

**DEPARTMENT OF DEFENSE  
DEPARTMENT OF THE NAVY  
UNITED STATES MARINE CORPS**

**DRAFT FINDING OF NO SIGNIFICANT IMPACT (FONSI) FOR ENVIRONMENTAL ASSESSMENT (EA) OF MV-22 FACILITIES PROJECT RELOCATION**

Pursuant to the Council on Environmental Quality (CEQ) (Code of Federal Regulations [CFR] Title 40, Parts 1500-1508 et seq.) regulations implementing the National Environmental Policy Act (NEPA) of 1969 (42 United States Code [USC] §4321, et seq.); Marine Corps Order P5090.2A, Change 3, Environmental Protection and Compliance Manual; and the USMC NEPA Manual, version 2.0, the United States Marine Corps (USMC) gives notice that an Environmental Assessment (EA) has been prepared for the relocation of planned facilities for the second MV-22 squadron at Marine Corps Base Hawaii (MCB Hawaii) Kaneohe Bay, Oahu, Hawaii. Based on the results of the EA, the proposed action will result in no significant impacts to the human or natural environment; therefore, an Environmental Impact Statement (EIS) is not required.

**Proposed Action:** The proposed action is to construct new and renovate existing facilities for the second MV-22 squadron near the southeast end of the runway at MCB Hawaii Kaneohe Bay. This represents a relocation from the site selected in the Record of Decision (ROD) for the Basing of MV-22 and H-1 Aircraft in Support of Third Marine Expeditionary Force (III MEF) Elements in Hawaii (2012) (MV-22 EIS). During site preparation for construction of the first MV-22 squadron facilities, archaeological Site 7411 was discovered, which led to adjustments in the site layout that imposed constraints upon the proposed location for the second squadron's facilities. At about the same time, changes in the Navy's home basing locations for the P-8A aircraft (replacement for the P-3 aircraft) resulted in the availability of the area previously reserved for several P-8 squadrons at the southeast end of the station's runway.

Elements of the proposed action include construction of an aircraft wash rack and supporting utility building, modification of the existing P-3 aircraft parking apron to meet required design loads for the MV-22, demolition of Buildings 1278 and 1279, and construction of a new privately-owned-vehicle (POV) parking lot on that footprint, construction of one additional and expansion of two existing POV parking lots along B Street,

installation of new underground utility lines, demolition and reconstruction of an existing direct refueling support office (Building 6180), and construction of one Type II modified aircraft maintenance hangar with supporting utility building, an apron addition at the hangar entrance, and vehicle parking at the utility building.

The purpose of the proposed action (relocate project site) is to construct facilities at a location which can best support III MEF mission and operational requirements, make use of existing facilities to the greatest extent practicable, and, where practicable, reduce construction costs and time.

The action is needed to provide facilities for the second MV-22 squadron which will be home based at MCB Hawaii Kaneohe Bay in 2016.

**Existing Conditions:** The location for the proposed action alternative, as well as the no-action alternative (construction at the site selected for both of the MV-22 squadron facilities in the MV-22 EIS ROD), is on the east side of the airfield at MCBH Hawaii Kaneohe Bay. The area is developed and lacks significant natural resources or important habitats, but contains archaeological and architectural cultural resources. Buildings proposed for demolition in both alternatives were determined to be ineligible for the National Register of Historic Places (NRHP) (Buildings 1278, 1279, and 6180 for the proposed action; and 574, 4000, 4005, 4040, 4075, 5019, and 5068 for the no-action alternative); however, construction of the new MV-22 hangar would have a visual impact on the Naval Air Station (NAS) Kaneohe National Historic Landmark and the NAS Kaneohe Historic Aviation District. The proposed action would construct facilities within the boundaries of two known archaeological sites, Site 4933 and Site 5829. Pavement upgrade for two aircraft parking pads would occur over Site 4933. Depths of parking pad pavement upgrade would not exceed the existing depth of disturbance, so no impacts to Site 4933 are expected. The wash rack utility building, direct refueling support office and associated parking lot, and underground utility lines would be constructed within Site 5829. Archaeological testing determined that the utility corridor and the relocation of the direct refueling support office have the potential to impact Site 5829.

**Alternatives Analyzed:** Because this EA was prepared to assess possible impacts at one newly-available site, and the

determinations for other alternatives analyzed in the MV-22 EIS are still relevant, alternatives other than the no-action alternative were not considered.

Following the discovery of Site 7411 near the northeast end of the runway, the site plan for the first MV-22 squadron facilities was adjusted, in order to minimize impacts to the archaeological site. The length of the aircraft parking apron, as shown in the 2012 MV-22 EIS, was reduced, resulting in the loss of two of the 20 aircraft parking pads required for the two MV-22 squadrons. Additionally, the relocation of the existing adjacent aircraft rinse facility, as proposed in the MV-22 EIS to allow space for the 20 aircraft parking pads, was removed from the site plan, in order to avoid potential unexpected impacts to cultural resources. The two pads that could no longer be accommodated on the parking apron for the second squadron would have to be accommodated at the existing P-3 aircraft apron located along the runway to the southeast, at two stall locations being analyzed under the proposed action. Other than the loss of the two aircraft parking pads at the northeast end of the parking apron, and forgone rinse facility relocation, the no-action alternative includes facility development for the second MV-22 squadron as proposed in the MV-22 EIS.

The possibility of relocating facilities for the second MV-22 squadron to West Field or another location around the airfield was considered; however, it was determined that development at other sites around the MCB Hawaii Kaneohe Bay airfield would incur significantly higher costs, face development constraints, and have operational impacts and, therefore, no other alternatives were carried through the EA analysis.

**Environmental Effects:** The EA evaluated the impacts of the proposed action and no-action alternatives on land use compatibility, soils and topography, drainage/water quality, noise, traffic, biological resources, traffic, and cultural resources. Impacts on other resources and issues of concern (air quality, utilities, hazardous and regulated materials, flood hazard, and socio-economic factors) would not be affected by the change in the construction footprint location, and were not analyzed. For land use compatibility, soils and topography, drainage/water quality, noise, biological resources, and traffic, impacts were determined to be the same or less than those analyzed in the MV-22 EIS. A Coastal Zone Management Act consistency determination is not required because the proposed

action will be located entirely on Federal land, which is excluded from the Hawaii Coastal Zone. Additionally, the proposed action would not have reasonably foreseeable direct or indirect effects on any coastal use or resources of the Hawaii Coastal Zone.

Cultural Resources. Under Section 106 of the National Historic Preservation Act (NHPA), the proposed action would have an adverse effect on archaeological Site 5829. MCB Hawaii Kaneohe Bay has complied with NHPA Section 106 by affording the Hawaii State Historic Preservation Officer (SHPO), the National Trust for Historic Preservation, the Advisory Council on Historic Preservation, the Historic Hawaii Foundation, the Office of Hawaiian Affairs and Native Hawaiian Organizations an opportunity to comment on the Proposed Action and consult to resolve the adverse effect. The consultation resulted in an executed Memorandum of Agreement (MOA) between MCB Hawaii Kaneohe Bay and the Hawaii SHPO that commits the USMC to measures that mitigate the adverse effect. Accordingly, the impact of the Proposed Action on archaeological Site 5829 is not considered to be a significant impact to cultural resources. Because the new MV-22 hangar would be visible from various vantage points around the airfield, there would be adverse effects to the historic districts and National Historic Landmark indicated in the EA. As concurred upon by the SHPO and as stipulated in the 2015 MOA, the new hangar would be designed to be visually compatible with existing facilities and therefore indirect impacts on view-sheds would not be significant. The proposed action would not impact traditional cultural properties or sacred sites. The proposed action would also not have a significant cumulative impact on cultural resources.

**Finding:** Based on the information gathered during the preparation of this EA and the analysis presented, the USMC has determined that the Proposed Action will have no significant impacts on the quality of the human or natural environment. Consequently, an EIS is not required.

**Point of Contact:** Interested parties may download an electronic copy of the EA addressing this action from the Marine Corps Base Hawaii website at:

<http://www.mcbhawaii.marines.mil/UnitHome/FeaturedInformation/MV22NOA.aspx>

**DRAFT FINDING OF NO SIGNIFICANT IMPACT (FONSI) FOR ENVIRONMENTAL ASSESSMENT  
(EA) MV-22 FACILITIES PROJECT RELOCATION**

The EA and FONSI are on file at Naval Facilities Engineering Command Pacific, 258 Makalapa Drive, Suite 100, Pearl Harbor, HI 96860-3134 (Attention: Project Manager, MV-22 EA, Code EV21).

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Date

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Colonel Eric W. Schaefer  
Commanding Officer  
Marine Corps Base Hawaii

# **ENVIRONMENTAL ASSESSMENT**

**MV-22 Facilities Project Relocation**

**Marine Corps Base Hawaii, Kaneohe Bay**

**Oahu, Hawaii**

Department of the Navy

February 2015

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## Cover Sheet

**Proposed Action:** Change in construction location of one of two hangars and supporting facilities from the site analyzed in the Final Environmental Impact Statement for the Basing of MV-22 and H-1 Aircraft in Support of Third Marine Expeditionary Force Elements in Hawaii. This would move the proposed construction project from the northeast end of the airfield to the southeast end.

**Type of Document:** Environmental Assessment

**Lead Agency** Marine Corps Base Hawaii Kaneohe Bay

**For Further Information:** ATTN: EV21, MV-22 Hangar EA Project Manager  
Environmental Division

Naval Facilities Engineering Command, Pacific  
258 Makalapa Drive, Suite 100, Pearl Harbor, HI 96860-3134

2 **Summary**

3 This Environmental Assessment (EA) was prepared pursuant to the National Environmental Policy Act of  
4 1969 (NEPA), as amended (42 United States Code [U.S.C] 4321 et seq.), its implementing regulations  
5 issued by the Council on Environmental Quality (CEQ) (40 Code of Federal Regulations [CFR] Part 1500 -  
6 1508), Marine Corps Order 5090.2A (with Change 3 of 26 Aug 2013), and the United States Marine Corps  
7 (USMC) NEPA Manual (Version 2 of September 2011).

8  
9 Marine Corps Base Hawaii (MCB Hawaii) Kaneohe Bay proposes to construct facilities for an MV-22  
10 Osprey aircraft squadron (including ten aircraft parking pads, hangar, wash rack and ancillary facilities)  
11 at an area near the southeast end of the MCB Hawaii Kaneohe Bay runway. This represents an  
12 approximately 3,000-foot shift in project location from the location analyzed in the Final Environmental  
13 Impact Statement (EIS) for the Basing of MV-22 and H-1 Aircraft in Support of the Third Marine  
14 Expeditionary Force (III MEF) Elements in Hawaii (MV-22 EIS). This EA tiers from and incorporates by  
15 reference determinations made in the MV-22 EIS.

16  
17 This project is needed to provide facilities for the second MV-22 squadron that will be home based at  
18 MCB Hawaii Kaneohe Bay in 2016. The purpose of the proposed action to relocate the project site is to  
19 construct facilities at a location at MCB Hawaii Kaneohe Bay that can best support III MEF mission and  
20 operational requirements, make use of existing facilities to the greatest extent practicable, and, where  
21 practicable, reduce construction costs and time. Because this action would represent a change in the  
22 siting of some of the facilities analyzed in the MV-22 EIS, and may have different impacts on site-specific  
23 resources, this EA was prepared to provide information to MCB Hawaii and the public on these possible  
24 differences. The basing decision and impacts related to squadron operations, including personnel  
25 increases, housing for personnel, socioeconomics, training impacts, and noise, were analyzed in the MV-  
26 22 EIS and the determinations made therein apply to the actions proposed in this EA.

27  
28 Two archaeological sites have been documented in and adjacent to the proposed project area. The  
29 project is also located adjacent to a proposed historic district that contains World War II historic  
30 facilities. MCB Hawaii conducted National Historic Preservation Act Section 106 consultations with State  
31 Historic Preservation Office, the Advisory Council on Historic Preservation, the Historic Hawaii  
32 Foundation, the Office of Hawaiian Affairs and other Native Hawaiian Organizations, interested parties,  
33 and the public. MCB Hawaii developed a Memorandum of Agreement (MOA) with the aforementioned  
34 consulting parties to avoid, minimize, or mitigate known adverse effects on historic properties within  
35 the Area of Potential Effect (Appendix A).

1      The proposed action would have no significant impact on the following resources or issues of concern:  
2      land use, visual effects, air quality, utilities and infrastructure, solid waste, hazardous materials,  
3      drainage, air quality, noise, vehicular traffic and circulation, soils and topography, and biological  
4      resources. The proposed action would not create environmental health and safety risks that may  
5      disproportionately affect children and minority or disadvantaged populations, and would not result in  
6      cumulative impacts to any environmental resource. Per consultation with the Hawaii State Coastal Zone  
7      Management Act program administrator, a Coastal Zone Management Act consistency determination is  
8      not required because the proposed action will be located entirely on Federal lands, which are excluded  
9      from the Hawaii Coastal Zone. Additionally, the proposed action would not have reasonably foreseeable  
10     direct or indirect effects on any coastal use or resources of the Hawaii Coastal Zone.  
11  
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18	Hawaii State Historic Preservation Officer, and the Advisory Council on Historic Preservation	
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20	to the Basing of MV-22 and H-1 Aircraft in Support of III Marine Expeditionary Force Elements in	
21	Hawaii, Marine Corps Base Hawaii, Kaneohe	
22		

## 1 **List of Acronyms and Abbreviations**

III MEF	Third Marine Expeditionary Force	MOA	Memorandum of Agreement
ACE	Aviation Combat Element	MV-22	Osprey Tiltrotor Aircraft
ACHP	Advisory Council on Historic Preservation	MWSS	Marine Wing Support Squadron
ARPA	Archeological Resource Protection Act	NAGPRA	Native American Graves Protection and Repatriation Act
BEQ	Bachelor Enlisted Quarters	NEPA	National Environmental Policy Act of 1969
BMPs	Best Management Practices	NHL	National Historic Landmark
BRAC	Base Realignment and Closure process	NHO	Native Hawaiian Organizations
CE	Command Element	NHPA	National Historic Preservation Act
CEQ	Council on Environmental Quality	NOA	Notice of Availability
CFR	Code of Federal Regulations	NPDES	National Pollution Discharge Elimination System
cmbs	Centimeters Below Surface	OEP	Office of Environmental Planning
CZM	Coastal Zone Management	PA	Programmatic Agreement
dB	Decibels	POV	Privately-Owned-Vehicle
DNL	Day-Night Average Sound Level	NRHP	National Register of Historic Places
DOH	U.S. Department of Health	ROD	Record of Decision
EA	Environmental Assessment	SHPO	State Historic Preservation Office
EIS	Environmental Impact Statement	UFC	Unified Facilities Criteria
EISA	Energy Independence and Security Act	USMC	United States Marine Corps
EO	Executive Order	VMM	Marine Medium Tiltrotor
ESQD	Explosive Safety Quantity Distance		
FONSI	Finding of No Significant Impact		
FSEIS	Final Supplemental EIS		
ft	Feet/Foot		
ft <sup>2</sup>	Square Feet/Foot		
GCE	Ground Combat Element		
HMLA	Marine Light Attack Helicopter		
HQ	Headquarters		
LCE	Logistics Combat Element		
LID	Low Impacts Development		
m	Meter		
m <sup>2</sup>	Square Meters		
MAG	Marine Aviation Group		
MAGTF	Marine Air-Ground Task Forces		
MALS	Marine Aviation Logistics Support		
MCAS	Marine Corps Air Station		
MCB	Marine Corps Base		
MILCON	Military Construction		

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1    **1. Purpose and Need**

2    **1.1. Introduction**

3    This Environmental Assessment (EA) evaluates the construction of facilities for an MV-22 Osprey aircraft  
4    squadron (including ten aircraft parking pads, hangar, wash rack and ancillary facilities) near the  
5    southeast end of the runway at Marine Corps Base Hawaii, Kaneohe Bay (MCB Hawaii Kaneohe Bay).  
6    This EA was prepared pursuant to the National Environmental Policy Act of 1969 (NEPA), as amended  
7    (42 United States Code [U.S.C] 4321 et seq.), its implementing regulations issued by the Council on  
8    Environmental Quality (CEQ) (40 Code of Federal Regulations [CFR] Part 1500 - 1508), Marine Corps  
9    Order 5090.2A (with Change 3 of 26 Aug 2013), and the United States Marine Corps (USMC) NEPA  
10   Manual (Version 2 of September 2011).

11   This document tiers from and incorporates by reference the Final Environmental Impact Statement (EIS)  
12   for the Basing of MV-22 and H-1 Aircraft in Support of the Third Marine Expeditionary Force (III MEF)  
13   Elements in Hawaii, completed in June 2012 (here after referred to as the MV-22 EIS) (Department of  
14   the Navy [DON] 2012). The USMC is evaluating a proposed change in the approved location of some of  
15   the facilities analyzed in the MV-22 EIS. Analysis in this EA focuses on potential impacts at the southeast  
16   site. The MV-22 EIS basing decision and impacts related to squadron operations, including personnel  
17   increases, housing for personnel, socioeconomic, training impacts, and noise, would not be affected by  
18   this proposed action.

19   **1.2. Purpose and Need**

20   The purpose for the proposed action (relocate project site) is to construct facilities at a location on MCB  
21   Hawaii Kaneohe Bay that can best support III MEF mission and operational requirements, make use of  
22   existing facilities to the greatest extent practicable, and, where practicable, reduce construction costs  
23   and time.

24   The need for the proposed action (relocate project site) is to provide facilities for the second MV-22  
25   squadron that will be home based at MCB Hawaii Kaneohe Bay in 2016.

