SCHOOLS

Letter E1

Comments

Clarkson UNIVERSITY

DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING

October 5, 2005

Mr. Gary Shirakata
US Army Corps of Engineers
Honolulu Engineer District, Building 230
Fort Shafter, HI 96858-5440

RE: Review of the Draft Environmental Impact Statement for Military Training Activities at Makua Military Reservation, Hawai'i

Dear Mr. Shirakata,

This review addresses the Draft Environmental Impact Statement, Military Training Activities at Makua Military Reservation (dated March 2005) (DEIS), prepared by the US Army Corps of Engineers with technical assistance from Tetra Tech, Inc. for the 25th Infantry Division (Light) and US Army, Hawai'i. In summary, while the October, 2002 Air Sampling and Analysis Plan for the DEIS incorporated many appropriate changes in response to the comments I provided on August 6, 2002,[1] there are serious questions whether the estimates presented in the DEIS of
E1-1 air quality impacts from activities at the MMR accurately represent conditions during the full range of normal operations. In order to fully inform the Army and the public regarding air quality impacts associated with training at MMR, the final environmental impact statement
E1-2 (EIS) should provide quantitative measures of how representative the conditions were during the monitoring periods, and resulting exposure estimates should be improved based on these data. If the previously monitored conditions were not representative, the Army should conduct
E1-3 additional monitoring and submit the results of that monitoring to public (including expert) review before incorporating them into the final EIS. Specific comments are provided below.

SPECIFIC COMMENTS

A. PRESCRIBED BURN

1. Based on the information presented in the DEIS, the prescribed burn resulted in the
E1-4 highest air quality impacts of the MMR activities. However, only one prescribed burn event was monitored, and this event was conducted under wet conditions that resulted in an inefficient burn and reduced dust emissions from the thermal plume generated by the burn.

[1] Such changes include the addition of monitoring locations; an on-range background monitoring location; wind socks; PM-2.5, chlorinated herbicide, explosives, dioxin and furan monitoring; and comparison to health criteria.

Department of Civil and Environmental Engineering
Clarkson University • PO Box 5710 • Potsdam, NY 13699-5710
315-268-7649 • Fax 315-268-7636 • aferro@clarkson.edu

Responses

E1-1
CALFEX event designs and meteorological conditions during the noise and air quality monitoring studies were representative of normal CALFEX designs and normal weather conditions.

E1-2
All CALFEX monitoring was done during typical company level CALFEX events, including the use of artillery, mortar, and air support units. When not included as part of the CALFEX event, detonation of demolition charges was done immediately after the CALFEX exercise. Weather conditions on the monitoring days were entirely representative of normal conditions, as is evident from a comparison of daily and long term average data from Honolulu International Airport. The January 31, 2003 CALFEX occured under weather conditions that are representative of normal January conditions. The April 10, 2003 CALFEX occurred under weather conditions that were slightly warmer and windier than normal April conditions, making the weather conditions on that day representative of conditions that are normal for June, July, or August. Thus, the full range of normal dry weather conditions was accounted for by the air monitoring study. Meteorological data for the days when sampling occurred are presented in Appendix G-7.

E1-3
CALFEX event designs and meteorological conditions during the noise and air quality monitoring studies were representative of normal CALFEX designs and normal weather conditions. The EIS was prepared in accordance with the National Environmental Policy Act and with applicable federal and Army regulations. Review of the Draft EIS by the US Environmental Protection Agency found the document to be adequate.

E1-4
Fugitive dust is not a significant contributor to particulate matter emissions during wildfires.

Comments	Responses
	(Cont.) E1-4 The vast majority of particulate matter from wildfires results from combustion of organic matter. High moisture conditions result in higher than normal particulate matter emissions, not lower than normal emissions during burn events. "Efficient" combustion conditions convert most of the organic content of the fuel into simple gaseous carbon oxides such as carbon dioxide and carbon monoxide. Inefficient combustion due to high fuel moisture levels lowers combustion zone temperatures, resulting in less complete combustion and production of elevated concentrations of partially oxidized organic compounds, most of which have low vapor pressures and condense as smoke aerosols. In addition, high moisture conditions reduce smoke plume temperatures, resulting in less plume rise and higher downwind ground level pollutant concentrations than would occur with dry fuels. Furthermore, high moisture conditions slow the speed of the burn, resulting in longer durations for the burn event. While conditions at the October 30, 2002 controlled burn were marginal for an efficient burn event, they were "worst case" conditions in terms of resulting pollutant emissions and downwind ground level pollutant concentrations.

