

# CHAPTER 6

## OTHER REQUIRED ANALYSES

---

### 6.1 INTRODUCTION

In addition to the analyses discussed in Chapters 4 and 5, NEPA requires additional evaluation of the project's impacts with regard to significant unavoidable adverse impacts, the relationship between short-term uses and long-term productivity, and any irreversible or irretrievable commitment of resources.

### 6.2 SIGNIFICANT UNAVOIDABLE ADVERSE IMPACTS

An EIS must describe any significant unavoidable impacts for which either no mitigation or only partial mitigation is feasible. Significant and unavoidable impacts from the proposed training activities occur in the following areas:

- Impacts on MMR recreational resources due to training (Land Use, Section 4.1);
- Conflicts with existing or planned MMR land uses (Land Use, Section 4.1);
- Noise impacts from MMR ordnance use (Noise, Section 4.5);
- MMR soil erosion impacts (Geology and Soils, Section 4.8);
- Impacts on MMR sensitive terrestrial species and habitat resulting from the spread of nonnative species (Biological Resources, Section 4.9);
- Impacts from fire on MMR and PTA sensitive terrestrial species and sensitive habitat (Biological Resources, Section 4.9);

- Impacts on MMR and PTA archaeological resources and ATI (Cultural Resources, Section 4.10);
- Access to MMR and PTA ATIs and archaeological sites (Cultural Resources, Section 4.10);
- Environmental justice impacts on access to MMR ATIs and archaeological sites (Socioeconomics and Environmental Justice, Section 4.12);
- Increased MMR and PTA wildfire ignition (Wildfires, Section 4.14);
- Cumulative impacts on MMR and PTA land use and recreation, geology and soils, biological resources, cultural resources, and wildfires (Cumulative Projects and Impacts, Chapter 5); and
- Cumulative impacts on MMR noise, water resources, and socioeconomics and environmental justice (Cumulative Projects and Impacts, Chapter 5).

### **6.3 RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF THE ENVIRONMENT AND LONG-TERM PRODUCTIVITY**

NEPA requires that an EIS consider the relationship between local short-term uses of the environment and the maintenance and enhancement of long-term productivity.

Short-term damage to the environment relating to training activities includes direct and indirect loss of habitat and damage to sensitive species, emissions impacts on air quality, and surface water quality impacts. Construction activities, especially for the PTA CALFEX range, would be short-term and temporary. Construction impacts would be mitigated, where practicable, under the constraints of public safety and the military mission.

Long-term environmental damage includes impacts on soil and water quality; impacts on habitat and sensitive biological resources from training activities, erosion, and wildfires; impacts on air quality from wind erosion due to training activities; and potential future damage to cultural resources. The conversion of important farmland to military use at WPAA could affect long-term agricultural (grazing) productivity in the State, but under current law, conversion of important farmlands is exempt from mitigation requirements if the conversion is necessary for national defense.

The long-term productivity of the proposed training activities is based on the Army's mission. Any measurement of long-term productivity in this context must recognize the paramount importance of national defense and the Army's obligation to adapt to changing national security needs. While the Army will take whatever actions are reasonable and practicable to preserve and protect the natural environment under its stewardship, the necessity of national defense requires the Army to provide the nation with capabilities that meet current and evolving national defense requirements. The proposed military training is designed to meet these goals and further the security and welfare of the United States, its residents, and its natural environment.

#### **6.4 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES**

NEPA requires that an EIS analyze the extent to which the proposed projects primary and secondary effects would commit nonrenewable resources to uses that future generations would be unable to reverse.

Implementing Alternatives 1, 2, 3, and 4 would require commitments of both renewable and nonrenewable energy and material resources for production of ammunition, weapons, and munitions. Material resources used would include metals, chemicals, and other petroleum products. Other nonrenewable resources which would be used during training activities include fuel used by vehicles in training maneuvers and troop convoys and water, power, and other resources necessary to maintain and operate the MMR and PTA facilities and military vehicle trails.

This page intentionally left blank

# CHAPTER 7

## REFERENCES

---

Adleman, Hy. 2005. Kuilima Resort Co. Personal communication with Dawn A. Lleces, Tetra Tech Inc. February 9, 2005.

AESO (Aircraft Environmental Support Office). 1999a. *Emission Inventories for Turbohaft Engines*.

\_\_\_\_\_. 1999b. *Summary Tables of Gaseous and Particulate Emissions from Aircraft Engines*.

Ahching, Paul. 2002a. US Army Air Traffic Control Chief, Hawai‘i. Personal communication with Quent Gillard, Q Analysis and Research, Inc., regarding low altitude military air traffic on islands of O‘ahu and Hawai‘i. August 20, 2002.