26   **1.3. Background Information**

27   **1.3.1. Project Background**

28   The MV-22 EIS analyzed the potential impacts of basing and operating two Marine Medium Tiltrotor  
29   (VMM) squadrons (up to 12 MV-22 Ospreys per squadron, for a total of 24 aircraft) and one Marine  
30   Light Attack Helicopter (HMLA) squadron (15 AH-1 Cobra attack and 12 UH-1 Huey utility helicopters, for  
31   a total of 27 aircraft) in Hawaii. The MV-22 Osprey aircraft provides the next generation equipment  
32   offering increased speed, longer range, and greater mission versatility than a helicopter. The MV-22 also  
33   satisfies the medium-lift capability needed for assault support transport of combat troops, equipment,  
34   and supplies. The HMLA squadron, which was relocated from MCB Camp Pendleton to MCB Hawaii  
35   Kaneohe Bay in 2012, provides rotary-wing light-lift and attack capabilities that were not previously  
36   based in Hawaii for routine training with infantry. The Third Marine Regiment (3d Regiment) is the major

1 infantry command at MCB Hawaii Kaneohe Bay. It was the only infantry regiment within the Marine  
2 Corps that had not previously routinely trained with rotary-wing light-lift and attack support. MAG-24,  
3 the Aviation Combat Element (ACE) of the Marine Air-Ground Task Force (MAGTF) at MCB Hawaii  
4 Kaneohe Bay, provides aviation support forces to the 3d Regiment.

5 The basing of two MV-22 squadrons at MCB Hawaii Kaneohe Bay and potential impacts to the  
6 environment were addressed in the MV-22 EIS. Each squadron of 12 MV-22 aircraft requires its own  
7 aircraft parking apron, hangar, and supporting facilities (e.g., utility buildings). Two alternative locations  
8 for the construction of these facilities at MCB Hawaii Kaneohe Bay were analyzed in the MV-22 EIS;  
9 Alternative A co-located facilities for the two squadrons on the northeast end of the runway, while  
10 Alternative B placed facilities for the two squadrons on the opposite side of the runway at West Field.  
11 The southeast portion of the runway was not analyzed as a potential location for the MV-22 facilities  
12 because it had been selected as the site for a hangar, additional parking apron, and miscellaneous  
13 structures to support three U.S. Navy P-8A Poseidon squadrons, scheduled to replace the Navy's P-3<sup>1</sup>  
14 squadrons beginning in 2019 (Final EIS for the Introduction of the P-8A Multi-Mission Maritime Aircraft  
15 into the U.S. Navy Fleet, November 2008/Record of Decision [ROD] December 2008). The ROD for the  
16 MV-22 EIS, published in August 2012, selected Alternative A, which co-located the facilities for the two  
17 MV-22 squadrons at the northeast end of the MCB Hawaii Kaneohe Bay runway. Design and  
18 construction of the facilities for the first MV-22 squadron began in 2013 under two military construction  
19 (MILCON) projects, P-904 and P-905.

20 Archaeological Site 7411 was discovered immediately northeast of, and partially within, the first MV-22  
21 squadron project area during geotechnical studies. Per Stipulation VIII of the Programmatic Agreement  
22 (PA) that was developed during EIS Section 106 consultations, regarding discoveries made during  
23 construction, MCB Hawaii informed the consulting parties of the discovery of the site and a  
24 Memorandum of Agreement (MOA) was developed (P-904/P-905 MOA), to address ways to avoid,  
25 minimize, and mitigate adverse effects to Site 7411. To avoid impacts to this site, and due to other site  
26 constraints, the length of the aircraft parking apron as shown in the 2012 MV-22 EIS was reduced,  
27 resulting in the loss of two aircraft parking stalls. These two stalls would be accommodated on the P-3  
28 parking apron at the southeast end of the runway. The remaining footprint for P-904/905 was shifted  
29 slightly to the south, but remains within the boundaries of the combined two squadron footprint  
30 analyzed in the MV-22 EIS. Details of the change in site design are discussed in Section 2.1.1.

31 In June 2014, the Navy published a new ROD approving the consolidation of the P-8A squadrons at two  
32 locations (Naval Air Station Whidbey Island in Washington, and Naval Air Station Jacksonville in Florida).  
33 MCB Hawaii Kaneohe Bay will receive a rotating detachment of two P-8A aircraft instead of three  
34 permanent squadrons. The P-8A detachment will not require construction of new facilities, resulting in  
35 the area near the southeast end of the runway becoming available for other uses, such as the facilities  
36 for the second MV-22 squadron. The Marine Corps considers use of this area for the construction of

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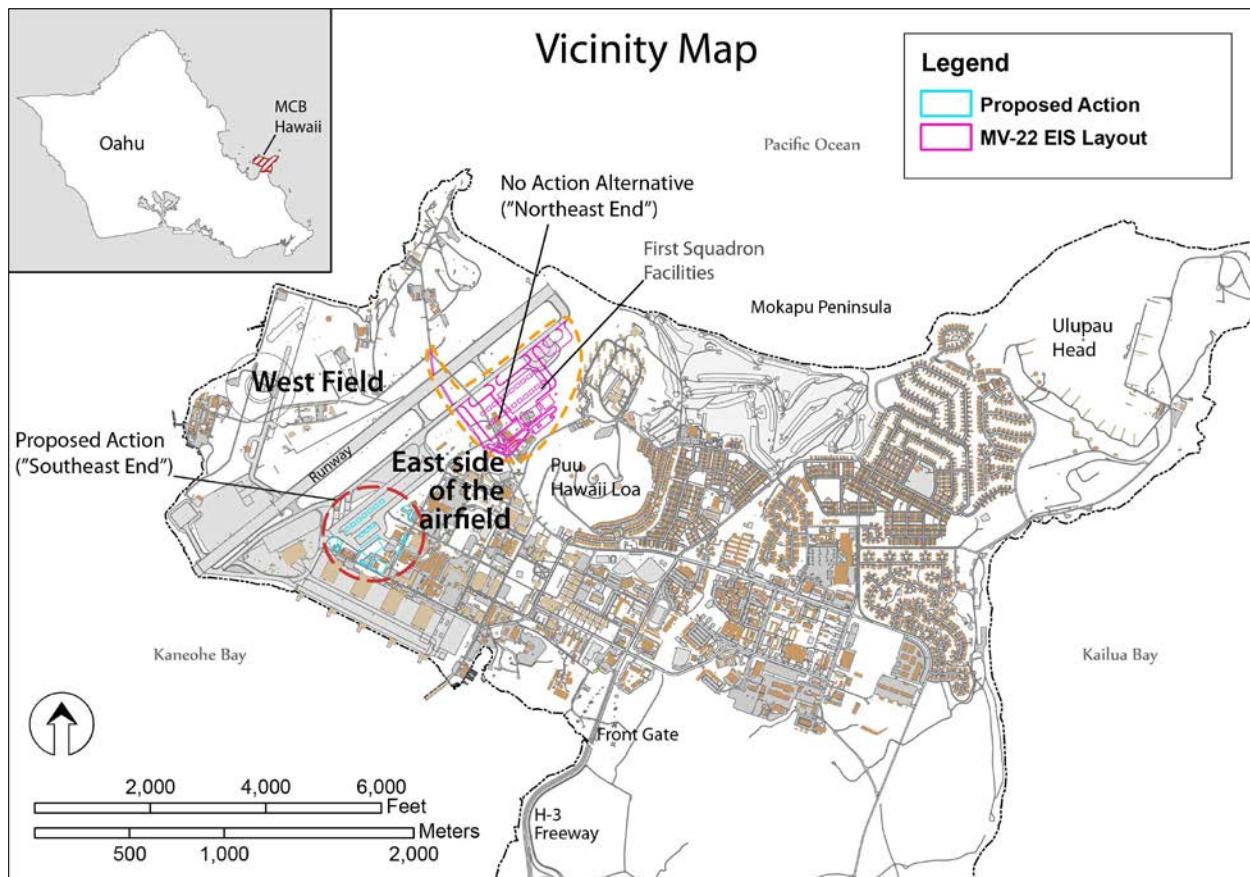
<sup>1</sup> The Lockheed P-3 Orion is a four-engine turboprop aircraft introduced in the 1960s. The US Navy uses this platform/aircraft for maritime patrol, reconnaissance, and anti-submarine warfare. This aging platform is in the process of being replaced by the Boeing P-8A Poseidon.

1 facilities for the second MV-22 squadron to be a better option than the original project site because the  
2 southeast end of the runway has an existing aircraft parking apron and infrastructure that can be used  
3 to reduce the amount of new construction and demolition required for the new facilities, thereby  
4 reducing project impacts, costs and schedules. Also, the existing facilities are close to other existing  
5 MAG-24 elements and facilities, thus improving functional consolidation and operational efficiency at a  
6 land-constrained base.

7 **1.3.2. Project Location and Surrounding Environment**

8 MCB Hawaii Kaneohe Bay is located on the windward (northeast) side of the island of Oahu, on the  
9 Mokapu Peninsula. The airfield and MAG-24 facilities are concentrated on the southwest side of the  
10 peninsula. Construction of facilities for the proposed action would be located just north of Hangars 104  
11 and 103, adjacent to areas currently used by the ACE (see Figure 1-1).

12 Neighboring civilian communities include Kailua and Kaneohe. In 2014, MCB Hawaii Kaneohe Bay  
13 supported approximately 19,400 people. Military personnel and dependents housed on base number  
14 11,100, with the remaining 5,600 located off base, and with a civilian workforce of 2,700 (MCB Hawaii  
15 Housing Department 2014). MCB Hawaii Kaneohe Bay, along with Marine Corps Air Station (MCAS)  
16 Kaneohe Bay, provides administrative, housing, facility maintenance, and training support for most  
17 personnel stationed at MCB Hawaii facilities (DON 2012).



1

2 **Figure 1-1 - Project Location**

3 **1.4. Environmental Permits and Agency Consultations**

4 Table 1-1 summarizes the permits and agency consultations that may be required to implement the  
5 proposed action.

6 **Table 1-1 - Environmental Permits or Consultations**

Permit or Consultation	Agency/Stakeholders
National Pollutant Discharge Elimination Permit System	Department of Health (DOH), State of Hawaii
National Historic Preservation Act (NHPA) Section 106 Consultation	Hawai'i State Historic Preservation Officer, Advisory Council on Historic Preservation, Native Hawaiian organizations, interested parties, and the public

7

8

1    **2. Description of Proposed Action and Alternatives**

2    **2.1. Alternatives**

3    The scope of the analysis in this EA is the construction of facilities for the second MV-22 squadron. All  
4    operational and training impacts associated with the basing of two MV-22 squadrons remain the same  
5    as that analyzed in the MV-22 EIS. Two alternatives are analyzed in this EA:

- 6       • No action: Construct facilities for the second MV-22 squadron at the northeast end of the  
7           runway per the alternative selected in the 2012 ROD. This alternative was modified from what  
8           was analyzed in the MV-22 EIS to avoid impacts to archaeological Site 7411. Those changes are  
9           described in Section 2.1.1.
- 10      • Proposed action: Construct the facilities for the second MV-22 squadron on the southeast end  
11       of the runway at the site considered for the location of P-8 squadrons (present P-3 location).

12     One other location for these facilities, on the west side of the runway (West Field; see Figure 1.1), was  
13     analyzed in the MV-22 EIS. That analysis is incorporated by reference in this EA as applicable. The West  
14     Field alternative is considered undesirable by MCB Hawaii for several reasons discussed in Section 2.1.3.

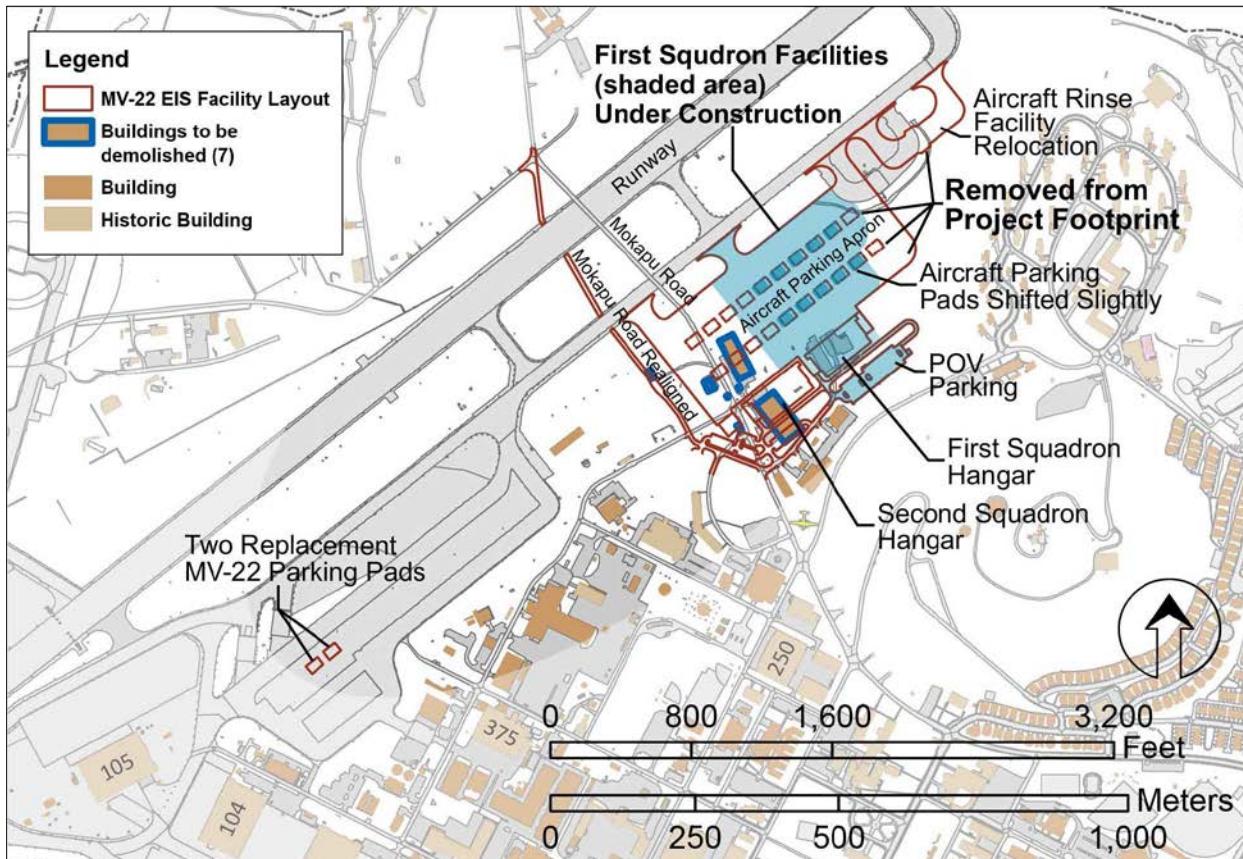
15     Analysis in this EA is focused on environmental resources and issues of concern for which potential  
16     impacts may be different at the southeast site than those analyzed in the EIS for the proposed northeast  
17     site (see Sections 2.3 and 3.2). Analysis of the No Action alternative focuses on the impacts of the  
18     changes required to avoid impacts to Site 7411. The MV-22 EIS basing decision and impacts related to  
19     squadron operations would not be affected by this proposed action.

20    **2.1.1. No Action**

21    The no action alternative would develop facilities for the second MV-22 squadron at the northeast  
22    airfield site. As mentioned, archaeological Site 7411 was identified in the project footprint for the  
23    alternative selected in the MV-22 EIS. To limit impacts to this site, the aircraft parking apron was  
24    reduced in size to shift the northeast corner away from the archaeological site, resulting in the loss of  
25    two of 20 aircraft parking stalls. Because only 18 of the 20 required aircraft parking stalls could now be  
26    accommodated at the northeast site, two stalls would have to be accommodated elsewhere. A  
27    comparison of the site plan provided in the MV-22 EIS and the site plan for the no action alternative is  
28    shown in Figure 2-1.

29    As analyzed in the MV-22 EIS, facility development for the second squadron at this location would  
30    require the demolition of seven structures (Buildings 574, 4000, 4005, 4040, 4075, 5019, and 5068) and  
31    realignment of a 0.4-mile section of Mokapu Road, the main artery for east-west access on the base.  
32    Based on the discovery of Site 7411 and the need to shorten the aircraft apron at the northeast site, the  
33    no action alternative would now require pavement upgrades for two aircraft parking stalls on the P-3  
34    parking apron (i.e., southeast site). Impacts associated with construction of these two stalls are  
35    analyzed in this EA. No additional NEPA analysis was conducted on the redesign of the parking apron at  
36    the northeast site because it remains within the original footprint analyzed in the MV-22 EIS. The site

1 plan for the first MV-22 squadron facilities, currently under construction, is shown in the shaded area in  
2 Figure 2-1 and as a single site plan in Figure 2-2. The aircraft rinse facility relocation was removed from  
3 the project footprint prior to construction of P-904/P-905 due to the discovery of archaeological Site  
4 7411. Construction of the facilities for the first MV-22 squadron is underway at the northeast site; no  
5 facility construction has commenced for the second squadron.



