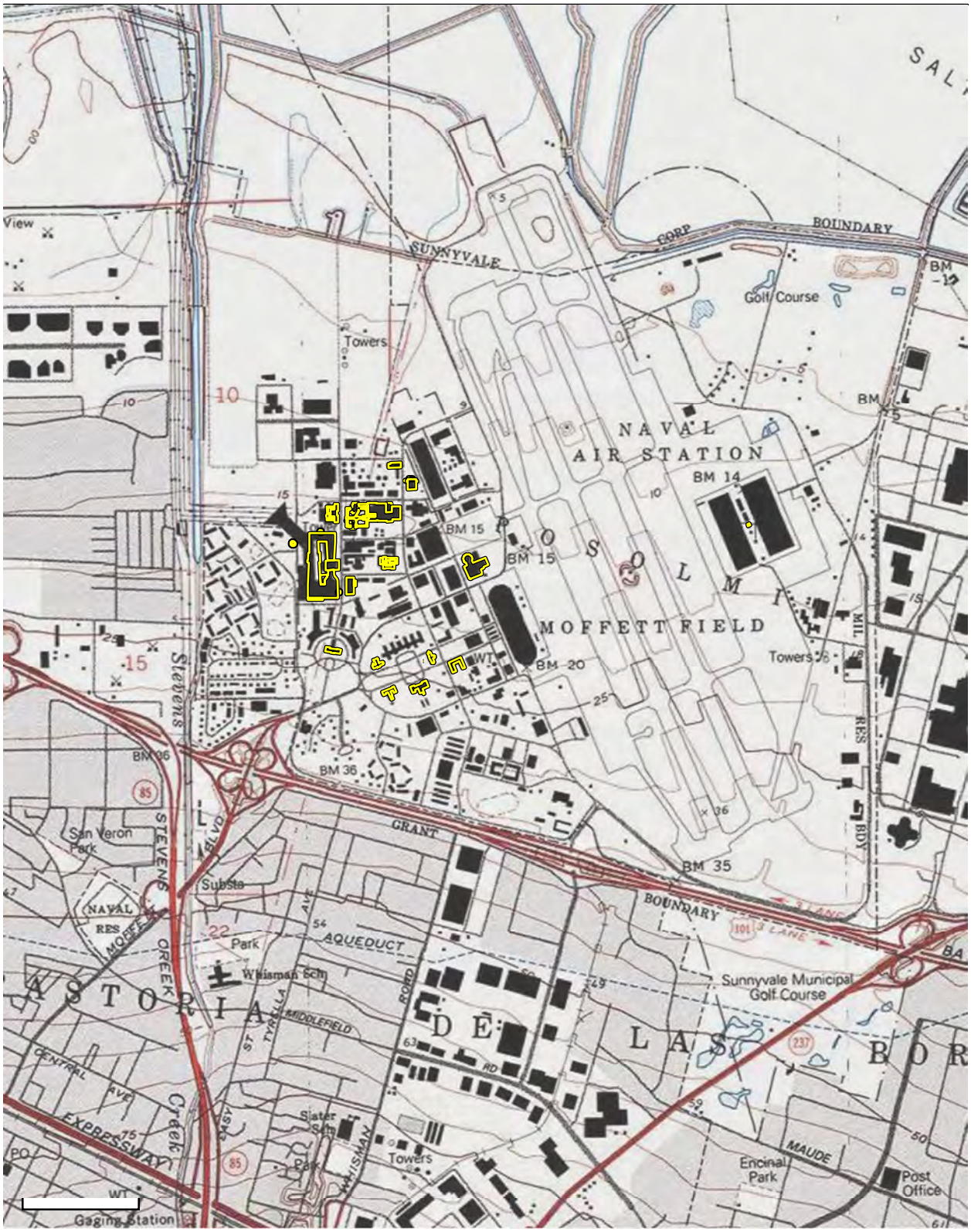
Source: ESRI, AECOM, NASA

0 5 10 20 Miles

Scale: 1 = 633,600; 1 inch = 10 mile(s)