\_\_\_\_\_. 2002b. US Army Air Traffic Control Chief, Hawai‘i. Personal communication with Quent Gillard, Q Analysis and Research, Inc., regarding military training routes and areas of overflight on islands of O‘ahu and Hawai‘i. August 20, 2002.

\_\_\_\_\_. 2003. US Army Air Traffic Control Chief, Hawai‘i. Personal communication with Quent Gillard, Q Analysis and Research, Inc., regarding airspace congestion over O‘ahu. January 29, 2003.

AirNav.com. 2002. Airports. Internet Web site: <http://www.airnav.com/airports>. Accessed on August 15, 2002.

Akana, Moses. 2003. Support Specialist, FAA Honolulu Control Facility, Hawai‘i. Personal communication with Quent Gillard, Q Analysis and Research, Inc., regarding local flying rules, minimum flight altitudes, and the Army’s accident history in Hawai‘i. February 21, 2003.

- Akasaki, Gary. 2003. US Army, DPW. Personal communication with Leslie Garlinghouse, Tetra Tech, Inc. April 2003.
- \_\_\_\_\_. 2008. US Army, DPW. Personal communication with David Giffin, USAEC. June 2008.
- Andera, Donald. 2003a. Standardization Officer, Aviation Brigade, 25th Infantry (Light), Standardization Office. Personal communication with Quent Gillard, Q Analysis and Research, Inc., regarding means of transporting ammunition and fuel to the Forward Area Rearm and Refuel Points during live-fire exercises at MMR. April 25, 2003.
- \_\_\_\_\_. 2003b. Standardization Officer, Aviation Brigade, 25th Infantry (Light), Standardization Office. Personal communication with Quent Gillard, Q Analysis and Research, Inc., regarding flight patterns, altitudes flown, and duration of live-fire training exercises at MMR. February 26, 2003.
- \_\_\_\_\_. 2003c. Standardization Officer, Aviation Brigade, 25th Infantry (Light), Standardization Office. Personal communication with Quent Gillard, Q Analysis and Research, Inc., regarding flight patterns, altitudes flown, and duration of live-fire training exercises at MMR. February 26, 2003.
- Anding, Deputy G4 Captain. 2004. US Army Hawai'i, Division Transportation Office. Personal communication with Gary Floyd, Tetra Tech, Inc. March 2004.
- Antonio, Joe. 2003. Oceanic Cable, Field Engineering. Personal communication with John Chung, Belt Collins Hawai'i Ltd. February 4, 2003.
- Athens, J. S., and M. W. Kaschko. 1989. *Prehistoric Upland Bird Hunters: Archaeological Inventory Survey and Testing for the MPRC Project Area and the Bobcat Trail Road, Pōhakuloa Training Area, Island of Hawai'i*. Prepared for the US Army Corps of Engineers, Pacific Ocean Division, Fort Shafter, Hawai'i. International Archaeological Research Institute, Inc., Honolulu, Hawai'i.
- Atkins, N., and S. L. Swartz (eds.). 1989. Proceedings of the workshop to review and evaluate whale watching programs and management needs/November 14-16, 1988, Monterey, CA. Cent. Mar. Conserv., Washington, DC. 53 pp. as cited in Richardson et al. 1995.
- ATSDR (Agency for Toxic Substances and Disease Registry Information Center). 2001. *White Phosphorus*. Internet Web Site: <http://www.atsdr.cdc.gov/tfacts103.html>. Accessed on June 27, 2003.
- Au, W.W. L., Popper, A. N. and Fay, R. J. (Eds). 2000. *Hearing by Whales and Dolphins*, Springer Verlag, New York. 485 pp.