6  
7 **Figure 2-1 – No action alternative/revised MV-22 EIS site plan**

8

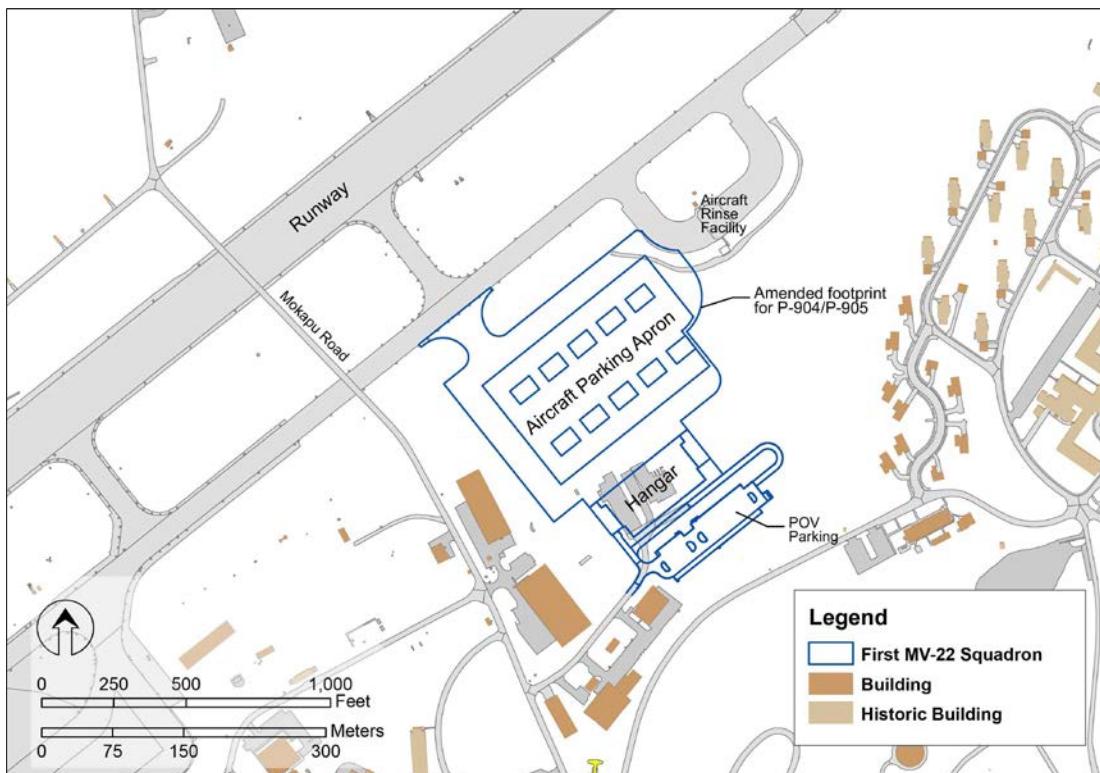
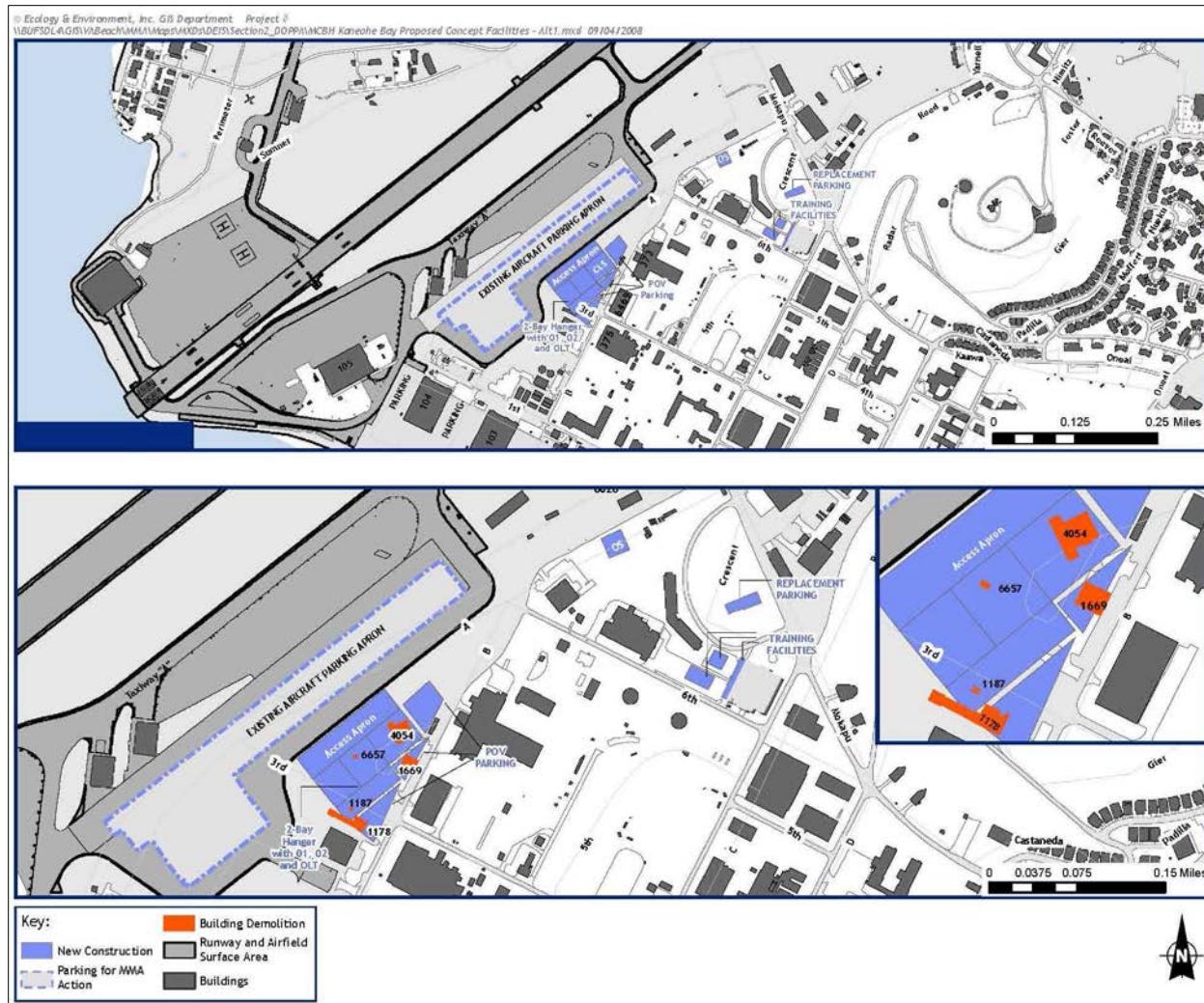


Figure 2-2 - First MV-22 squadron facility site plan (under construction)

#### 2.1.2. Proposed Action

This alternative would construct new and renovate existing facilities for the second MV-22 squadron on the existing P-3 parking apron (southeast site); P-3 aircraft would park on the Hangar 105 ramp as needed until the squadrons they are assigned to are disestablished or permanently moved to another installation. The southeast site is adjacent to other ACE activities within MCB Hawaii Kaneohe Bay and would allow the second squadron to interact more readily with MAG-24 and Marine Aviation Logistics Support (MALS) units at the southern end of the airfield. This alternative would require less new development at the northeast end of the airfield and increase site utilization in an operationally beneficial and already developed area. The two MV-22 squadrons operate with III MEF independently, both have their own support facilities, and the result of the proposed action (separation of the two MV-22 squadrons vice co-location) would not affect their operations or unit cohesiveness. The proposed action would utilize the area that was proposed for P-8A Poseidon squadron facility development in the Final P-8A EIS as shown in Figure 2-3.



1

2 **Figure 2-3 – Conceptual Layout of Facilities for the P-8A Poseidon squadrons (DON 2008)**

3 Facilities for the second MV-22 squadron include an aircraft wash rack and supporting utility building,  
4 modifying the existing P-3 aircraft parking apron to accommodate one squadron of MV-22 aircraft (10  
5 parking stalls—two of the 12 aircraft in a squadron are presumed to be inside the hangar at any given  
6 time), demolition of Buildings 1278 and 1279 and construction of a new privately-owned-vehicle (POV)  
7 parking lot, construction of one additional and expansion of two existing POV parking lots along B Street,  
8 installation of security lighting and fencing, relocation of an existing direct refueling support office (i.e.,  
9 guard house; Building 6180), and construction of one Type II modified aircraft maintenance hangar and  
10 supporting utility building. Modifications to the existing P-3 aircraft parking apron would include  
11 replacing the pavement within the 10 MV-22 parking stall footprints with heat-resistant concrete and  
12 sodium silicate coating to accommodate required design loads. Two aircraft tie-downs and one  
13 grounding point would also be provided at each parking stall. The facility site plan is shown in Figure 2-4.  
14 A summary of the components is provided in Table 2.1. Expected maximum excavation depths are  
15 provided due to the potential for impacts to archaeological resources.

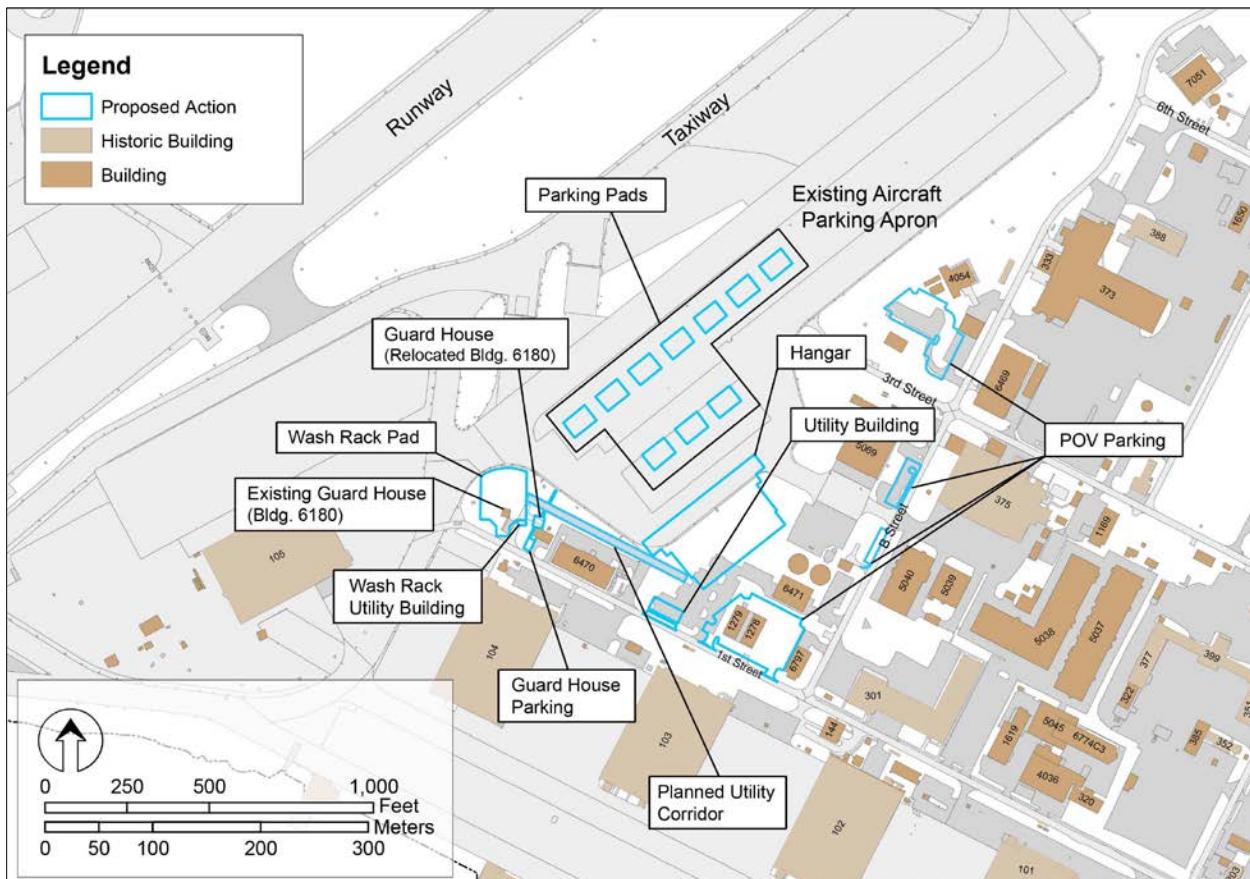
## **1      *Table 2-1 - MV-22 Facility Requirements***

Squadron Facilities	Building Area	Pavement Area	Excavation Depth ft
Aircraft Wash Rack	---	24,800 sf (2,304 m <sup>2</sup> )	3.6 ft (1.1 m)
Wash Rack Utility Building	624 sf (58 m <sup>2</sup> )	---	4.5 ft (1.4 m)
Guard House	301 sf (28 m <sup>2</sup> )	---	4.5 ft (1.4 m)
POV Parking Lots	---	41,925 sf (3,895 m <sup>2</sup> )	1.2 ft (0.4 m)
Aircraft Parking Stalls	---	35,736 sf (3,320 m <sup>2</sup> )	3.0 ft (0.9 m)
Aircraft Maintenance Hangar	71,069 sf (6,603 m <sup>2</sup> )	---	Piles*
Aircraft Apron to Hangar	---	21,119 sf (1,962 m <sup>2</sup> )	3.0 ft (0.9 m)
Line Vehicle Parking	---	6,135 sf (570 m <sup>2</sup> )	1.2 ft (0.4 m)
Utility Building For Hangar	3,197 sf (297 m <sup>2</sup> )	---	5.5 ft (1.7 m)
Total Building Area	75,191 sf (6,986 m <sup>2</sup> )	---	
Total Paved Surfaces	---	129,715 sf (12,051 m <sup>2</sup> )	

\*Pile depth to be determined (all piles would be located outside of known archaeological sites)

Planned utility corridor excavation, between the hangar and wash rack, would extend through the cultural layer of a known archaeological site

2



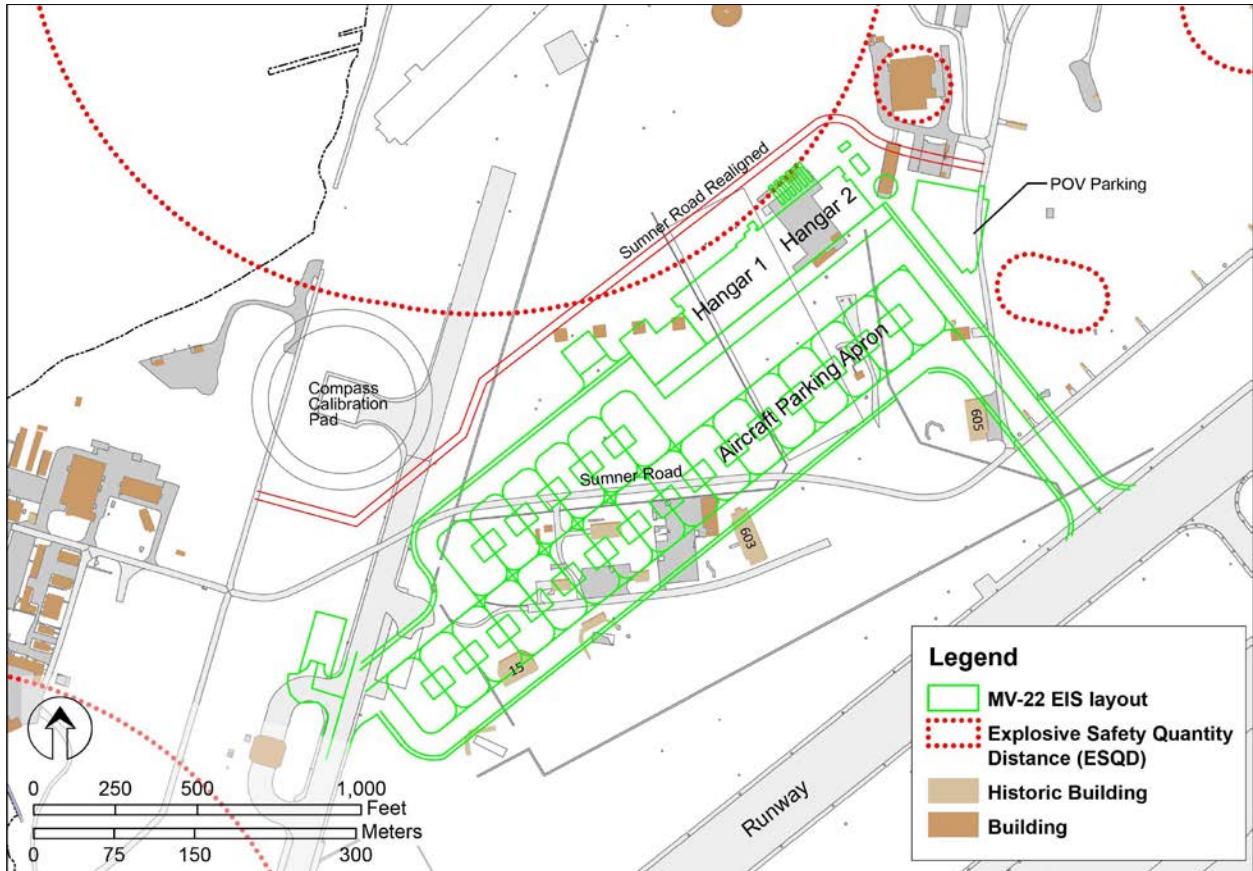
**Figure 2-4 - Site Plan, MV-22 Second Squadron**

### 6 2.1.3. Alternatives Considered and Dismissed

<sup>7</sup> The MV-22 EIS analyzed the alternative of locating two MV-22 squadrons at West Field(see Figure 2-5).

8 The MV-22 EIS explained that project development at West Field included the following findings: it

1 would require the construction of a runway underpass, would be constructed in a flood zone and  
2 tsunami evacuation zone, and include the demolition of buildings eligible for listing on the National  
3 Register of Historic Places (NRHP). Impacts of the underpass include costs, impacts to operations during  
4 construction, and removal of the approximately 140,000 cubic yards of excavation material that would  
5 be generated from construction. A traffic analysis conducted in 2012 indicated that the underpass would  
6 be required even if only one MV-22 hangar was built at West Field. Specific construction requirements if  
7 the hangar was built in the flood zone were not determined in the MV-22 EIS.



9 **Figure 2-5 – West Field MV-22 EIS facility site plan**

10  
11 A West Field alternative was not selected for further consideration in this EA due to operational impacts,  
12 including the preference to have both squadrons located on the east side of the runway. It is noted that  
13 this EA considers construction of facilities for only one squadron (i.e., one hangar and ten parking stalls  
14 versus two hangars and 20 parking stalls as analyzed in the MV-22 EIS), but the determination that a  
15 West Field alternative is not preferred is still valid.