Figure 1
Project Location

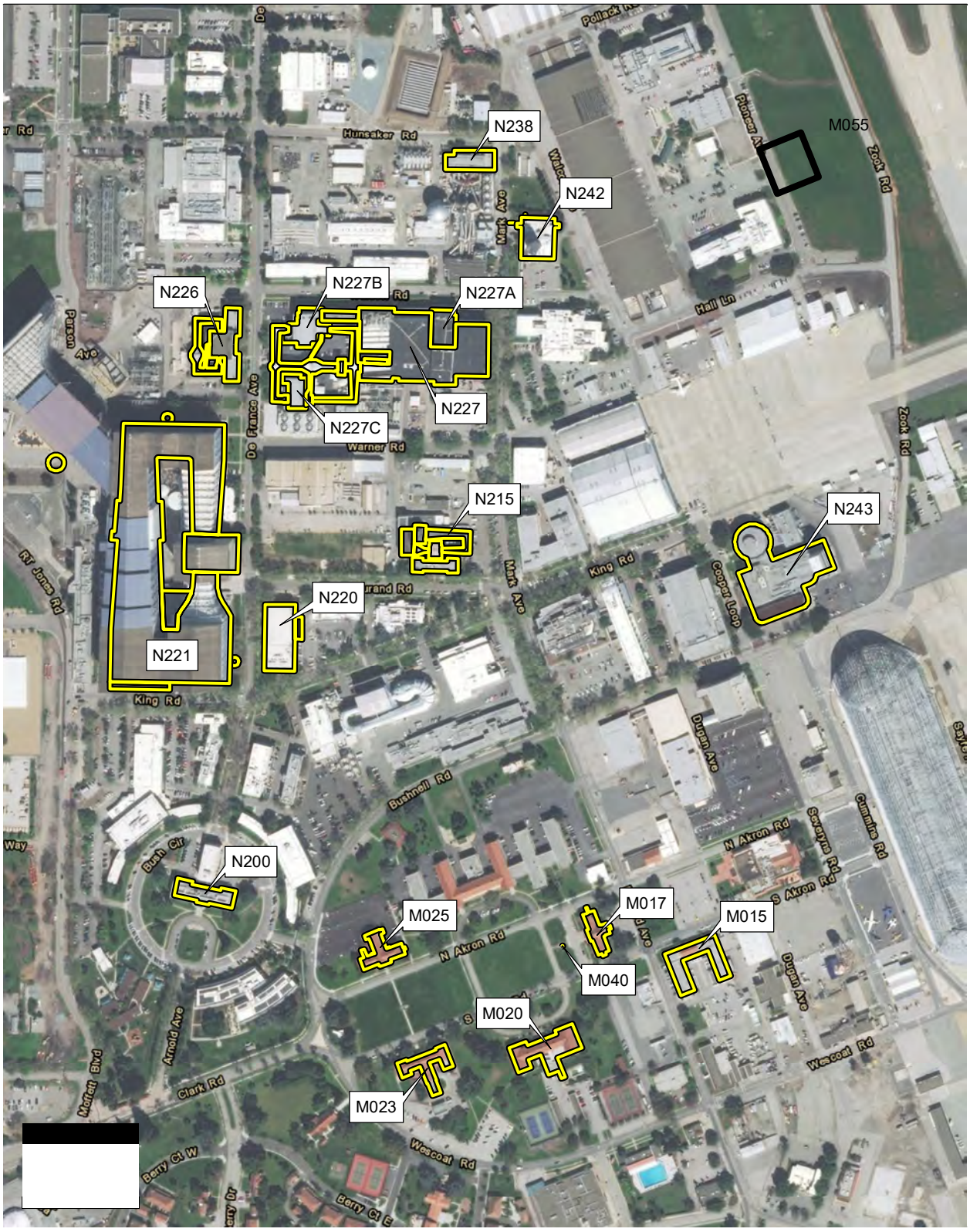
Path: P:_6032\60327567_NASA_NRHP\900-CAD-GIS\920 GIS\922_Maps\Cultural\FY_20_Maintenance\Figure01_ProjectLocation.mxd, 4/8/2020, downsl1



Source: ESRI, AECOM, NASA, National Geographic Society; USGS 7.5' Topographic Quadrangle: Mountain View

Figure 2
Project Site

Path: P:_6032\60327567_NASA_NRHP\900-CAD-GIS\920 GIS\922_Maps\Cultural\FY_20_Maintenance\Figure02_APE_Topo.mxd, 4/8/2020, downsl1



Source: ESRI, AECOM, NASA

0 250 500 1,000 Feet

Scale: 1 = 6,000; 1 inch = 500 feet

Figure 3
APE

FY19 Maintenance Project

Path: P:_6032\60327567_NASA_NRHP\900-CAD-GIS\920 GIS\922_Maps\Cultural\FY_20_Maintenance\Figure03_APE_Aerial.mxd, 4/8/2020, downsl1

Appendix B
Project Information Sheets and Locator Maps

The following content was redacted from this public posting:

Appendix B: Project Information Sheets and Locator Maps