- Baker, C. S., and L. M. Herman. 1981. *Migration and Local Movement of Humpback Whales (Megaptera Novaeangliae) through Hawaiian Waters*. Canadian Journal of Zoology, 59, 460-469.
- Balazs, G. H. 1980. Synopsis of Biological Data on the Green Turtles in the Hawaiian Islands. US Department of Commerce, NOAA Technical Memorandum NOAA-TM-NMFS-SWFC-7.
- Balcomb, K. C., III. 1987. *The Whales of Hawai‘i*. Marine Mammal Fund, 99 pp.
- Barroga, Emilio. 2005. Resident Engineer, State of Hawai‘i Department of Transportation, Highways Division, Design Branch. Personal communication with Dawn A. Lleces, Tetra Tech Inc. February 9, 2005.
- Barrera, William J., Jr. 1987. *Saddle Road. Hawai‘i Island: Archaeological Survey of 138 KV Powerline*. Chiniago, Inc., Honolulu, Hawai‘i. Submitted to R.M. Towill Corp.
- Barrera, William, Jr., and Marion Kelly 1974. Archaeological and Historical Surveys of the Waimea to Kawaihae Road Corridor of Hawai‘i: Archaeological Survey and Historical Survey. Departmental Report Series 74-1. Department of Anthropology, Bernice P. Bishop Museum, Honolulu, Hawai‘i.
- Bautista, Ken. 2005. US Army DPW, Transformation Office. Personal communication with Dawn A. Lleces, Tetra Tech Inc. February 10, 2005.
- Baylor, K. J. 1999. *Sediment Sampling Field Report, Muliwai Ponds, Ka‘ena, O‘ahu, Hawai‘i*. Prepared for EPA, Region IX. October 14, 1999.
- Beavers, Andrew M., and Robert E. Burgan. 2002. *Analysis of Fire History and Management Concerns at Pōhakuloa Training Area*. Center for Environmental Management of Military Lands, Colorado State University. April 2002.
- Beavers, Andrew M., Robert Burgan, Francis Fujioka, Richard D. Laven, and Philip N. Omi. 1999. *Analysis of Fire Management Concerns at Mākua Military Reservation*. Center for Ecological Management of Military Lands, Colorado State University. December 1999.
- Beckwith, M. W. 1940. *Hawaiian Mythology*. University of Hawai‘i Press, Honolulu.
- Belt Collins. 1993. *Schofield Barracks Real Property Master Plan*. Prepared for USASCH. May 1993.
- Benoit-Bird, K. J., Whitlow W. L. Au. 2003. Prey dynamics affect foraging by a pelagic predator (*Stenella longirostris*) over a range of spatial and temporal scales. *Behav Ecol Sociobiol* (2003) 53:364–373.

- Benoit-Bird, K. J., and Whitlow W. L. Au. 2004. Diel migration dynamics of an island-associated sound-scattering layer. *Deep-Sea Research I* 51 707
- Berglund, Birgitta, and Thomas Lindvall (eds.) 1995. *Community Noise*. Archives of the Center for Sensory Research by the Center for Sensory Research, Stockholm, Sweden. 2(1):1-195. World Health Organization, Geneva, Switzerland.
- Berzin, A. A. and A.A. Rovnin. 1966. *Distribution and Migration of Whales in the Northeastern part of the Pacific Ocean, Bering and Chuckchi*. *Izv. Tikhookean. Nauchno-issled, Inst. Rybn. Khoz. Okeanogr. (TINRO)*. 58:179-207. (In Russian). Translated by US Dep. Inter., Bur. Commer. Fish. Seattle, Washington. pp. 103-106. Soviet Research on Marine Mammals of the Far East.
- Bingham, H. 1847. *A Residence of Twenty-One Years in the Sandwich Islands*. Hezekiah Huntington, Hartford, Connecticut.
- Bleich, V. C., R. T. Bowyer, A. M. Pauli, R. L. Vernoy, and R. W. Anthes. 1990. *Responses of Mountain Sheep Ovis Canadensis and Helicopter Surveys*. *California Fish & Game* 76 (4) 197-204.
- BLS (Bureau of Labor Statistics). 2002. Local Area Unemployment Statistics: Honolulu County. Internet Web site: <http://data.bls.gov/servlet/SurveyOutputServlet>. Accessed on February 10, 2003.
- \_\_\_\_\_. No date. Local Area Unemployment Statistics. Internet Web site: <http://data.bls.gov/servlet/SurveyOutputServlet>. Accessed on June 25, 2002.
- Booker, Terry. 2003. AT&T Government Solutions. Personal telephone communication with John Chung, Belt Collins Hawai'i Ltd. February 12, 2003.
- Bow, Daniel. 2002. Master Planner, US Army DPW. Personal communication with Jennifer Saufler, Tetra Tech, Inc. September 4, 2002.
- \_\_\_\_\_. 2003. Master Planner, US Army DPW. Personal communication with John Bock, Tetra Tech, Inc. December 22, 2003.
- \_\_\_\_\_. 2005. Master Planner, US Army DPW. Personal communication with Dawn A. Lleces, Tetra Tech Inc. February 10, 2005.
- Brasher, A., and S.S. Anthony. 1999. Occurrence of Organochlorine Pesticides in Stream Bed Sediment and Fish from Selected Streams on the Island of O'ahu, Hawai'i, 1998. US Geological Survey publication.