16 Existing hangars (e.g., Buildings 103, 104, or 105) are in use by other units and new facility construction  
17 would be required for displaced tenants if these hangars were used for the second MV-22 squadron. The  
18 interior vertical clearance of existing hangars is inadequate for MV-22 aircraft due to the height of the

1    rotors when positioned vertically, which is required when the aircraft is on the ground. Development  
2    elsewhere along the runway is constrained by accident potential zones at both ends of the runway, and  
3    by vertical height setbacks around the entire runway perimeter. The MCB Hawaii Kaneohe Bay runway  
4    bisects the west side of Mokapu Peninsula, with water at both ends, which reduces the amount of  
5    developable area and, particularly, access to the west end, which is only accessible via a surface road  
6    crossing the active runway.

7    **2.2. Summary of Environmental Impacts**

8    Table 2-2 summarizes the potential impacts that could result from the alternatives evaluated.

9    **Table 2-2 - Summary of Environmental Impacts**

Environmental Resource or Issue of Concern	Proposed Action	No Action
Utilities and infrastructure, solid waste and hazardous material	No impacts beyond those described in the MV-22 EIS	No impacts beyond those described in the MV-22 EIS
Land use, viewplanes, drainage, air quality, noise, vehicular traffic/circulation, soils and topography, biological resources,	No impacts beyond those described in the MV-22 EIS  Overall reduction in storm water drainage and impacts to topography due to the reduction in construction of new impermeable surface	No impacts beyond those described in the MV-22 EIS
Cultural resources	Impacts to Site 5829 would be mitigated with controlled excavation and data recovery;  No impacts to Site 4933 are expected. Archaeological monitoring of construction activities would be carried out during ground disturbance for the undertaking.	No impacts

**3. Existing Environment and Environmental Consequences**

This chapter describes the environmental setting and baseline conditions specific to the region of influence for the proposed action, and the potential environmental consequences of implementing the proposed action. Existing conditions and environmental consequences associated with the no action alternative were described in the MV-22 EIS and approved in the ROD. The revised no action site plan is within the footprint analyzed in the EIS, except for the two stalls relocated to the P-3 apron.

**3.1. Scope of Resource and Issue Analysis**

The analysis in this EA is focused on those environmental resources and issues of concern (e.g., noise, traffic) for which potential impacts may be different at the southeast site than those analyzed for the northeast portion of the runway in the MV-22 EIS. The basing decision and impacts related to squadron operations, including personnel increases, housing for personnel, socioeconomic, training impacts, and noise, were analyzed in the MV-22 EIS and the determinations made therein apply to the actions proposed in this EA. Similarly, the analyses for resources and issues of concern that were addressed in the MV-22 EIS are incorporated by reference in this EA where applicable. Resources and issues of concern are addressed in three categories: 1) items that have no differences from the MV-22 EIS analysis, 2) items for which explanations on the applicability of MV-22 EIS determinations to the proposed action are provided for clarity, and 3) items for which additional analysis was conducted.

Resources and issues of concern that have no differences from the MV-22 EIS analysis (i.e., are not different along the east side of the airfield) include land use, air quality, utilities and infrastructure, solid waste, and hazardous materials. Determinations made in the MV-22 EIS for these resources or issues of concern are applicable to the proposed action, and, therefore, are not re-analyzed in this document.

MV-22 EIS determinations were considered in the analysis of potential environmental impacts of the proposed action on drainage, air quality, noise, vehicular traffic and circulation, soils and topography, and biological resources. The rationale for incorporating by reference the analyses and determinations presented in the MV-22 EIS is provided in Section 3.2.

Analysis of site-specific resources that could be impacted by the proposed action is focused on cultural resources at the southeast site. An archaeological assessment conducted for this EA determined that previously identified archaeological Sites 4933 and 5829 are located within the project area. No impacts to Site 4933 are expected to result from the implementation of the proposed action. However, archaeological testing conducted for this EA concluded that the project would impact Site 5829. The proposed action will also indirectly impact the setting/viewshed of several historic structures, a proposed historic district, and a National Historic Landmark. Analysis of cultural resources, including a summary of testing results and proposed mitigation, are described in Section 3.3.

**3.2. Overview**

Construction, demolition, and renovation projects have the potential to affect the natural and human environment. Potentially affected resources/issues of concern were identified through a scoping process

1 that included review of previous environmental documents and consultation with subject-matter  
2 experts, as well as review of investigations conducted during the preparation of the MV-22 EIS.

3 The proposed action would take place on the same side of the airfield as that described under the  
4 preferred alternative in the MV-22 EIS. Therefore, the proposed action (essentially a relocation of one of  
5 the components analyzed in the referenced EIS) would not affect the following resources beyond the  
6 effects described in the MV-22 EIS: utilities and infrastructure and solid waste and hazardous materials.  
7 Similarly, use of a different construction location within the base would not result in environmental  
8 justice effects or environmental health risks to children that are different from those analyzed in the  
9 MV-22 EIS. Explanations of the applicability of the MV-22 EIS determinations to land use, visual effects,  
10 drainage, air quality, noise, vehicular traffic/circulation, soils and topography, and biological resources  
11 are provided below. Potential effects to Cultural Resources are discussed in Section 3.3.

12 **Land Use:** The proposed location of the hangar is closer to the existing hangars along 1st Street than  
13 would be the case under the no action alternative, approximately 3,000 feet from the northeast corner  
14 of the runway adjacent to the first hangar now under construction. Accordingly, the siting of the MV-22  
15 facilities under the proposed action is compatible with surrounding uses. The proposed hangar fronts an  
16 existing aircraft apron with existing access to taxiways and the runway and is in compliance with airfield  
17 planning guidance and the Installation Master Plan. Per consultation with the Hawaii State Coastal Zone  
18 Management Act program administrator, a Coastal Zone Management Act consistency determination is  
19 not required because the proposed action will be located entirely on Federal lands, which are excluded  
20 from the Hawaii Coastal Zone. Additionally, the proposed action would not have reasonably foreseeable  
21 direct or indirect effects on any coastal use or resources of the Hawaii Coastal Zone.

22 **Viewplane Effects:** The new hangar has the potential to adversely affect public scenic viewplanes (note:  
23 historic viewplane effects are discussed in Section 3.3 below). Visual effects of the hangar were analyzed  
24 in the MV-22 EIS and are discussed here in terms of changes to the visual landscape associated with the  
25 new hangar location. The proposed hangar is a large industrial building with approximate dimensions of  
26 365 feet long x 175 feet wide x 80 feet tall. The proposed hangar sits across 1<sup>st</sup> Street from five large  
27 existing aircraft hangars (Buildings 101, 102, 103, 104 and 105), each approximately 380 feet long x 250  
28 feet wide x 50 feet tall. From on-base, the proposed hangar would be very visible from the west and  
29 northeast across the runway looking towards the east and southwest, with the existing hangars acting as  
30 a fairly solid backdrop. From the east, the proposed hangar would be difficult to see through the field of  
31 existing buildings. It would not intrude into longer views of the Koolau ridgeline and lower slopes, very  
32 distinctive features of Windward Oahu.

33 The City's Koolaupoko Sustainable Communities Plan (CCH 2000), the regional plan maintained by the  
34 City to regulate development in the Windward Area of Oahu (in which MCB Hawaii Kaneohe Bay is  
35 situated), seeks to protect significant scenic public views of ridges, upper valley slopes, shoreline areas  
36 from major public parks, highways, coastal waters and hiking trails. The Mokapu Peninsula is fairly low-  
37 lying with the exception of Ulupau Head, a prominent feature along the Windward Coast (and to a lesser  
38 degree, Puu Hawaii Loa). The existing airfield area is low-lying and the industrial like buildings grouped  
39 around the southeast end of the runway (including the project site) are visible from public vantage

1 points on the H-3 Freeway in the approach to the Main Gate, from Heeia State Park approximately 2.5  
2 miles to the west and Kualoa Regional Park approximately 6.5 miles to the north. From the closest  
3 vantage point along the H-3 approach to the Main Gate, the proposed hangar would be behind the row  
4 of existing hangars along 1<sup>st</sup> Street and barely visible above the top of the hangars. From Heeia State  
5 Park the proposed hangar would be behind Hangar 105 but the distance would make it very hard to  
6 distinguish from other adjacent buildings. The hangar would stand out from the adjacent hangars from  
7 the Kualoa State Park vantage point but the intervening distance would make it blend with from  
8 adjacent buildings. In none of these site lines are public views of Ulupau Head and Puu Hawaii Loa  
9 affected. Based on the foregoing assessment, the prosed action will not have a significant impact on  
10 public viewplanes.

11 **Drainage:** As described in the MV-22 EIS, box culverts drain the runway area, which includes both the  
12 northeast and southeast sites, southward to Kaneohe Bay. Because the proposed action would not  
13 require the construction of a new aircraft parking apron, the loss of permeable land would be  
14 approximately 5 acres less than the no action alternative.. The site of the proposed action lies within the  
15 same drainage area as the original site, so the strategy for handling storm water would be similar to  
16 what was analyzed in the MV-22 EIS. As detailed in the MV-22 EIS, design standards and best  
17 management practices (BMPs) for the proposed action would be applied to control surface storm water  
18 runoff as well as to improve or maintain the quality of discharged water, per Naval Facilities Engineering  
19 and Construction Bulletin requirements, Section 438 of the Energy Independence and Security Act  
20 (EISA), as well as Unified Facilities Criteria (UFC) 3-210-10 (Low Impact Development [LID], which call for  
21 projects to maintain storm water discharge to predevelopment hydrology conditions to the maximum  
22 extent technically feasible, and for application of BMPs for water quality) (UFC 2010).

23 Because Kaneohe Bay is classified as Class AA water (designated to remain in a natural pristine state as  
24 nearly as possible with an absolute minimum of pollution or alteration of water quality from any human-  
25 caused source or action (OEP 1987)), the base's current National Pollutant Discharge Elimination System  
26 (NPDES) permit (Permit No. HI 0110078) includes restrictions on the amount of storm water that may be  
27 discharged to the bay. Projects that result in additional storm water runoff require a revision of the  
28 station's current NPDES permit. Utilizing BMPs and implementing storm water management practices as  
29 specified in the installation's Storm Water Management Plan (SWMP), impacts on water quality from  
30 erosion and off-site sedimentation during and after completion of construction and during operations  
31 would be negligible. As part of the SWMP, sampling is regularly conducted to ensure that storm water  
32 discharges meet state water quality standards. Accordingly, drainage is not addressed further in this EA.

33 **Air Quality:** Construction-related impacts to air quality would not be measurably different from those  
34 analyzed in the MV-22 EIS. Emissions would be short-term, and existing regulatory controls would  
35 minimize impacts. Emissions from generators and other stationary sources would be controlled through  
36 the existing regulatory permit process under the Clean Air Act. Emissions from mobile sources would be  
37 readily dispersed. Accordingly, air quality is not addressed further in this EA.

38 **Noise:** The frequency of runway operations, aircraft mix, and location and use of off-base aircraft flight  
39 tracks are the primary determinants of community noise-related concerns. The proposed action would

1 not change these factors, which were analyzed in the MV-22 EIS. The relocation of the aircraft parking  
2 pads and hangar from one end of the runway to the other would not be expected to significantly alter  
3 off-base noise levels as presented in the MV-22 EIS.

4 The MV-22 squadron would replace the P-3 squadron at the southeast end of the airfield, so local  
5 aircraft noise levels at that end of the runway would not change appreciatively. Additional information  
6 on noise contributors is detailed in the MV-22 EIS. Overall, actual noise levels are expected to be lower  
7 than those analyzed in the MV-22 EIS because the noise analysis anticipated the basing of three P-8A  
8 squadrons at MCB Hawaii, which was subsequently reduced to a two aircraft P-8A detachment.

9 Construction activities may be occasionally audible at surrounding properties. For this reason,  
10 construction curfew periods are typically implemented to minimize construction noise impacts. During  
11 construction, temporary noise would be managed by following State DOH noise permit requirements.  
12 Unavoidable but temporary noise impacts may occur during construction at the base, but they are not  
13 expected to be severe due to the location of the construction areas within the base's boundaries.

14 Accordingly, noise is not addressed further in this EA.

15 **Vehicular Traffic/Circulation:** There would be no net increase in vehicle trip generation or off-base  
16 traffic levels associated with the proposed action from that analyzed in the MV-22 EIS. Relocation of one  
17 squadron from one end of the runway to the other would reallocate some projected local traffic  
18 increases from the northeast end of the airfield (e.g., along Mokapu Road and G and E Streets) to the  
19 southeast end (e.g., along 1<sup>st</sup> Street). The traffic study referenced in the MV-22 EIS analyzed conditions  
20 at roadways providing access into the base, the two entry gates, and nine intersections throughout MCB  
21 Hawaii Kaneohe Bay, accounting for a projected increase of over 1,000 personnel (1,000 military  
22 personnel, and 22 civilian employees, including the two MV-22 squadrons) that would operate  
23 throughout the west side of the base. The traffic study determined that off-base access roads would  
24 become slightly more congested and that additional sentries would be needed at the entry gates during  
25 peak periods to minimize queuing.

26 Several measures were recommended to improve levels of service at congested on-base intersections to  
27 maintain adequate traffic flow. The traffic analysis conducted for the MV-22 EIS analyzed all roadways  
28 around the airfield and identified needed improvements throughout the area. This included  
29 improvements at the intersections of G Street and Mokapu Road, G Street and Reed Road, E Street and  
30 3<sup>rd</sup> Street, and E Street and 2<sup>nd</sup> Street. These recommended improvements are being conducted,  
31 regardless of the second MV-22 hangar location, so traffic impacts, above those analyzed for the MV-22  
32 EIS, would not be expected. The disestablishment of the P-3 squadrons, and the decision to not base  
33 three P-8 squadrons at MCB Hawaii Kaneohe Bay, would also reduce the number of vehicle trips to the  
34 southeast end of the runway below the conditions analyzed in the MV-22 EIS. Since the proposed action  
35 would not increase the number of vehicle trips, no significant impacts would occur.

36 **Soils and Topography:** As explained in the MV-22 EIS, based on the United States Department of  
37 Agriculture Soil Natural Resources Conservation Service (USDA NRCS) web soil survey, the surface soil  
38 identified around the runway primarily consists of Fill Land (FL). Shallow borings performed for previous

1 runway and taxiway projects indicate that the surface soils in these areas consist of fill material. Soil  
2 types, including Mamala Stony Silty Clay Loam (MnC), Ewa Silty Clay Loam (EmB), and Molokai Silty Clay  
3 Loam (MuC), have also been mapped in the eastern and northeastern portions of the peninsula. The  
4 silty clay loams consist of well-drained soils with moderate permeability characteristics. Runoff varies  
5 from very slow to medium, erosion hazard varies from slight to moderate, and the shrink-swell potential  
6 ranges from low to moderate. Site-specific geotechnical engineering investigations were conducted to  
7 determine construction requirements.

8 Because the proposed action would use existing facilities and construct new facilities in an already  
9 developed area on the SE end of the runway, the overall disturbance to soils and topography are less  
10 than those analyzed in the MV-22 EIS. As noted, construction activities would be completed in  
11 compliance with a project-specific NPDES permit program. As part of the permit program, BMPs would  
12 be implemented for erosion and sediment control prior to and during construction. Excessive ground  
13 settlement, erosion, and expansive soil impacts are not anticipated with the implementation of  
14 applicable geotechnical engineering practices during design and construction.

15 **Biological Resources:** Facility construction would occur within currently developed areas along the east  
16 side of the airfield (see Figure 2-4). This area is dominated by invasive species (e.g., Bermuda grass) or  
17 planted landscape trees and shrubs.

18 MCB Hawaii Kaneohe Bay does not contain federally designated critical habitat. A complete inventory of  
19 species and supporting habitats found at MCB Hawaii Kaneohe Bay was documented in the MV-22 EIS.  
20 Wildlife species that occur at MCB Hawaii Kaneohe Bay are concentrated along the base's 11 miles of  
21 shoreline, within the Nuupia Ponds and Ulupau Head Wildlife Management Areas (WMA), and within  
22 the 500-yard offshore security buffer zone. The sites analyzed in this EA are not in the vicinity of the  
23 WMAs or the shoreline. Neither of the sites evaluated in this EA provide high-quality habitat for  
24 terrestrial native or naturalized flora or fauna. Implementation of BMPs to avoid or minimize storm  
25 water runoff would further reduce potential impacts on marine resources. The MV-22 EIS also explains  
26 that outdoor lights at MCB Hawaii Kaneohe Bay are shielded when possible to minimize attraction to  
27 seabirds, such as shearwaters, and discusses the Bird Aircraft Strike Hazard (BASH) Plan, developed by  
28 MCAS Kaneohe Bay to reduce the risk of air strikes involving birds, including resident and migratory bird  
29 species. No significant impacts are expected from the proposed action.

### 30 **3.3. Cultural Resources**

31 Cultural resources include archaeological, historic and traditional cultural properties that reflect our  
32 heritage and are considered important to a culture, a subculture, or a community for any scientific,  
33 traditional, spiritual, or educational reason. NHPA defines historic properties to include prehistoric and  
34 historic sites, buildings, structures, districts, or objects listed or eligible for listing in the NRHP, as well as  
35 artifacts, records, and remains related to such properties (NHPA, as amended [16 U.S.C. 470 et seq.]).  
36 Additionally, cultural resources are protected under the Archeological Resource Protection Act (ARPA)  
37 (16 U.S.C. 470aa-9 470mm; Public Law 96-95 and amendments), the Native American Graves Protection  
38 and Repatriation Act (NAGPRA) (Public Law 101-601; 25 U.S.C. 3001-3013), and the American Indian  
39 Religious Freedom Act (AIRFA), (Public Law No. 95-341, 92 Stat. 469, dated August 11, 1978, codified at

1    42 U.S.C. § 1996). Section 106 of the NHPA requires that federal agencies with jurisdiction over a  
2    proposed federal project take into account the effect of undertakings on properties listed, or eligible for  
3    listing, on the NRHP, and affords the State Historic Preservation Office (SHPO), the Advisory Council on  
4    Historic Preservation (AHP), Native Hawaiian Organizations (NHO), the Office of Hawaiian Affairs  
5    (OHA), interested parties, and the public an opportunity to comment on a proposed undertaking. The  
6    NHPA and its implementing regulations at 36 CFR Part 800 also include provisions for consultation with  
7    NHO regarding cultural significance of potential religious and sacred artifacts.