Comments

According to the After Action Phase I and Phase II reports prepared by Donaldson Enterprises, Inc. (DEI, Kaneohe, HI), dated December 2002 and October 2003, respectively, the prescribed burn that was monitored in October 2002 was much less extensive than the prescribed burn that was conducted the following year in July 2003, which was not monitored. The 2002 DEI report states:

"During the period from August to November the Makua Valley area received considerable rainfall, including during the week of the burn, which greatly decreased the efficiency of the burn."

In contrast, the 2003 DEI report states:

"Burn was scheduled for July, traditionally a season characterized by dry grass and leaves which maximizes the burn's efficiency. Due to weather conditions changing after burn was started, the fire became out of control and burned into unplanned areas."

E1-5 Because the prescribed burns are an integral part of the training that takes place at the MMR, the emissions from this source must be accurately addressed. Representative prescribed burns
E1-6 need to be monitored rather than one that produces uncharacteristically low combustion and dust emissions and burns less biomass than typical prescribed burns.

2. To address the suitability of a monitoring event to represent accurately air quality
E1-7 impacts, an estimate of how much area and biomass are burned for the monitored prescribed burn event should be compared with the range of typical area and biomass burned for historical (as well as future predicted) prescribed burns at the MMR. The amount of time the burn and
E1-8 smoldering occur should also be compared with the past and expected future range of typical
E1-9 burn times. The monitoring results should be scaled appropriately to assess impacts from both typical and worst case conditions.

3. Only 3 sampling locations were selected for the prescribed burn monitoring event. The DEIS states that all of the stations "appeared to be qualitatively affected by smoke plumes during some portion of the prescribed burn operation" (page 3-39). A more quantitative
E1-10 measure of how often the sampling locations were located in the plume from the prescribed burn would improve the reliability of the monitoring results and allow for adjustment of the results to account for the sampling locations not measuring impacts associated with the burn.
E1-11 Although some photographs were taken during the burn, no videotaping was conducted.[2] Therefore, it is not possible to verify the effectiveness of the sampling locations.

[2] As discussed in my August 6, 2002 comments, videotaping is a vital element of quality assurance/quality control to document whether the emissions are captured by the designated sampling stations and whether source emissions impact the background monitoring station.

Responses

E1-5
Controlled burns are a component of installation management programs, but are not an integral part of CALFEX training exercises. While conditions at the October 30, 2002 controlled burn were marginal for an efficient burn event, they were "worst case" conditions in terms of resulting pollutant emissions and downwind ground level pollutant concentrations. Thus, emissions from controlled burns are acurately characterized by the monitoring study.

E1-6
While conditions at the October 30, 2002 controlled burn were marginal for an efficient burn event, they were representative of "worst case" conditions in terms of resulting pollutant emissions and downwind ground level pollutant concentrations.

E1-7
There is insufficient information available on past prescribed burns to provide any quantitative comparison between the October 30, 2002 burn and historical burn events.

E1-8
There is insufficient information available on past prescribed burns to provide any quantitative comparison between the October 30, 2002 burn and historical burn events. The October 30, 2002 controlled burn event included some preliminary test burns as part of normal procedured used to decide whether or not to proceed with the planned burn event. The intial test burn was started more than 2 hours before a decision was made to proceed with the planned burn event. The planned burn event in "Area B" lasted about 2.5 hours. Air sampling was initiated a little before the start of the Area B controlled burn, and lasted for a total of about 4-1/2 hours to continue sampling residual smoke levels after the burn was formally declared out. The entire burn event represented high-emission smoldering burn conditions.

Comments	Responses
	(Cont.) E1-9 While conditions at the October 30, 2002 controlled burn were marginal for an efficient burn event, they were "worst case" conditions in terms of resulting pollutant emissions and downwind ground level pollutant concentrations. "Efficient" combustion conditions convert most of the organic content of the fuel into simple gaseous carbon oxides such as carbon dioxide and carbon monoxide. Inefficient combustion due to high fuel moisture levels lowers combustion zone temperatures, resulting in less complete combustion and production of elevated concentrations of partially oxidized organic compounds, most of which have low vapor pressures and condense as smoke aerosols. The relatively high fuel moisture conditions present during the October 30, 2002 controlled burn resulted in worst case smoke generation conditions, compounded by reduced plume rise and increased ground level pollutant concentrations downwind of the burn area. E1-10 There was no practical way to quantify the times when individual sampling stations were impacted by an emissions plume. Plume impact is not limited to times when visible smoke is present. Visible smoke merely indicates high concentrations of particulate matter. Lower concentrations can be present even when a visible smoke plume cannot be noticed. E1-11 Still photographs provide ample documentation of conditions during the air sampling events. Since weather conditions during the October 30, 2002 burn were representative of conditions when prescribed burns can be conducted, the resulting air sampling also is representative of such conditions.