8    Cultural resources covered under NHPA—including archaeological sites, traditional cultural properties  
9    (TCPs), and buildings and structures—are evaluated for significance using criteria established under  
10   NHPA to determine eligibility for inclusion in the NRHP, as stipulated in 36 CFR Part 60.4.

11   The quality of significance in American history, architecture, archaeology, and culture is present in  
12   districts, sites, buildings, structures, and objects of state and local importance that possess integrity of  
13   location, design, setting, materials, workmanship, feeling, and association, and meet one or more of the  
14   following criteria:

- 15       • Criterion A. Properties associated with events that have made a significant contribution to the  
16       broad patterns of our history;
- 17       • Criterion B. Properties associated with the lives of persons significant in our past;
- 18       • Criterion C. Properties that embody the distinctive characteristics of a type, period, or method  
19       of construction; or
- 20       • Criterion D. Properties that have yielded, or may be likely to yield, information important in  
21       prehistory or history (36 CFR 60.4).

22   MCB Hawaii has conducted numerous inventories of cultural resources at MCB Hawaii Kaneohe Bay to  
23   identify properties that are eligible for listing in the NRHP. The results of these studies have been  
24   summarized in MCB Hawaii's Integrated Cultural Resources Management Plan (2014) (ICRMP).

25   An undertaking is defined under NHPA Section 106 regulations as a “project, activity or program funded  
26   in whole or part under the direct or indirect jurisdiction of a Federal agency, including those carried out  
27   by or on behalf of a Federal agency; those carried out with Federal financial assistance; and those  
28   requiring a Federal permit, license or approval” (36 CFR 800.16 (l)(1)). Under 36 CFR Part 800, an  
29   undertaking adversely affects a historic property if it alters the characteristics that qualify the property  
30   for inclusion in the National Register in a manner that would diminish the integrity of the property.  
31   “Integrity” is the ability of a property to convey its significance, based on its location, design, setting,  
32   materials, workmanship, feeling, and association. Adverse effects can be direct or indirect. They can  
33   include reasonably foreseeable impacts that may occur later in time or be farther removed in distance.

34   Under NEPA, whether or not an action would have a significant impact on cultural resources is  
35   determined based on the context and intensity of the impact. While a proposed action (undertaking)  
36   could be determined under 36 CFR Part 800 to have an adverse effect on historic properties, the context  
37   or intensity of that adverse effect may not be such that it constitutes a significant impact under NEPA;

1 adverse impacts may also be resolved, or mitigated, thus reducing the potential for an impact to be  
2 significant.

3 Damage, loss, or disturbance to Native Hawaiian human remains would be an impact under NAGPRA.  
4 Loss of access to sacred or ceremonial areas would be an impact under AIRFA, enacted to protect and  
5 preserve traditional religious rights and cultural practices of American Indians, Eskimos, Aleuts, and  
6 Native Hawaiians.

7 **3.3.1. Definition of the Area of Potential Effect**

8 For the purposes of NHPA, effects on historic properties are analyzed within the area of potential effects  
9 (APE) of the undertaking. APE is defined at 36 CFR Part 800.16(d) as “the geographic area or areas within  
10 which an undertaking may directly or indirectly cause changes in the character or use of historic  
11 properties, if any such properties exist.” The APE for cultural resources includes the locations of the  
12 proposed action and activities, as well as areas that may be affected by construction or the presence of  
13 the new facilities. One example includes visual impacts of development or use, if those visual features  
14 contribute to characteristics that qualify the property for inclusion in the NRHP (i.e., the site’s “integrity  
15 of location, design, setting, materials, workmanship, feeling, and association”) (36 CFR Part 60.4).

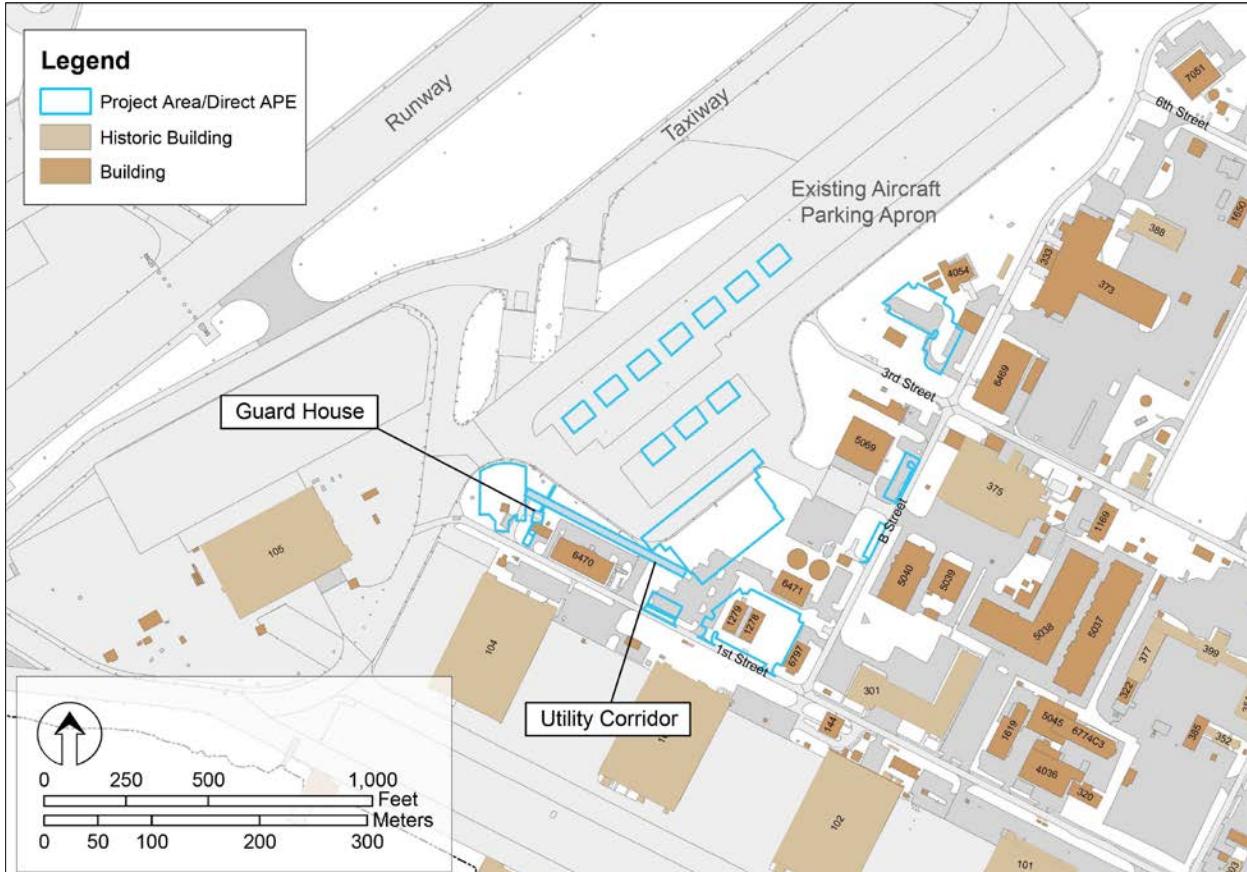
16 **3.3.2. Affected Environment**

17 **3.3.2.1. *Proposed Action***

18 Early in the planning process it was determined that the proposed action would have the potential to  
19 impact cultural resources; specifically, archaeological sites and historic structures/districts. Per the MCB  
20 Hawaii’s ICRMP, there are no properties at MCB Hawaii Kaneohe Bay that are officially designated, or  
21 eligible for designation, as traditional cultural properties. Additionally, the proposed action would not  
22 impact access to sacred or ceremonial areas. NHPA Section 106 consultation was initiated to review the  
23 potential for impacts to historic properties and allow input from consulting parties into the planning  
24 process. An archaeological assessment was conducted to compile data from previous studies. The  
25 assessment identified locations where construction under the proposed action would occur, but that  
26 had not been previously surveyed. Subsurface testing was conducted to confirm the extents of a known  
27 archaeological site and the depth of fills in the area. Meetings were held with the SHPO architects and  
28 archaeologists, the ACHP, the Historic Hawaii Foundation, NHO, OHA, interested parties, and the public  
29 to discuss concerns and findings from the archaeological assessment and testing conducted for this  
30 study, as well as to review design documents. Through the Section 106 process, a MOA for the proposed  
31 action (2015 MOA) was developed between MCB Hawaii and the consulting parties. This section  
32 explains how cultural resources could be impacted by the proposed action. The areas within which  
33 impacts could occur and the measures outlined in the MOA to avoid, minimize, or mitigate effects to  
34 historic properties are summarized.

35 Two APEs were considered for the proposed action. The direct APE addresses the construction footprint  
36 for the proposed action, in which ground disturbance from construction activities (building footprints,  
37 utility corridors, etc.) could affect archaeological resources or demolition/alteration of a historic  
38 structure could impact that structure’s integrity. The indirect APE refers to the area within which there

- 1 could be visual or audible impacts (vibration) to historic properties from construction activities or from
  - 2 new structures inserted into the viewshed once construction is completed.



**Figure 3-1 - Direct APE** (utility corridor approximated for planning purposes)

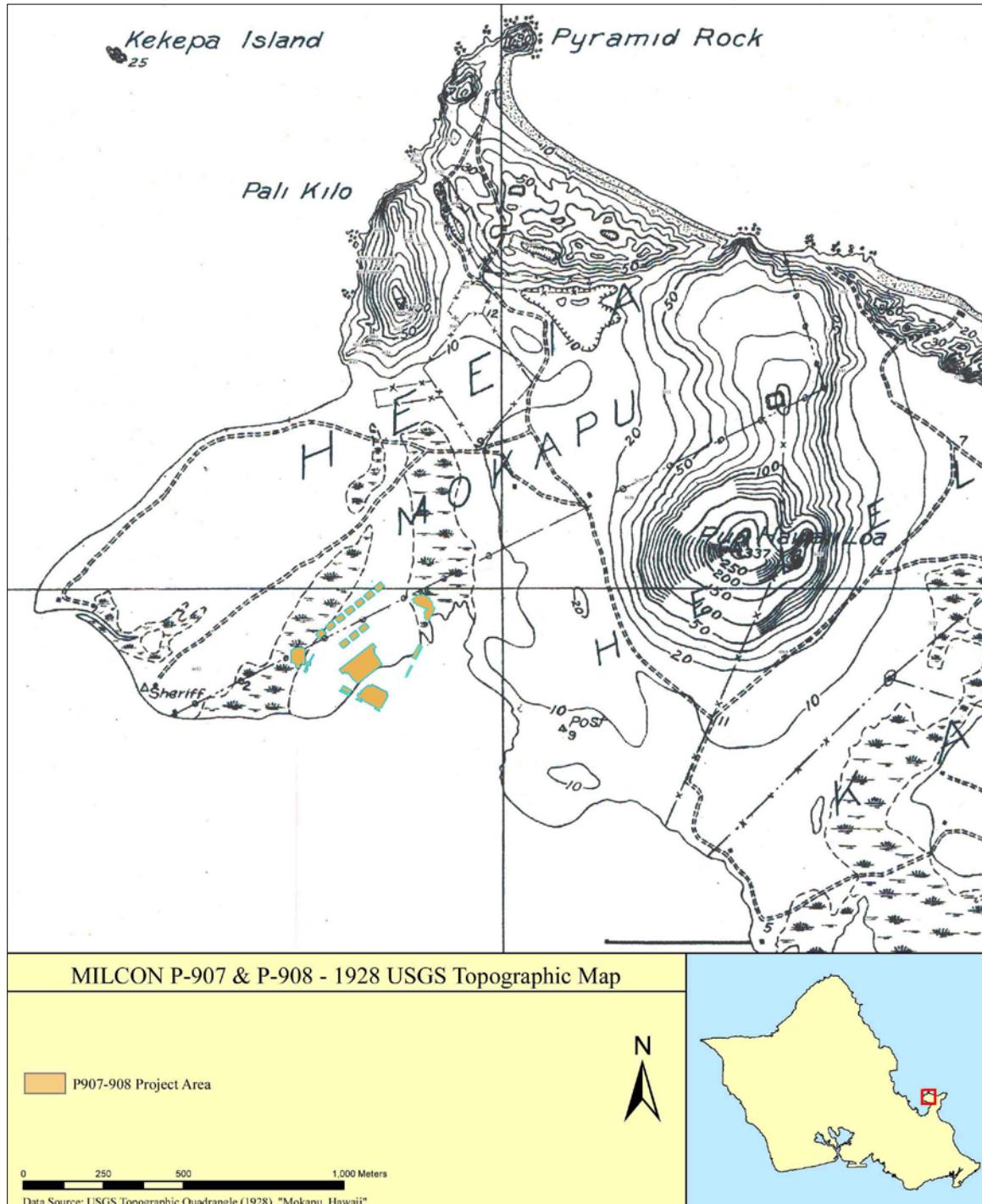
## Direct APE

7 None of the structures within the construction footprint are eligible for listing or listed on the NRHP;  
8 therefore, there are no direct impacts anticipated to historic structures. The proposed project area  
9 encroaches upon two previously known archaeological sites, Site 4933 and Site 5829, which are eligible  
10 for listing on the NRHP. Physical remains of past human activities, and human burials are present at both  
11 sites. The direct APE is defined as the facility footprints shown as blue project area symbols on  
12 Figure 3-1.

## **13 Archaeological Resources**

14 An assessment of archaeological resources located within the proposed construction site was prepared  
15 by International Archaeological Research Institute, Inc., (IARI) (Allen, et al., 2014). The assessment  
16 compiled and analyzed information from previous archaeological, historical, and environmental reports  
17 to establish the locations of known cultural resources, and identified areas where archaeological testing  
18 would be needed to provide more information.

- 1 The Direct APE also includes a former, now-buried, sand beach ridge located between two buried former  
2 wetlands, which originated as the estuaries of streams flowing off of nearby hills and, over time, became  
3 vegetated (Figure 3-2). Two archaeological sites, Site 4933 and Site 5829, are located on the beach ridge  
4 and both include habitation/occupation debris and human burials.



**Figure 3-2 - Pre-Contact Peninsula Topography**

(Source: Allen, et al., 2014; with reference to USGS Topographic Quadrangle (1928), Mokapu, Hawaii)

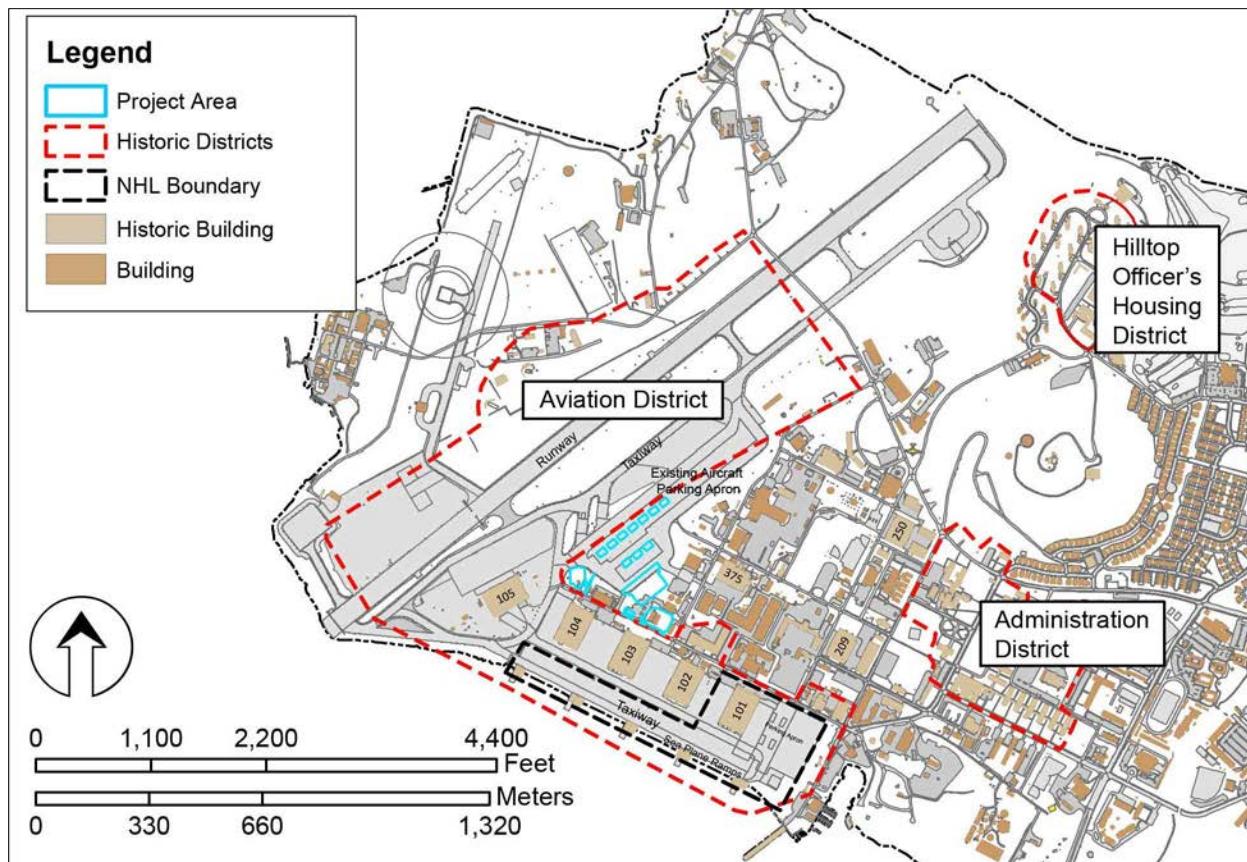
1 This ridge and the original coastline are no longer distinguishable due to the extensive use of fill material  
2 during the early 20th-century to level and expand the peninsula. Prior to the fill applications, however,  
3 the project area would have been located very near the west edge of a long embayment and estuary on  
4 the south shore, the mouth of one of two former streams. Prior to 1900—and 20th-century applications  
5 of huge volumes of bay sediments to coastal areas to create new dry land—the project area was actually  
6 located near the southeast edge of a small peninsula that jutted out to the southwest from Mokapu  
7 Peninsula, incorporating the south half of the area now occupied by the main runway and taxiways. This  
8 beach ridge is now buried under 25-180 cm of modern fill.

9 [Site 4933](#)  
10 Site 4933 currently underlies a concrete aircraft parking apron. Replacement of the existing concrete  
11 with upgraded heat-resistant concrete is proposed for two MV-22 parking pads above Site 4933. The site  
12 was first recorded in 1991, during archaeological monitoring and data recovery in backhoe trenches that  
13 were excavated as part of a water main replacement project. Data recovery in 1996 identified four  
14 archaeological features. The current boundary for Site 4933 encompasses all the exposures of Layer III,  
15 where evidence of human habitation has been identified, that have been documented during the  
16 various investigations.

17 [Site 5829](#)  
18 Site 5829, the only other archaeological site within the direct APE, consists of at least four traditional  
19 Hawaiian burials and evidence of habitation. The burials were discovered in units excavated along Drain  
20 Line B during monitoring of trench excavation for the Base Realignment and Closure (BRAC) project in  
21 2001, in an area south of Site 4933 and apparently on the same former beach ridge between wetlands.  
22 Site 5829 also includes a cultural layer, Layer III, which could be a continuation of Layer III at Site 4933.  
23 Testing conducted from 2000 to 2002 encountered cultural layers in additional locations that indicate  
24 temporary habitations.

25 Monitored excavation in 2013, connected with construction of the Flight Line Marine Mart across Third  
26 Street from Hangar 103 and a short distance southeast of both Sites 4933 and 5829, encountered no  
27 archaeological resources or human skeletal remains. Like the Site 4933 boundary, the current Site 5829  
28 boundary encompasses all exposures of the cultural layer documented by previous researchers.

29 MCB Hawaii, through the Cultural Resource Management staff, made effect determinations and  
30 discussed effect and mitigation possibilities with stakeholders as part of the NHPA Section 106  
31 consultation. Concerns regarding potential impacts to archaeological resources from the proposed  
32 action, and requests for archaeological testing, were received from the SHPO. Testing was conducted at  
33 six locations outside of Site 5829 and one at the proposed guard house footprint within the Site 5829  
34 boundary. The cultural layer was encountered within Site 5829 at the planned guard house relocation  
35 site and it was determined that construction would impact the site at this location. Site 4933 is located  
36 within portions of the project area but it is not likely that this site would be affected by construction  
37 because the new apron foundation and paving were designed to match existing conditions where  
38 replacement is required (i.e., new excavations in the apron would not go deeper than the depth of the  
39 existing apron).



**Figure 3-3 - Indirect APE**

#### Indirect APE

The proposed action would take place adjacent to the NAS Kaneohe Historic Aviation District (Figure 3-3) and the NAS Kaneohe National Historic Landmark (NHL). The indirect APE includes all areas around the airfield from which the new hangar would be visible, including the Aviation and Officers' Housing Districts, but not the Administration District. Potential visual and audible impacts of the proposed action on individual buildings, the historic districts, and NHL were considered during project design, and discussed during the Section 106 consultation. The potential for affect was primarily limited to the five historic hangars, along 1<sup>st</sup> Street, an area that is referred to as Hangar Row and which includes the NHL, but was also considered in regard to views to and from the airfield, including NRHP eligible Buildings 313 and 375. Because the new MV-22 hangar would be approximately 30 feet taller than the historic hangars and visible from various vantage points around the airfield, there would be adverse effects to the indicated historic districts. As stipulated in the 2015 MOA, the new hangar would be designed to be visually compatible with existing facilities.

#### Historic Architectural Resources

Buildings and structures at MCB Hawaii Kaneohe Bay are designated as: listed in the NRHP, determined eligible for listing, or not eligible. Historic architectural resources at MCB Hawaii

1 Kaneohe Bay include World War II era buildings and structures, as well as those associated with the  
2 Cold War era. World War II era buildings and structures are either listed, or determined eligible for  
3 listing, in the NRHP due to their association with the 7 December 1941 Japanese attack, which  
4 marked the start of U.S. involvement in World War II. Of these, Hangar 101 (located at the east end  
5 of “hangar row”), the parking apron east of the hangars, the taxiway south of the hangars, and the  
6 adjacent seaplane ramps extending into Kaneohe Bay, are listed in the NRHP, and together are  
7 classified as the NAS Kaneohe NHL. Three NRHP-eligible historic districts are also located at MCB  
8 Hawaii Kaneohe Bay: the NAS Kaneohe Aviation District, Administration District, and Hilltop  
9 Officers’ Housing District. The NAS Kaneohe Aviation District encompasses the NHL; Hangars 102,  
10 103, 104, and 105 to the west of Hangar 101 (that together make up hangar row); the runway; an  
11 office building; utilities shop; torpedo workshop; and bombsight workshop (Figure 3-3). The Hilltop  
12 Officers’ Housing District has views of hangar row that could be impacted by the proposed action;  
13 however, the proposed MV-22 hangar would be designed to be visually compatible with the  
14 architecture and materials of the structures in the historic district and NHL. The Administration District  
15 and the three Cold War era NRHP eligible buildings do not have views of the NHL. No construction  
16 or use associated with the proposed action would take place within the Aviation District.

17 **3.3.2.2. *No Action Alternative***

18 The no action alternative includes facility construction for one squadron primarily within a previously  
19 disturbed area at the northeast end of the runway. This alternative includes the demolition of seven  
20 buildings, not eligible or proposed for listing on the NRHP, and relocation of a 0.4-mile section of  
21 Mokapu Road, as described in the MV-22 EIS. With the exception of relocating two aircraft parking stalls  
22 to the P-3 apron, affected areas and site history relevant to this alternative were addressed in the MV-  
23 22 EIS. The relocated parking stalls would be constructed at the same site analyzed for the proposed  
24 action and would not require excavation below the depth of the existing apron. As discussed for the  
25 proposed action, there are no properties at MCB Hawaii Kaneohe Bay that are officially designated, or  
26 eligible for designation, as traditional cultural properties. The proposed action would not impact access  
27 to sacred or ceremonial areas.

28 **3.3.3. Environmental Impacts**

29 **3.3.3.1. *Proposed Action***

30 **Direct Impacts**

31 The proposed action includes the demolition of Buildings 1278 and 1279, as well as the relocation of  
32 6180. These buildings were determined not eligible for listing on the NRHP; therefore, no direct impacts  
33 to historic architectural resources would result from the proposed action.

34 Sites 4933 and 5829, both of which include evidence of habitation and human burials, are the only  
35 documented sites within or adjacent to the project area. No burials are known to exist in areas where  
36 construction is planned.

1 The current aircraft parking apron foundation and paving at Site 4933 extends to a depth of 90 cm  
2 below surface (cmbs). Construction excavation is not expected to exceed that depth. Excavation depth  
3 for the MV-22 parking pads would be controlled by the Contractor's quality control methods and  
4 through observation during construction activities by a Government archaeological monitor. The  
5 horizontal extent of any ground disturbance would also not exceed the current extent of the area  
6 disturbed during earlier excavation. Accordingly, Site 4933 is not expected to be adversely affected by  
7 construction for the proposed action.

8 The footprints for the southeast corner of the proposed aircraft wash rack, the guard house, the guard  
9 house parking area, and a utility corridor between the hangar and the guard house are located within  
10 the boundaries of Site 5829. The proposed action would impact a portion of Site 5829; specifically, the  
11 portion of the site within the footprint of the guard house (see Figure 3-1). To ensure that the site  
12 deposit did not extend into the rest of the construction footprint, archaeological testing, in the form of  
13 four trenches within the proposed MV-22 hangar footprint and two trenches within the proposed wash  
14 rack footprint, was conducted. Testing confirmed that the site deposit does not occur in these areas,  
15 and no additional cultural resources are present. Therefore, impacts are restricted to the portions of Site  
16 5829 noted above (300 square feet).

17 **Indirect Impacts**

18 The scale of the buildings that would be constructed under the proposed action was discussed during  
19 Section 106 consultation process. It was agreed that only the new MV-22 hangar was large enough to  
20 have a potential effect on the visual quality of the historic district and NHL, and viewsheds around the  
21 airfield. To minimize these effects, every effort will be made to make the proposed MV-22 hangar design  
22 compatible with the architecture and materials of the structures in the historic district and NHL (e.g.,  
23 compatible roof lines and building fenestration). The design stipulations in the 2015 MOA are  
24 considered part of the proposed action.

25 **3.3.3.2. No Action Alternative**

26 During site preparation and grading for the construction of the first squadron facilities, one feature of  
27 Site 7411 was demolished. In accordance with the PA that was developed for the MV-22 EIS proposed  
28 action, Section 106 consultation was initiated and the subsequent P-904/P-905MOA was developed that  
29 stipulated the development and implementation of a preservation plan for the remainder of the site  
30 (USMC 2012 and 2013).

31 Impacts associated with the no action alternative, including the realignment of Mokapu Road, were  
32 evaluated in the MV-22 EIS. A large portion of the area was surveyed and tested as part of the MV-22 EIS  
33 preparation, and no cultural materials were found in test excavations (DON 2012).

34 As determined in the MV-22 EIS, no NRHP-listed or eligible structures would be demolished, renovated,  
35 or otherwise affected.

36

37

1   **3.3.4. Proposed Mitigation Measures**

2   **3.3.4.1. *Proposed Action***

3   With the implementation of the mitigation measures outlined in the PA and 2015 MOA, the impacts of  
4   the proposed action on cultural resources are not significant.

5   **Archaeological Resources**

6   Site 4933 is not expected to be adversely affected by construction under the proposed action; however,  
7   archaeological monitoring would be conducted during aircraft parking pad construction to ensure that  
8   no unanticipated effects occur. No additional mitigation is proposed.

9   Archaeological testing confirmed that excavation for the guard house foundation and the utility corridor  
10   would impact the cultural layer at Site 5829 (300 square feet). Expanded areal (block) excavation and  
11   data recovery within potentially affected areas of Site 5829 was recommended to be conducted, after  
12   the construction contractor removes existing pavement where needed, in order to mitigate potential  
13   adverse impacts to Site 5829. Details of the controlled excavation and data recovery would be  
14   addressed in an archaeological testing plan.

15   No archaeological sites have been identified in the remainder of the construction footprint; however,  
16   archaeological monitoring would be conducted during construction to ensure that no unanticipated  
17   effects occur.

18   **Historic Architectural Resources**

19   Section 106 consultation resulted in an agreement with the SHPO, ACHP, and the Historic Hawaii  
20   Foundation that potential indirect effects would be mitigated by designing the MV-22 hangar to be  
21   compatible with the architecture and materials of the structures in the historic district and NHL.  
22   Specifically, the hangar would have straight roof lines, and hangar doors and building fenestration would  
23   be designed in a way that is compatible with the appearance of the historic hangars. The proposed  
24   hangar design meets these criteria.

25   **3.3.4.2. *No Action Alternative***

26   The no action alternative represents a reduction in cultural resource impacts compared to the design  
27   shown in the MV-22 EIS. The no action alternative would exclude a portion of the aircraft parking apron  
28   that would have impacted Site 7411. As described in Section 2.1.1, the no action alternative also  
29   excludes the relocation of the aircraft rinse facility to a previously undisturbed area at the northeast end  
30   of the site where additional unexpected impacts could occur. No archaeological sites have been  
31   identified in the proposed construction footprint; however, archaeological monitoring would occur  
32   during construction to ensure that no unanticipated effects occur. With the implementation of the  
33   mitigation measures outlined in the PA and P-904/P-905 MOA, the impacts of the proposed action  
34   alternative on cultural resources would not be significant.

35   **3.4. Cumulative Impacts**

36   The CEQ's NEPA regulations define cumulative effects as: 'The impact on the environment which results  
37   from the incremental impact of the action when added to other past, present, and reasonably

1 foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such  
2 other actions' (40 CFR 1508.7). Cumulative impacts can arise from the individual effects of a single  
3 action or from the combined effects of past, present and/or future actions. Cumulative impacts can  
4 result from individually minor actions that collectively amount to significant actions over time.

5 The projects listed in Table 3-1 were considered in conducting the cumulative impact analysis and  
6 represent recent past, present, and reasonably foreseeable future projects. For the purposes of this EA,  
7 the timeframe of current and/or reasonably foreseeable projects extends from 2010 to 2017. Most of  
8 the capital improvement projects at MCB Hawaii Kaneohe Bay are related to the basing of the MV-22  
9 Osprey squadrons and the HMLA, the small detachment of the P-8A Multi-Mission Maritime Aircraft  
10 squadron and their supporting units, and other aviation-related improvements. The Defense Policy  
11 Review Initiative (DPRI) is evaluating potential relocation of some U.S. Marines and dependents from  
12 Okinawa to Oahu, projected for the years between 2019 and 2026. The projects associated with DPRI  
13 are part of the USMC long-term planning horizon, but, at this time, are not sufficiently detailed for in-  
14 depth analysis to be included within the cumulative impacts analysis.

15 The cumulative impact analysis builds on the comprehensive analysis provided in the EIS with a focus on  
16 cultural resources.

17 **3.4.1. Projects Considered in the Cumulative Analysis**

18 Cumulative impacts were analyzed in the MV-22 EIS for projects or activities that are either in proximity  
19 to the proposed action, similar to the proposed action, large enough to have effects, and/or occurring  
20 within the same timeframe. The MV-22 EIS analysis included military and non-military actions. MILCON  
21 projects for MCBH are shown in Table 3-1. Congress approves the USMC MILCON submission on an  
22 annual basis. Table 3-1 lists projects that have been approved/funded and are being executed at MCBH  
23 as well as projects that have been proposed in respective fiscal years (i.e. "FY 2017"). It is important to  
24 note that although the projects are proposed, budget constraints and priorities limit project submission  
25 for Congressional approval. It is not possible to determine what projects will be funded/executed; it is  
26 likely that a small number may be selected. The following are proposed MILCON projects. As Congress  
27 funds MILCON projects, priorities and funding levels may change and not all projects may be executed.

28 **Table 3-1 - Recent Past, Present and Reasonably Foreseeable Future Projects at MCB Hawaii Kaneohe  
29 Bay**

Project Name	Description	Year
Bachelor Enlisted Quarters (BEQ)	Construct BEQ at Kaneohe to meet current demands.	Funded FY2010 (complete)
Child Development Center	As part of the American Recovery and Reinvestment Act of 2009, expand the existing Child Development Center to meet increased demands for infant and child care at Kaneohe.	Funded FY2010 (complete)
BEQ	New Command Headquarters (HQ), New 214 Bed BEQ, Renovation of 5070 and 5071, Demolition of Buildings 4010, 4017, 4019, 4020, 6075	Funded FY2011 (completion Feb 2015)
Waterfront Operations (Ops) Center	Construct Facility to replace Waterfront Ops deteriorated metal facilities formerly used by Navy Operational Support Center	Funded FY2011

MV-22 Facilities Project Relocation Environmental Assessment  
 Marine Corps Base Hawaii Kaneohe Bay, Oahu

<b>Project Name</b>	<b>Description</b>	<b>Year</b> (in progress)
MCAS Ops Complex	Provide a consolidated MCAS operations facility to include the air passenger/cargo terminal, weather office, command spaces, and aircraft rescue and firefighting center.	Funded FY2012 (completion Feb 2015)
MV-22 Hangar	Provide hangar to support first new MV-22 Squadron to be based at K-Bay.	Funded FY2013 (in progress)
Aircraft Staging Area	Construct aircraft parking apron for the first MV-22 squadron.	Funded FY2013 (in progress)
Aircraft Maintenance Expansion	Renovates and expands the MALS maintenance facilities including the GSE compound.	Funded FY2014 (in progress)
Aviation Simulator Modernization/Addition	Simulator Center for Aviation Training to accommodate 15-17 new Aviation simulators for the HMLA, VMM, & HMH squadrons	Funded FY2014 (in progress)
Aircraft Maintenance Hangar Upgrades	Renovate Hangar 101 for HMLA and construct additional shop/admin space to meet BFR.	Funded FY2014
Armory Addition and Renovation	Expand existing armory to accommodate space deficiencies to support 3rd Marine Regiment and 1/12 Marines.	Funded FY2014
3d Radio Maintenance/Operations Complex	Construct facilities to support GTF Marines added to 3d Radio Battalion.	Funded FY2014 (in progress)
VMU, MWSD and CH53E Upgrades	Relocates 3rd Radio Motor Pool out of the Building 373 compound. Constructs Portland cement concrete pavement and wash racks to support VMU and MWSD. Upgrades and reconfigures Building 373 to accommodate VMU and MWSD. Renovates Building 388 and 6082 for MWSD. Project installs a 5 ton crane for CH53E in Hangar 102, creates a SCIF and installs OOMA infrastructure for VMU support.	Proposed FY2015
MV-22 EIS Traffic Mitigation	Traffic improvements to various areas on base to mitigate traffic per the MV-22/HMLA EIS	Proposed FY2015
BEQ (Aviation Support)	204 Bed BEQ and parking structure to support new Aviation Squadrons and Marine Wing Support Squadron (MWSS). This is first part of the original 608-bed P-886. Includes air conditioning of Bachelor Officers Quarters (BOQ) B503 and new laundry facilities to service 1600 series barracks	Proposed FY2016
Electrical Distribution, Airfield Lighting and Repairs and Improvements	Relocate airfield vault (currently in Hangar 105 i.e. clear zone) - needed upgrades/safety issues to airfield lighting controls. Upgrade some of the airfield lighting infrastructure per airfield lighting study.	Proposed FY2016
Replacement Medical/Dental Clinic	Multi-story replacement clinic to provide primary medical and dental care	Proposed FY2016
Amphibious Assault Vehicle Maintenance Facility	New amphibious assault vehicle maintenance facility	Proposed FY2017
Multi-Purpose Training Complex	Project will construct a facility to support training using simulators that are housed in temporary and semi-permanent facilities. Also included are classrooms and an auditorium, rappel tower, gas chamber and a training pool	Proposed FY2017
Artillery Battery Complex	Construct new vehicle maintenance facility, gun storage facility, renovate existing gun storage facility and provide office spaces to replace trailers and tension fabric structures that have been in place since 2009 currently used by 1/12.	Proposed FY2017
Wastewater Treatment Plant Redundancy and	Upgrade the Base Wastewater Treatment Plant to provided redundant treatment systems to address State of Hawaii	Proposed FY2017