Comments

4. Videotaping of air quality monitoring events was incorporated into the final Air Sampling and Analysis Plan (October 2002), but videotapes were not available upon request for the DEIS air quality monitoring events, presumably because the videotaping was not actually conducted. The lack of videotapes precluded meaningful quality assurance/quality control of the data presented in the DEIS. Videotaping should be included in all future air quality monitoring events and should be available for public viewing.

E1-12
E1-13

5. The time-weighted average (TWA) was not calculated correctly, resulting in misleadingly low air quality values being reported in the DEIS. By multiplying the sample concentration by the sampling time and dividing by 480 minutes, the Army incorrectly assumed that the unsampled period concentration was equal to zero. The background PM concentration for the Makua Valley is not, however, zero, and a zero PM concentration immediately following a burn is especially unrealistic. In addition, if a typical burn lasts longer than the sampling time, then the appropriate portion of the unsampled period should be assumed to have concentrations similar to those of the sampled burn period. If the TWA were calculated correctly, there likely were localized violations of the health-based standards for particulate matter, even for the relatively small and inefficient – and, thus, unrepresentative – burn that was monitored in October 2002.

E1-14
E1-15

6. Given the history of accidental burn events at MMR and intentionally set fires that go out of control and take days to bring under control, the DEIS should evaluate whether prescribed burn events that last longer than the October 2002 event that was monitored would violate the 24-h PM2.5 and PM10 NAAQS.

E1-16

7. The DEIS does not provide an assessment of the air quality impacts associated with burning the Open Burn/Open Detonation (OB/OD) area, a known area of contaminated soil located within the area in which prescribed burns are regularly conducted and, accordingly, a potentially significant contributor to air pollution. Although Air Location 2 (A2) was selected to measure pollutants generated from the OB/OD area, the DEIS does not state whether the OB/OD area was impacted during the CALFEX exercises. Moreover, while the OB/OD area would not be specifically targeted for impact during the CALFEX exercises, to secure relevant data, the Army could and should specifically target the OB/OD for monitoring during a prescribed burn. Community member Leandra Wai informed me that she specifically asked the Army to monitor air quality on the day the OB/OD area was burned in October 2002, but that the Army refused to do so, monitoring instead only on the day after. To provide a complete picture of the impacts associated with its routine activities at MMR, the Army should monitor a burn of the OB/OD area and submit the results of that monitoring to public (including expert) review before incorporating its findings into the final EIS.

E1-17
E1-18
E1-19
E1-20

B. CALFEX

1. The DEIS does not provide any information regarding whether the CALFEX events that were monitored were typical of the live-fire exercises proposed for MMR. To better estimate

E1-21

Responses

E1-12
See response to Comment E1-11.

E1-13
The Army thanks you for your comment and appreciates your participation in this public review process. Your comment has been considered and has been included as part of the administrative record for this process.

E1-14
The TWA concentrations cited in the Draft EIS were calculated properly. As explained in Appendix G-6, the TWA for PM10 and PM2.5 were calculated using background concentrations of 21.2 micrograms per cubic meter for PM10 and 13.2 micrograms per cubic meter for PM2.5. These assumed background concentrations are 50% of the lowest concentration reported from the 3 monitoring stations, resulting in a very conservative estimate of background conditions. All time periods included in the TWA outside the actual monitoring duration were assumed to have these background particulate matter concentrations.

E1-15
As noted in response to other comments, the TWA concentrations cited in the Draft EIS were calculated properly, and there were no violations of health-related ambient air quality standards. And as noted in response to other comments, vegetation moisture conditions resulted in a slow, inefficient combustion process, but this resulted in higher than normal smoke generation and lower than normal smoke plume lofting. Therefore the sampling results are conservatively high compared to more typical vegetation moisture conditions for controlled burn events.