MV-22 Facilities Project Relocation Environmental Assessment  
 Marine Corps Base Hawaii Kaneohe Bay, Oahu

<b>Project Name</b>	<b>Description</b>	<b>Year</b>
Modernization	recommendation and for contingency operations in case of failure of critical components.	
Main Gate Improvements	Main gate Anti-Terrorism/ Force Protection (AT/FP) improvements.	Proposed FY2017
LHD Pad Conversion and MV-22 Landing Zones	Landing Zone Improvements at various locations to accommodate MV-22. Locations include MCB Hawaii Kaneohe Bay, & MCTAB. LHA/LHD Conversion	Proposed FY2017
MAG-24 Armory Expansion	Expand Armory to meet the needs of HMLA, MWSS, VMU and MV-22	Proposed FY2017
Regimental Consolidated Communications/Electrical Facility	Consolidated Communications/Electrical Shop for 3rd Marines and 1/12 BN.	Proposed FY2017
Fire Station	Provide Larger Fire Station in new location to meet UFC requirements and sizing for Fire Station	Proposed FY2017
Puuloa Communications/Electrical Modernization	Upgrade and restore existing failing communications infrastructure, provide power where no power currently exists and upgrade entry control points	Proposed FY2017
Electrical Distribution Modernization'	Repair and Upgrade various components of the base electrical distribution system, including substations and switching stations	Proposed FY2017
Alternate Communications Feeder	Installs new communication duct bank and renovates 213, upgrades 276A.	Proposed FY2017
Van Pad Modernization	Repair and upgrade van pads C&D to support MV22 Arrival. Construct 10,000 SF Warehouse to support MALS-24 (building demolished but not reconstructed as part of P907)	Proposed FY2017
Energy and water efficiency and security improvements and renewable energy projects	In accordance with Secretary of the Navy policy and other federal mandates, MCB Hawaii continues to implement a broad array of energy and water efficiency projects to reduce contributions to greenhouse gas emissions, and create a more secure, independent and sustainable base. Projects include simple conservation measures like lighting, water fixture and HVAC retrofits/upgrades, and renewable energy projects including rooftop photovoltaic panels and solar water heaters, and supporting the commercialization of wave energy technology (being spearheaded by Naval Engineering and Expeditionary Warfare Center in the waters off of MCB Hawaii Kaneohe Bay).	FY 2008-FY2015

- 1
- 2 Status of MILCON projects since MV-22 EIS publication that are relevant to this discussion include:
- 3     • A planned P-8 hangar was removed from the projects list
- 4     • Start of construction of the first MV-22 squadron hangar and parking Apron (2013)
- 5     • Traffic improvements to various areas on base to mitigate traffic as proposed in the MV-22 EIS
- 6 These changes would not result in cumulative impacts to the areas analyzed in this EA. Construction of the first MV-22 hangar led to the discovery of a new archaeological site and the opportunity to redesign the site plan for the first hangar, in the case of the no action alternative, in a way that could avoid additional impacts to this site.
- 10 The smaller combined footprint for the two squadrons, and the fact that construction of the facilities for the second MV-22 squadron would occur later in time than originally proposed (phased vs. concurrent construction) also helps to minimize potential cumulative effects on erosion, storm water pollutant transmission, noise, and traffic impacts.

1 Cumulative impacts analysis in this EA focuses only on cultural resources because, as with existing  
2 conditions and potential impacts, cumulative impacts to other resources would be no greater than those  
3 analyzed in the EIS, and the relevant mitigation measures proposed therein would apply. Other changes  
4 associated with the reduced project footprint for the no action alternative include reductions of both  
5 direct and cumulative impacts to soils, topography, and drainage due to the reduced amount of  
6 impermeable surface from the parking apron.

7 **3.4.2. Cultural Resources**

8 The APE for the evaluation of cumulative impacts on cultural resources is MCB Hawaii Kaneohe Bay. See  
9 Figure 1-1.

10 In accordance with NHPA Section 106, the Marine Corps consulted with SHPO architects and  
11 archaeologists, the ACHP, the Historic Hawaii Foundation, Native Hawaiian organizations, interested  
12 parties, and the public. The Marine Corps developed the 2015 MOA with the aforementioned consulting  
13 parties to avoid, minimize, or mitigate known adverse effects on historic properties within the APE, and  
14 to establish the process whereby additional consultation would occur for those parts of the proposed  
15 action that have uncertain effects on historic properties (e.g., should construction at untested locations  
16 inadvertently reveal historic properties). The 2015 MOA references stipulations set forth in the MV-22  
17 EIS PA (USMC 2012) that would result in minimizing and mitigating impacts to historic properties.  
18 Minimizing cumulative impacts to cultural resources would be achieved in part by mitigating the impacts  
19 to historic properties related to the proposed action and subsequent actions in this area.

20 The proposed action includes the demolition of two buildings and the construction of a hangar and  
21 supporting facilities. The buildings proposed for demolition are not eligible for listing on the NRHP, and,  
22 therefore, demolition would not contribute to cumulative impacts to cultural resources. Building  
23 demolition and hangar construction would alter viewsheds around the airfield. However, with the  
24 mitigation proposed in the 2015 MOA developed for the proposed action, cumulative impacts to cultural  
25 resources resulting from the altered viewsheds would not be significant. The proposed action would  
26 impact an archaeological site at the southeast end of the airfield. Due to the non-renewable nature of  
27 historic properties, the adverse impact on Site 5829, when combined with past, present and reasonably  
28 foreseeable actions, would contribute to cumulative adverse impacts on cultural resources at MCB  
29 Hawaii Kaneohe Bay. However, the proposed data recovery would document any additional resources  
30 encountered within Site 5829 and help answer many of the questions that are still unanswered  
31 concerning specifics of the site, how its occupants lived, and the nature of the surrounding environment  
32 at the time(s) of site occupation. With the implementation of the mitigation measures outlined in the  
33 2015 MOA, cumulative impacts to cultural resources from the proposed action would not be significant.

34 The no action alternative includes the demolition of seven buildings and hangar construction. The  
35 buildings proposed for demolition are not eligible for listing on the NRHP, and, therefore, demolition  
36 would not contribute to cumulative impacts to cultural resources. Building demolition and hangar  
37 construction would alter viewsheds around the airfield. However, cumulative impacts to cultural  
38 resources resulting from the altered viewsheds would not be significant. Therefore, as determined in the

- 1 MV-22 EIS, no significant cumulative impacts to cultural resources would result from the no action alternative.
- 3 There is always a probability of encountering human skeletal remains in secondary context (sand fill) during ground disturbing activities. Although these remains have been displaced from their original context, and discovery of such remains during construction would not be considered an impact under NAGPRA, MCB Hawaii would follow the procedures for inadvertent discovery of human remains outlined in the PA and the installation's ICRMP.

8

## 1    4. List of Preparers and Reviewers

2 Naval Facilities Engineering Command Hawai'i

Facilities Alan Yamagata  
Facility Design Technical Representative

3 Marine Corps

<u>Headquarters, U.S. Marine Corps</u>	Dr. Sue Goodfellow Head of Planning and Conservation Section Brad Chittenden DC/A
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[Department](#) Public Works Division, Planning Branch

4 Helber, Hastert & Fee, Planners

**Principal-In-Charge** Thomas A. Fee, AICP, LEED AP ND  
**M.A. Urban Planning**

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## **APPENDIX A**

Memorandum Of Agreement Among The Marine Corps Base Hawaii Kaneohe, Hawaii, the Hawaii State Historic Preservation Officer, and the Advisory Council on Historic Preservation Regarding the Relocation/Construction of Facilities for the Second MV-22 squadron in Response to the Basing of MV-22 and H-1 Aircraft in Support of III Marine Expeditionary Force Elements in Hawaii, Marine Corps Base Hawaii, Kaneohe

[pending signatures]

**MEMORANDUM OF AGREEMENT (MOA)**  
AMONG THE  
**MARINE CORPS BASE HAWAII KANEOHE (MCB), HAWAII,**  
AND  
**THE HAWAII STATE HISTORIC PRESERVATION OFFICER (SHPO),**  
AND  
**THE ADVISORY COUNCIL ON HISTORIC PRESERVATION (ACHP)**  
REGARDING  
**RELOCATION/CONSTRUCTION OF FACILITIES FOR**  
**SECOND MV-22 SQUADRON IN RESPONSE TO THE BASING OF**  
**MV-22 AND H-1 AIRCRAFT IN SUPPORT OF**  
**III MARINE EXPEDITIONARY FORCE ELEMENTS IN HAWAII,**  
**MARINE CORPS BASE HAWAII, KANEOHE**

WHEREAS, in July 2012, Marine Corps Base (MCB) Hawaii executed a Programmatic Agreement (PA) with the Hawaii State Historic Preservation Officer (SHPO) and the Advisory Council on Historic Preservation (ACHP) pursuant to 36 CFR § 800.14(b) of the regulations implementing Section 106 of the National Historic Preservation Act for the basing and operation of MV-22 and H-1 squadrons in Hawaii; and

WHEREAS, a subset of the original Undertaking was the construction of a new hangar, wash rack, supporting utility buildings, replacement and upgrade of aircraft parking pads, and a personally owned vehicle (POV) parking lot for the second MV-22 squadron on MCB Hawaii Kaneohe Bay; and

WHEREAS, the planned siting for the facilities for the second squadron listed above was relocated from the northeast end of the runway, as proposed in 2012, to an existing aircraft parking apron at the southeast end of the runway, and

WHEREAS, the July 2012 PA does not explicitly state how to analyze effects to historic properties if the Undertaking changed, therefore, MCB Hawaii is developing this Memorandum of Agreement (MOA) pursuant to 36 CFR § 800.6 to identify historic properties and assess and resolve any adverse effects associated with the construction and operation of the facilities for the second MV-22 squadron at MCB Hawaii Kaneohe Bay; and

WHEREAS, the remaining portions of the original Undertaking, including construction of facilities and for the first MV-22 squadron and the H-1 squadron, and all H-1 and MV-22 squadron training operations, have not changed and continue to be addressed under the 2012 PA; and

WHEREAS, pursuant to 36 CFR §800.4(a)(1) and in consultation with the Hawaii State Historic Preservation Officer (SHPO) and Native Hawaiian Organizations (NHO), MCB Hawaii has determined the area of potential effect (APE) for the relocation of the facilities (including related infrastructure) for the second MV-22 squadron to be the area shown in Exhibit 1; and

WHEREAS, MCB Hawaii has determined that the construction for the facilities for the second MV-22 squadron will have adverse effects on historic properties, including a direct effect on archaeological Site 5829, which is eligible for listing in the National Register of Historic Places (NRHP) under criterion D; and

WHEREAS, in addition to being evaluated as eligible for listing in the NRHP under criterion D, Native Hawaiian organizations (NHO) have assigned cultural significance to Site 5829, and consider the further investigation and preservation of this site to have relevance to a living people and will contribute to a living culture; and

WHEREAS, MCB Hawaii has redesigned the foundation for parking pad (stall) improvements, such that excavations will extend no further than the depth of the current foundation, in order to avoid impacts to another NRHP-eligible Site 4933; and

WHEREAS, MCB Hawaii will avoid visual impacts to the Historic Aviation District and National Historic Landmark (NHL) at MCB Hawaii Kaneohe Bay (Exhibit 2) by designing the new MV-22 hangar with architectural features sympathetic to the character defining features of the hangars within the District and NHL (Exhibit 3); and

WHEREAS, the MCB Hawaii began consulting with the parties to the July 2012 PA in March 2014 when it notified those parties regarding the proposal to relocate the facilities for the second MV-22 squadron and the potential of that change to affect historic properties; and

WHEREAS, pursuant to 36 CFR §800.6(a)(2), MCB Hawaii has consulted with NHO to resolve the adverse effects on historic properties and has invited the following NHO to sign this MOA as concurring parties: Office of Hawaiian Affairs, Diamond 'Ohana, Olds 'Ohana, Paoa/Kea/Lono 'Ohana, Keko'olani, 'Ohana, Paik 'Ohana, 'Ohana Keaweamahi, 'Ohana Naihe, 'Ohana Kapu, 'Ohana Huihui, 'Ohana Keli'inohi, and 'Ohana Kaleikini, 'Ohana Kawainui; and

WHEREAS, pursuant to 36 CFR §800.6(c)(2), the Marine Corps has consulted with and invited the National Trust for Historic Preservation (NTHP) and Historic Hawaii Foundation (HHF) to sign this PA as concurring parties; and

WHEREAS, MCB Hawaii has consulted with the Hawaii SHPO to resolve the adverse effects on historic properties; and

WHEREAS, pursuant to 36 CFR §800.6(a)(1) MCB Hawaii has notified the Advisory Council on Historic Preservation (ACHP) of its adverse effect finding and the ACHP has agreed to participate; and

NOW, THEREFORE, MCB Hawaii, the SHPO, and the ACHP agree that, upon MCB Hawaii's decision to proceed with the relocation of the facilities for the second MV-22 squadron, MCB Hawaii shall ensure that the following stipulations are implemented in

order to resolve the adverse effects of the relocation on Site 4933, Site 5829, and the Historic Aviation District.

## **Stipulations**

MCB Hawaii shall ensure that the following stipulations are implemented as part of the Undertaking:

### **I. MITIGATION MEASURES**

A. MCB Hawaii shall ensure that the following mitigation will be completed prior to construction related excavation within Site 5829.

- 1) Controlled Excavation and Data Recovery—Field and Laboratory
  - i. Within three months of the relocation project execution, MCB Hawaii will commence controlled excavation and archaeological data recovery at the guard house footprint (relocated Building 6180 – Exhibit 4) and along planned utility corridors (Exhibit 5) (as described below in Stipulations I.A.1.ii., I.A.1.iii., and I.A.1.iv.) prior to ground disturbance in the potential controlled excavation/data recovery area, dashed area noted in Exhibit 4. An archaeological monitoring and testing plan will be developed by the selected archaeological contractor detailing exact locations for data recovery, as well as the approach and steps to be taken. The plan will be submitted within 15 calendar days of the archaeological contract award. Government review and comment on the draft plan will be completed within 30 calendar days after contract award and the final work plan will be submitted within seven calendar days of receiving government comments on the draft. Archaeological testing and monitoring will be completed no later than four years after the execution of this MOA.
  - ii. Controlled excavation at Site 5829 shall include removal of the overburden from the footprint of the guard house concrete foundation to the top surface of the cultural layer (where present) followed by manual skim (i.e. shallow) shoveling through the deposit to test for burials and/or human skeletal remains (see Stipulation II.A.2 below for procedures pertaining to the discovery of cultural items as defined in the Native American Graves Protection and Repatriation Act (NAGPRA) (25 U.S.C. 3001 et seq., as appropriate). If significant artifacts and/or features are encountered they will be exposed, plotted, excavated, screened, and collected. Data recovery for identified features shall consist of photo documentation and limited excavation to expose the profile of the feature to its base to document the construction of the feature and any subsurface deposits.

- iii. Artifacts and site samples will be analyzed in the laboratory after field excavations and all collected material will be curated in the secured vault in the MCB Hawaii Environmental Department. Analysis will be completed within 60 calendar days of completing fieldwork. Curation will be completed within one year of completing fieldwork.

## 2) NHO Site Visit Requests

- i. MCB Hawaii shall consider requests for site visits by NHO during the controlled excavations in order to allow visitors to observe the work. All visitors shall be required to follow the construction contractor's safety instructions and Personal Protective Equipment shall be required. MCB Hawaii shall inform NHO of the start of archaeological data recovery and testing within 30 calendar days of the archaeological contract award.
- ii. Excavation is expected to take place between April 2015 and September 2016. Within 30 calendar days of receipt of the start of archaeological data recovery, NHO shall notify MCB Hawaii if they wish to make site visits during the fieldwork and/or if significant artifacts or features are encountered . This notification shall be sent to one of the MCB Hawaii Cultural Resources Managers at [june.cleghorn@usmc.mil](mailto:june.cleghorn@usmc.mil) or via phone at (808) 257-7126 or [coral.rasmussen@usmc.mil](mailto:coral.rasmussen@usmc.mil) or via phone at (808) 257-7134.
- iii. If significant artifacts or features are encountered, NHO (who have made notifications per subsection ii. above) will be notified within 48 hours of the discovery and given an opportunity for a site visit prior to recovery of the artifacts or features. Responses to notification must be made within 48 hours of notification, and site visits will be allowed within fifteen calendar days of notification.

## 3) Controlled Excavation and Data Recovery—Reporting

- i. The archaeological contractor shall summarize the results of the data recovery in an end of fieldwork letter report, and a draft and final report, for submittal to MCB Hawaii after which each shall be shared with the Signatories, except for the ACHP, and concurring parties.
- ii. End of Field Report will be submitted within 15 calendar days of completing fieldwork.
- iii. Draft report will be submitted to MCB Hawaii within 60 calendar days of completing fieldwork. Comments from the Signatory and concurring parties regarding the draft report shall be provided to MCB Hawaii within 30 calendar days of the receipt of the report in order to be considered for the final report. MCB Hawaii will consider all timely comments in preparing the final report.
- iv. Final Report will be submitted within 15 calendar days upon receiving government comments.

The data recovery contract and work plan will be developed to accommodate site visit requests explained in subsection ii.

B. Archaeological monitoring during construction

- 1) Per Stipulation V.D. of the July 2012 PA, MCB Hawaii shall ensure that archaeological monitoring of construction activities and all ground disturbance for the undertaking will be carried out by or under the direction of an Archaeologist who meets the professional qualifications for Archaeologist under the Secretary of the Interior's Historic Preservation Professional Qualification Standards (Federal Register Vol. 62, No. 119, pp. 33712-33714, 1997).
- 2) Within 15 calendar-days prior to the start of any ground disturbing activities for the construction of facilities for the second MV-22 squadron, a cultural brief will be provided for the construction contractor. MCB Hawaii shall ensure that the construction contractor, including the construction crews, is briefed on the cultural significance of Site 4933 and Site 5829 as well as procedures for inadvertent discoveries of historic properties and NAGPRA cultural items (for the latter see Stipulation II.A.2 below).

C. Hangar Design. As noted above, as mitigation for potential visual effects to the Historic Aviation District and NHL, MCB Hawaii will design the new MV-22 hangar with architectural features sympathetic to the character defining features of the hangars within the District and NHL. Doors and fenestration shall be designed consistent with the design of the adjacent historic hangars such that these features would not detract from the visual quality of the historic hangars.

**II. DISCOVERIES.** If during the performance of the Undertaking, previously unidentified historic properties are discovered within the APE, or previously unanticipated effects occur to known historic properties within the APE, the provisions in the July 2012 PA, specifically Stipulation VIII of the PA, shall be followed.

In addition to the Stipulations of the PA, in the event that findings occur that would lead to significant impacts if the project were to continue, consultation with NHO and SHPO would be reinitiated to examine archaeological findings and consider mitigation possibilities.

**III. RESOLVING OBJECTIONS.** Should a Signatory or Concurring Party to this MOA object in writing to MCB Hawaii regarding the manner in which the terms of this MOA are carried out, the provisions in the July 2012 PA, specifically Stipulation XI of the PA (Dispute Resolution), shall be followed.

**IV. AMENDMENTS AND TERMINATION.** Only the Signatories (SHPO, MCB Hawaii, and ACHP) may propose to amend or terminate this MOA. Should any

Signatory propose to amend or terminate this MOA, the provisions in the July 2012 PA, specifically Stipulation XII of the PA (Amendments and Termination), shall be followed.

V. DURATION. This MOA shall expire five (5) years from the date of its execution, or when all the Mitigation Measures listed in Stipulation I are completed (whichever occurs first); or if terminated pursuant to Stipulation IV. MCB Hawaii will provide written updates to signatories and concurring parties every two years or until the MOA has expired or been terminated.

VI. ANTI-DEFICIENCY. MCB Hawaii's obligations under this MOA are subject to the availability of appropriated funds, and the stipulations of this MOA are subject to the provisions of the Anti-Deficiency Act and will be followed pursuant to Stipulation XIII (Anti-Deficiency) in the July 2012 PA.

**SIGNATORIES:**

**MARINE CORPS BASE HAWAII, KANEOHE**

Eric Schaefer, Colonel, United States Marine Corps  
COMMANDING OFFICER, MCB HAWAII

By: \_\_\_\_\_ Date: \_\_\_\_\_

DRAFT

STATE HISTORIC PRESERVATION OFFICER

Carty S. Chang  
HAWAII STATE HISTORIC PRESERVATION OFFICER

By: \_\_\_\_\_ Date: \_\_\_\_\_

Carty S. Chang  
Chairman, Department of Land and Natural Resources

DRAFT

ADVISORY COUNCIL ON HISTORIC PRESERVATION

By: \_\_\_\_\_ Date: \_\_\_\_\_

John M. Fowler  
Executive Director

DRAFT

**CONCURRING PARTIES:****OFFICE OF HAWAIIAN AFFAIRS**

By: \_\_\_\_\_ Date: \_\_\_\_\_  
Kamana‘opono M. Crabbe  
Ka Pouhana, Chief Executive Officer

**DIAMOND ‘OHANA**

By: \_\_\_\_\_ Date: \_\_\_\_\_  
Ah Lan Diamond

By: \_\_\_\_\_ Date: \_\_\_\_\_  
Richard Likeke Papa

**OLDS ‘OHANA**

By: \_\_\_\_\_ Date: \_\_\_\_\_  
Nalani Olds

**PAOA/KEA/LONO ‘OHANA**

By: \_\_\_\_\_ Date: \_\_\_\_\_  
Donna Kamehaiku Camvel

**KEKO’OLANI ‘OHANA**

By: \_\_\_\_\_ Date: \_\_\_\_\_  
Terrilee Keko‘olani Raymond

**PAIK ‘OHANA**

By: \_\_\_\_\_ Date: \_\_\_\_\_  
Linda Kaleo Paik

**‘OHANA KEAWEAMAHİ**

By: \_\_\_\_\_ Date: \_\_\_\_\_  
Ka’anohi Kaleikini

**‘OHANA NAIHE**

By: \_\_\_\_\_ Date: \_\_\_\_\_  
Kekaimalino Kimball Ka‘opio

**‘OHANA KAPU**

By: \_\_\_\_\_ Date: \_\_\_\_\_  
JR Keoneakapu Williams

**‘OHANA HUIHUI**

By: \_\_\_\_\_ Date: \_\_\_\_\_  
Norman Caceres

**‘OHANA KELI’INOI**

By: \_\_\_\_\_ Date: \_\_\_\_\_  
Kalahikiola Keli‘inoi

‘OHANA KALEIKINI

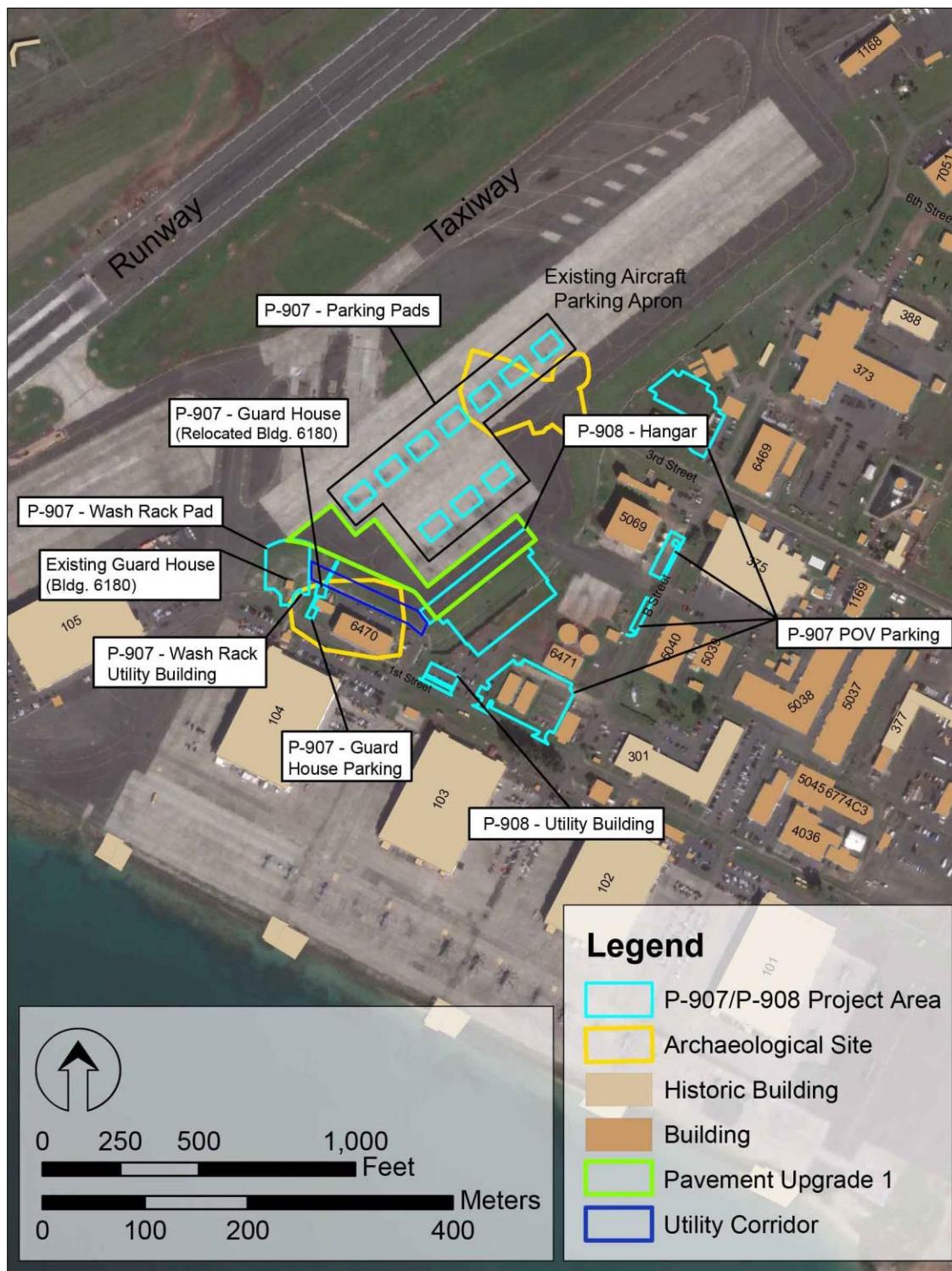
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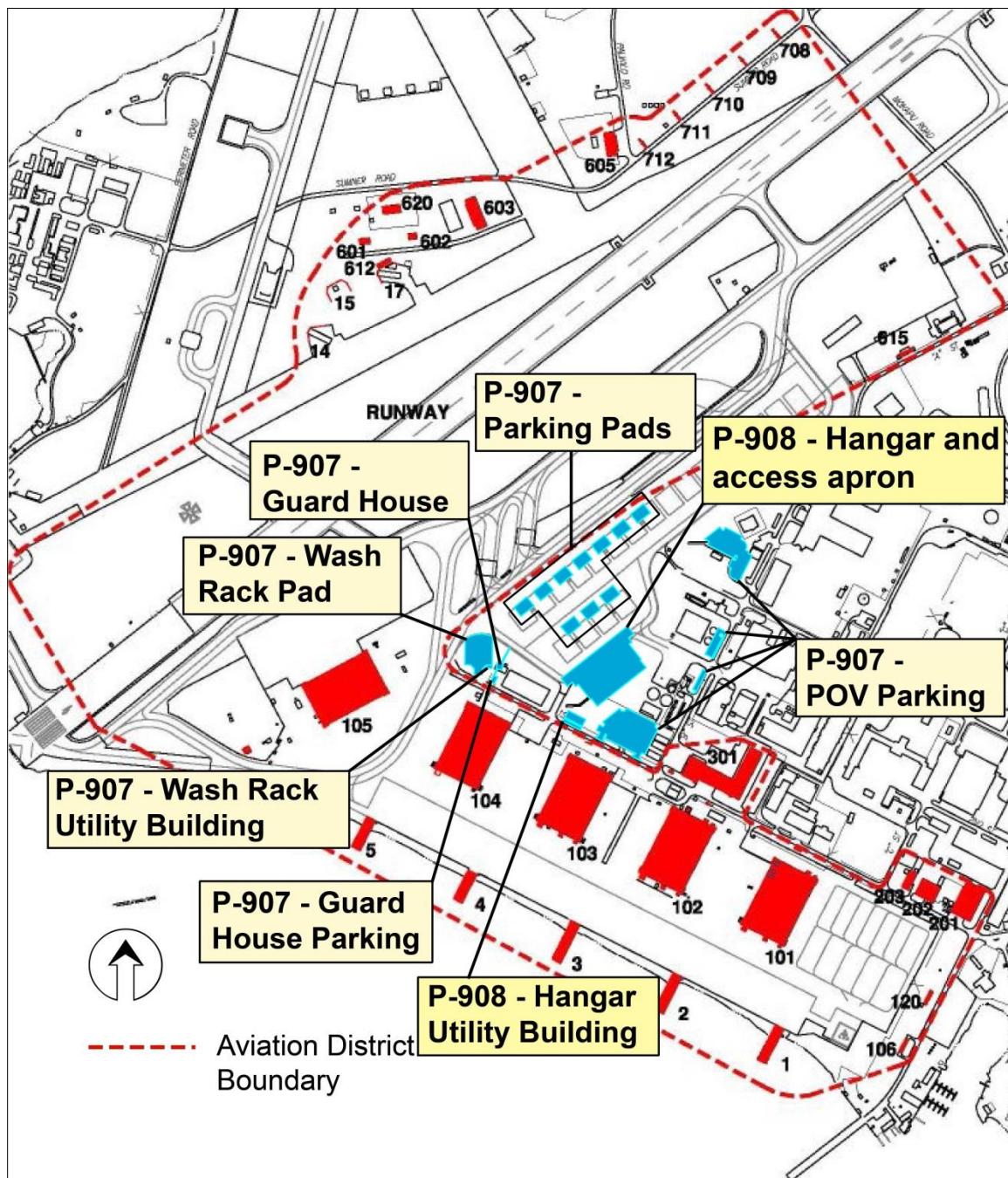
## Exhibit 1

Project footprints within Sites 4933 and 5829



**Exhibit 2**

Undertaking proximity to the Historic Aviation District



### Exhibit 3

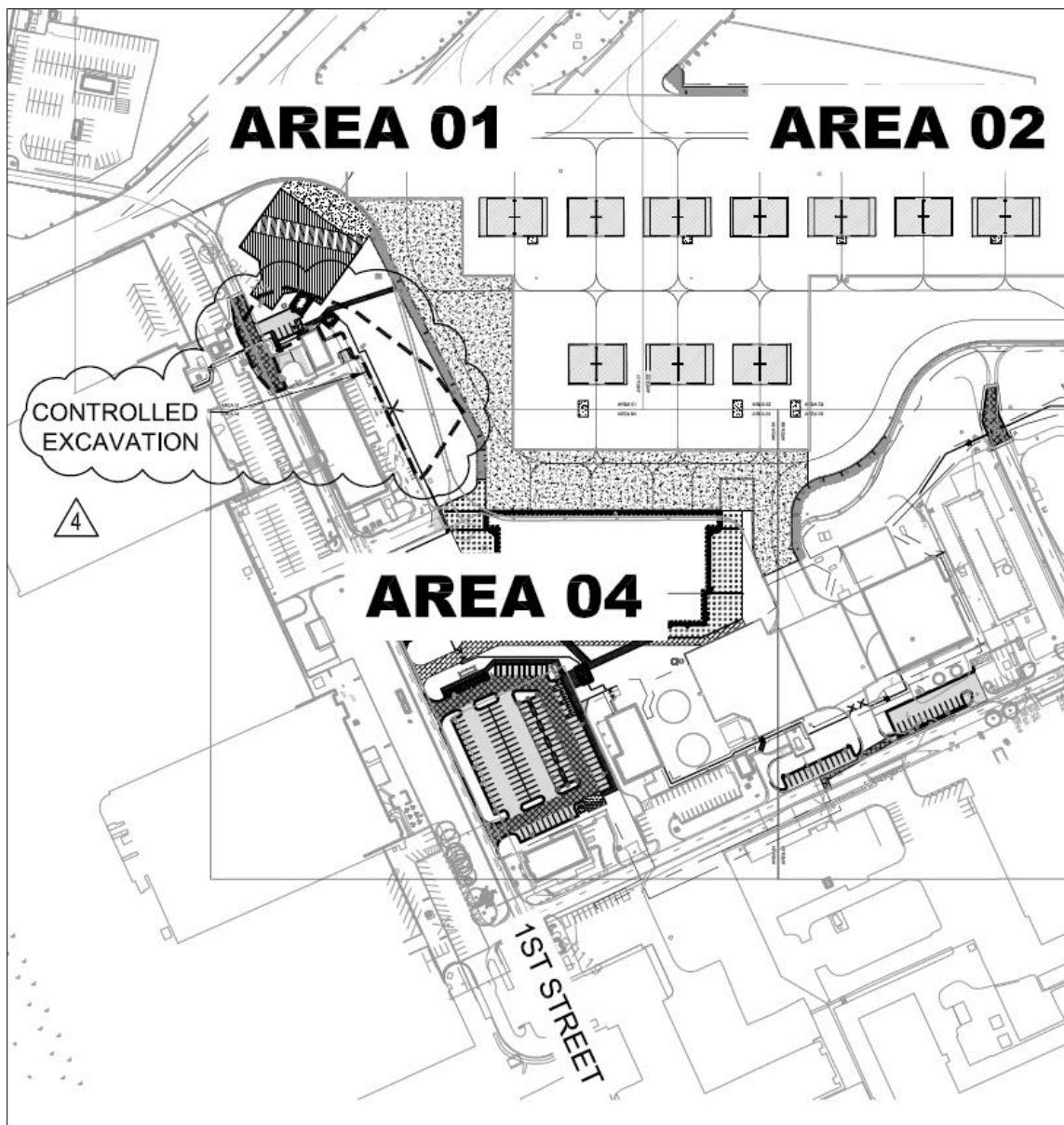
Hangar redesign with straight roof lines



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**Exhibit 4**

Potential controlled excavation/data recovery area for P-907-P-908 within Site 5829



### Exhibit 5

Planned utilities within Site 5829