Comments	Responses
	(Cont.) E1-16 The 4.5 hours of air sampling at the controlled burn event on October 30, 2002 resulted in an estimated PM10 concentration that was only 40% of the federal ambient air quality standard and and estimated PM2.5 concentration that was 92% of the federal standard. There is little prospect that any controlled burn event at MMR would result in off-post PM10 concentrations above the value of the federal PM10 standard. While it is possible that some controlled burn events might result in off-post PM2.5 concentrations above the value of the federal PM2.5 standard, no such single event would constitute a violation of the federal standard. The federal PM2.5 standard requires a 3-year average of annual 98th percentile PM concentrations at the same location to exceed the numerical value of the federal standard before there is a violation of the standard. The 98th percentile value would be the 7th highest value for the year (either actually monitored or predicted by modeling). It is extremely unlikely that three consecutive years would each result in seven or more burn events producing PM2.5 concentrations above the numerical value of the federal standard.

Comments	Responses
	(Cont.) E1-17 The air sampling plan called for monitoring one controlled burn. None of the public comments made on the air sampling plan asked that a burn at the OB/OD area be monitored. The selected burn event included a much larger acreage than the OB/OD area, and included areas much closer to Farrington Highway and Makua Beach than the OB/OD area. Monitoring the burn at the OB/OD area instead of the October 30, 2002 burn event would have produced much lower pollutant concentration measurements at the public use areas on Makua Beach than did the monitored burn event. E1-18 While Air Location 2 would measure pollutants transported westward from the OB/OD area, the primary purpose of this location was to measure pollutants transported eastward from the primary objective area. Monitoring stations were located north, east, south, and west of the primary objective area to ensure that pollutants generated during a CALFEX event would be monitored regardless of prevailing wind direction. E1-19 The burn at the OB/OD area occurred the day after the monitored controlled burn event, not the day before it. The air sampling plan called for monitoring one controlled burn, and none of the public comments on the air sampling plan asked for a burn at the OB/OD to be monitored. The selected burn event included a much larger acreage than the OB/OD area, and included areas much closer to Farrington Highway and Makua Beach than the OB/OD area. Monitoring the burn at the OB/OD area instead of the October 30, 2002 burn would undoubtedly have produced much lower pollutant concentration measurements at the public use areas on Makua Beach than did the monitored burn event.

Comments	Responses
	(Cont.) E1-20 The Army thanks you for your comment and appreciates your participation in this public review process. Your comment has been considered and has been included as part of the administrative record for this process. E1-21 As explained in the Draft EIS, there is no single scenario for a company level CALFEX. Each CALFEX is individually designed by the unit commander. The monitored CALFEX events were selected as typical of company-level CALFEXs because they included indirect fire support (artillery and mortars), aviation unit support (helicopter strafing, and demolition explosives use.

Comments

E1-22 the impact of live-fire training at MMR, the EIS should itemize the weapons, vehicles, and quantities of munitions used for the CALFEX #1 and #2 events that were monitored and compare these to those that would be used during the full range of live-fire exercises proposed for MMR.

E1-23 2. The DEIS does not provide any information regarding whether or for how long the air sampling locations were in the dust or combustion emission plumes during the CALFEX events, and, thus, fails to provide any meaningful information regarding air quality impacts associated with such live-fire exercises.

E1-24 3. Both of the monitored CALFEXs took place during the wet season (Jan. and April 2003) when vegetation is less likely to burn and less dust is kicked up by artillery and mortar shells, rockets, and explosives. Per the DEIS, the Army proposes to carry out up to 50 CALFEXs per year (i.e., about one per week, year-round), and all of its training alternatives involve 242 days of training per year. Training during drier times of the year would likely result in greater air quality impacts than the CALFEXs that were monitored for the DEIS, due to the increased risk of associated fires and, even in the absence of a training-related fire, more dust getting kicked up. The Army needs to assess the air quality impacts of the CALFEXs during the dry season.

E1-25

Sincerely,

Andrea R Ferro

Andrea R. Ferro, P.E., Ph.D.
Department of Civil and Environmental Engineering

Responses

E1-22
The monitored CALFEX events were selected as typical of company-level CALFEXs because they included indirect fire support (artillery and mortars), aviation unit support (helicopter strafing, and demolition explosives use.

E1-23
Air sampling locations were located at the closest areas of public access, and at locations north, east, south, and west of the primary ordnance impact area. These locations make the resulting monitoring data very meaningful for impact assessment purposes. There was no practical way to quantify the times when individual sampling stations were impacted by an emissions plumes. Plume impact is not limited to times when visible smoke is present. Most gaseous pollutants are invisible, and particulate matter is visible only when present in very high concentrations. Visible smoke merely indicates high concentrations of particulate matter. Lower concentrations can be present even when a visible smoke plume cannot be noticed. Pollutant transport and dispersion continues well beyond the point at which the plume becomes invisible. Visible plumes during the CALFEX exercises were limited to the immediate areas of the Impact Area and the howitzer firing point. Plume concentrations were reduced below visible concentrations as they dispersed beyond these areas of origin.

E1-24
Seasonal differences in weather conditions at low elevation locations in Hawaii are not sufficient to bias the representativeness of the monitored CALFEX events. As demonstrated by long term weather data for Honolulu, there is only a 9 degree swing in average daily maximum and minimum temperatures between the warmest and coldest months of the year. In addition, days with more than 0.01 inches of precipitation do not vary widely regardless of season (a low of 5.7 days per month for June and a high of 10.2 days per month for December).

Comments	Responses
	E1-24 Similarly, mean monthly wind speeds do not vary widely (a low of 9.5 mph in January and a high of 13.1 mph in July). Prevailing wind directions are the same in every month. All CALFEX air sampling took place during periods when there was no rain. Photographs taken from the observation tower show small dust plumes in the Impact Area during helicopter strafing runs, clearly indicating the rapid drainage and drying of area soils. Daily weather data from Honolulu International Airport, when compared with long term averages, show that weather conditions for the January 31, 2003 CALFEX event were entirely representative of January conditions. Daily weather data for the April 10, 2003 CALFEX show that air temperatures and wind speeds for that day were slightly higher than average April conditions, making that day entirely representative of average June, July, or August conditions. Thus, the monitored CALFEX events occurred on days when weather conditions were representative of the entire annual range of weather conditions. E1-25 All CALFEX monitoring was done during typical company level CALFEX events, including the use of artillery, mortar, and air support units. When not included as part of the CALFEX event, detonation of demolition charges was done immediately after the CALFEX exercise. Weather conditions on the monitoring days were entirely representative of normal conditions, as is evident from a comparison of daily and long term average data from Honolulu International Airport. The January 31, 2003 CALFEX occurred under weather conditions that are representative of normal January conditions. The April 10, 2003 CALFEX occurred under weather conditions that were slightly warmer and windier than normal April conditions, making the weather conditions on that day representative of conditions that are normal for June, July, or August. Thus, the full range of normal dry weather conditions was accounted for by the air monitoring study. Meteorological data for the days when sampling occurred are presented in Appendix G-7.

Letter E2 **Comments** **Responses**

UNIVERSITY OF HAWAI'I AT MĀNOA
Department of Ethnic Studies

October 6, 2005

Mr. Gary Shirakata
U.S. Army Corps of Engineers
Honolulu Engineering District, Building 230
Fort Shafter, HI 96858-5440

Mr. Shirakata:

I am writing to provide comments on the Draft Environmental Impact Statement for Military Training Activities at Mākua Military Reservation.

I received my Ph.D. in Anthropology from the University of Hawai'i at Mānoa (UHM), and I am currently an Assistant Professor in the Departments of Ethnic Studies and Anthropology of the University of Hawai'i at Mānoa. My background and experience focus on Hawaiian cultural issues, particularly traditional and cultural practices surrounding ancient burials. I am a member of Hui Mālama I Nā Kūpuna O Hawai'i Nei ("Hui Mālama"), a Native Hawaiian organization specifically identified under federal statutes, including the National Historic Preservation Act ("NHPA"), the Native American Graves Protection and Repatriation Act ("NAGPRA"), and the statute establishing the Smithsonian Institution's National Museum of the American Indian, as having expertise in Hawaiian culture, particularly burials. I have published manuscripts and conducted presentations on Hawaiian burials and have participated in numerous repatriations for Hui Mālama and as a former cultural specialist for the Bishop Museum. Since 2003 I have coordinated service learning activities in which UHM students travel to Mākua for cultural accesses into the valley and clean-ups on the beach[1]

I have reviewed the Draft Environmental Impact Statement ("DEIS"), focusing especially on the sections regarding cultural resources. I have also reviewed two final reports released in June 2003 by Social Research Pacific, Inc. entitled "Cultural Impacts on Traditional Cultural Properties from Continued Military Use of U.S. Army Makua Military Reservation, Wai'anae, Oahu Island, Hawai'i" and "Planning Level Oral History Survey Makua and Kahanahaiki Valleys for Traditional Cultural Properties at the U.S. Army Makua Military Reservation, Wai'anae, Oahu Island, Hawai'i," as well as Ogden Environmental and Energy Services Co., Inc., 2002, "Final Report: Initial Implementing Activities for the Historic Preservation Plan at Ukanipō Heiau and Intensive Survey and Mapping of Archaeological Sites, Ukanipō Heiau Vicinity, Mākua Military Reservation, Mākua Valley, O'ahu Island, Hawai'i."

The Army remarks in its DEIS that their preferred proposed action (alternative 3) will cause a wide range of significant impacts and adverse cumulative impacts to cultural resources such as

[1] See attached curriculum vitae.

2560 Campus Road, George Hall 301, Honolulu, Hawai'i 96822
Telephone: (808) 956-8086, Facsimile: (808) 956-9494

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Hawaiian burials and cultural sites. These include, but are not limited to, decreased access to traditional and archaeological sites and increased potential of destruction of said resources (See sections ES.7.10, 4.10.3, 5.3.10, and Tables ES-2 and ES-3). The army also outlines measures they believe might mitigate some of these impacts (Sections ES.10, 4.10.3 and Table ES-4).

E2-1 Though exceedingly long, the DEIS suffers from a lack of a sound cultural and archaeological basis. In particular, the DEIS contains flawed analyses of site significance and poor

E2-2 understandings of Hawaiian cultural practices and philosophies, especially those regarding burial and cultural sites.

E2-3 As an anthropologist, I was troubled to discover that the Army has failed to complete assessments of all the sites in the Mākua Military Reservation (MMR). The DEIS was completed without full National Historic Preservation Act (NHPA) evaluation of sites, and thus the Army does not know the full potential significance of many features. Instead of spending the required time and research needed to determine if sites are eligible as traditional cultural properties (TCPs) to be listed on the National Register of Historic Places (NRHP), DEIS drafters instead created a somewhat amorphous category of "areas of traditional importance" (ATIs), into which all identified sites have been put. Similarly, work on the "Cultural Impacts on Traditional Cultural Properties" report was hamstringed by time constraints and distrust on the part of the community (p. 1). Three oral

E2-4 history interviewees withdrew their interviews from the final "Planning Level Oral History Survey" because of the ongoing negotiations over the US military use of Mākua (p.24). Even the one site that is listed on the NRHP, Ukanipō Heiau Complex (Site 181), continues to evade full archaeological assessment due to the various constraints of time, access and field methods (Ogden 2002, p.ii).

E2-2 The Army's failure to arrive at a full assessment of the cultural and archaeological significance of the sites in Mākua results in a serious lack of knowledge of full extent of, among other features, burial sites. As it stands, over half of the 119 archaeological sites listed in the DEIS have either

E2-5 not been evaluated or are pending evaluation. Also out of the total number, only seven sites are listed as "possible burials," four of which are still pending evaluation (See Table 3-28 "Summary of Identified Archaeological Sites in Mākua and Kahanahāiki Valleys). Based on the extent of

E2-5 precontact settlement in the valley and on the coast, the number of identified possible burials is exceedingly low. There are also a number of site/feature types such as mounds, above grade dry laid masonry, and pits that could also include burials. The 2002 Ogden report on Ukanipō reveals in dramatic fashion how sites that are not fully evaluated may contain multiple burial and sacred sites. After an extensive grassfire burned over the Ukanipō Heiau Complex in 1998, the number

E2-6 of sites and features jumped from 1 site with 11 features to 5 sites with 240 features, including 30 features with possible burials. However, one would not be aware of this if one looked only at the DEIS, which makes no mention in Table 3-28 of the new features and possible burials at Ukanipō.

E2-3 More complete assessments that draw on both archaeological and cultural experts is required in order to fully assess the cultural resources at Mākua and allow Native Hawaiian families the

2560 Campus Road, George Hall 301, Honolulu, Hawai'i 96822
Telephone: (808) 956-8086, Facsimile: (808) 956-9494

Responses

E2-1
The EIS was prepared in accordance with the National Environmental Policy Act and with applicable federal and Army regulations. Review of the Draft EIS by the US Environmental Protection Agency found the document to be adequate. The Army derived its basis for the archaeological and cultural resource analysis from site specific baseline reports from cultural resource firms with extensive local experience, as well as from oral histories, public meetings and interested individuals. In addition, the Army encouraged the public and Native Hawaiians to share their knowledge of resources present at MMR and incorporated this information into the Draft EIS.

E2-2
It is the Army's position to protect all identified and unevaluated Areas of Traditional Importance, sites, natural features, and historic structures as though they are eligible for the National Register. Determinations of significance and interpretation of these sites is ongoing and will continue for years to come in consultation with the Native Hawaiian community. Until this is completed the sites will be treated as eligible and consultations on military impacts on these sites will continue.

E2-3
Please see the response to Comment E2-2.

E2-4
It is the Army's understanding that the oral history interviewees withdrew their comments because of disagreements with members of Malama Makua. The Army has assessed the Ukanipo Heiau. Further assessment, such as subsurface testing, would cause irreparable damage to its cultural integrity.

Comments	Responses
	(cont.) E2-5 The Army recognizes that burials may exist in areas it has not been able to survey. It is difficult to distinguish between mounds intended for agricultural use from burials without invasive testing. Testing, however, is destructive and whatever is contained within the site will be disturbed, which is an adverse effect. The Army errs on the side of caution in undertaking subsurface testing because of the destructive nature of such examination. Subsurface testing which has been undertaken in Makua yielded features that appeared to be burials but did not contain any human remains. The Army's subsurface testing resulted in objections from a member of Malama Makua as well as from a lineal descendent. E2-6 These new sites and features located during the 2001 surveys are listed in Table 3-28 as Sites 5775, 5776, 5777, and 5778. The possible burials were identified at Site 5775. Table 3-28 has been changed to reflect this.

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opportunities to engage in traditional cultural and religious practices relating to the care of the iwi (bones), 'aumākua (ancestral guardians) and akua (deities).

E2-2 Finally, the Army argues that certain significant impacts to archaeological resources and "ATIs, including landscapes shrines, archaeological sites, and burial sites" are "mitigable to less than significant" (pp. 4-146 - 4-151; Table ES-4). This assertion reflects either a fundamental misunderstanding or a careless dismissal of Hawaiian culture. Traditional and modern Hawaiian culture deems disturbance of burials and destruction of cultural sites as a cultural harm of first magnitude. Once burials are disturbed, no subsequent accommodations such as consultation or reinterment will undo the cultural injury. Likewise, mere "data recovery" does nothing to diminish the loss of cultural sites to the living Hawaiian culture; once a cultural site is gone, it is lost forever to present and future generations of Hawaiians. The living descendants today suffer spiritually, physically, culturally, and emotionally each time a burial or cultural site is desecrated. The life of the Hawaiian culture depends upon the preservation of these sites, for it is these sites and the practices of caring for them that allow the 'Ōiwi (indigenous Hawaiians) to maintain the proper balance of people, gods and land. To expose the burials is to desecrate them, and to destroy the sites and the bones therein is the ultimate form of humiliation for the living. Mere reinterment of the iwi once they are uncovered does not suffice to remedy the cultural harm suffered from their disturbance and removal.

E2-7 There is no way of mitigating this harm. The harm done to the Hawaiian people through the despoiling of burials and other cultural sites is above repair, and it will have long-term consequences that our own descendants will have to endure. It is the responsibility of the living to protect the dead in order for the future generations to live in pono – balance and unity. This cannot occur when burial sites and the kulāiwi (ancestral lands) they are in, lands which contain generations upon generations of families planted back into the soil, are destroyed. The only certainty is the humiliation and reproach such destruction will heap upon the Hawaiian culture and people.

Me ka 'oia 'i'o,

Ty P. Kāwika Tengan, Ph.D.
Assistant Professor of Ethnic Studies and Anthropology
University of Hawai'i at Mānoa

2560 Campus Road, George Hall 301, Honolulu, Hawai'i 96822
Telephone: (808) 956-8086, Facsimile: (808) 956-9494

Responses

E2-7:
The Army recognizes in the impact analysis that there could be substantive and unmitigable harm to cultural resources. In addition, please see response to Comment E2-2.