- Brewin, Bob. 1997. *AT&T outbids GTE for DOD pact*, Federal Computer Week. Internet Web site: [http://www.fcw.com/fcw/articles/1997/FCW\\_030397\\_140.asp](http://www.fcw.com/fcw/articles/1997/FCW_030397_140.asp). Accessed on February 28, 2003.
- Brill, R. W., G. H. Balazs, K. N. Holland, R. K. C. Chang, S. Sullivan, and J. C. Georgea. 1994. Daily Movements, Habitat Use, and Submergence Intervals of Normal and Tumor-bearing Juvenile Green Turtles (*Chelonia mydas L.*) Within a Foraging Area in the Hawaiian Islands. *Journal of Experimental Marine Biology and Ecology* 185 (1995) 203-218.
- Bruckner, Hank. 2003. President, General Aviation Council of Hawai'i. Personal communication with Quent Gillard, Q Analysis and Research, Inc., regarding flight congestion in central O'ahu, Hawai'i. January 30, 2003.
- Buck, Peter H. 1957. *Arts and Crafts of Hawai'i*. Bernice P. Bishop Museum Special Publication 45. Bishop Museum Press, Honolulu, Hawai'i.
- Busnel, R. G., and J. Fletcher (eds). 1978. *Effects of Noise on Wildlife*. Academic Press, New York, New York. (not seen).
- Butler, Major Jeff. 2003. United States Army. Personal communication with John Chung, Belt Collins Hawai'i Ltd. March 25, 2003.
- BWS (Honolulu Board of Water Supply). 2001. Annual Report and Statistical Summary, July 1, 2000 – June 30, 2001. Honolulu, Hawai'i.
- \_\_\_\_\_. 2003. Customer Service System Meter Readings Report. February 27, 2003 and March 3, 2003.
- Cabrera Services. 2008. Technical Memorandum: Depleted Uranium Scoping Investigations at Mākua Military Reservation, Pōhakuloa Training Area, and Schofield Barracks Impact Area on the islands of O'ahu and Hawai'i. April 2008.
- Calambokidis, J., G. H. Steiger, J. M. Straley, T. J. Quinn II, L. M. Herman, S. Cerchio, D. R. Salden, M. Yamaguchi, F. Sato, J. Urban, J. Jacobsen, O. von Ziegesar, K. C. Balcomb, C. M. Gabriele, M. E. Dahlheim, N. Higashi, S. Uchida, J. K. B. Ford, Y. Miyamura, P. L. de Guevara, S. A. Mizroch, L. Schlender, and K. Rasmussen. 1997. *Abundance and Population Structure of Humpback Whales in the N. Pacific Basin*. Final Report to the Southwest Fisheries Science Center, P. O. Box 271, La Jolla, California, 92038.

- Carlson, I., P. Cleghorn, F. Eblé, T. Jackson, and M. Weisler. 1996. *Archaeological Reconnaissance Survey of Proposed Firebreak Road at Mākuā Military Reservation, Wai‘anae District, Island of O‘ahu, Hawai‘i*. Report prepared by BioSystems Analysis, Kailua for USACE, Pacific Ocean Division, Fort Shafter, on file at USACE, Pacific Ocean Division, Fort Shafter.
- Cassirer, E. F., D. J. Freddy, and E. D. Ables. 1992. *Elk Responses to Disturbance by Cross-Country Skiers in Yellowstone National Park*. Wild. Soc. Bull. 20 (4) 375-381.
- Caterinicchia, Dan. 2002. *AT&T Looks To Expand Hawai‘i Work*. Internet Web site: <http://www.fcw.com/geb/articles/2002/1118/web-att-11-21-02.asp>. Accessed on March 4, 2003.
- CEQ (Council on Environmental Quality). 1978. CEQ Regulations for Implementing the Procedural Revisions of NEPA. 40 CFR Part 1500 – 1508. November 28, 1978.
- \_\_\_\_\_. 1981. *Forty Most Asked Questions. Concerning CEQ’s National Environmental Policy Act Regulations*. 46 Fed. Reg. 18026; March 23, 1981; as amended by 51 Fed. Reg. 15618, April 25, 1986.
- \_\_\_\_\_. 1997. *Considering Cumulative Effects Under the National Environmental Policy Act*. January 1997.
- \_\_\_\_\_. 2002. Memorandum for the heads of federal agencies from: James Connaughton, chair. Subject: *Cooperating Agencies in Implementing the Procedural Requirements of the National Environmental Policy Act*. January 30, 2002.
- CEMML (Center for Ecological Management of the Military Lands). No date. *Assessment for Programmatic ESA Section 7. 7 Consultation on Army Transformation of one Brigade of the 25th Infantry Division (Light) to an Interim Brigade Combat Team, Various sites, O‘ahu*. (In preparation).
- CEMML and PTA NRS. 2006. Report for the Ecosystem Management Program, Pōhakuloa Training Area, Island of Hawai‘i, July 2003 to December 2005. U.S. Army Garrison, Hawai‘i.
- \_\_\_\_\_. 2007. Status of the Implementation of Actions Identified in the 2003 US Fish and Wildlife Service’s Biological Opinion for Pōhakuloa Training Area, Island of Hawai‘i January 2006 to December 2006. U.S. Army Garrison, Hawai‘i.
- \_\_\_\_\_. 2008. Draft Report for the Ecosystem Management Program Pōhakuloa Training Area, Island of Hawai‘i January 2007 to December 2007. U.S. Army Garrison, Hawai‘i.

- CHABA. 1996. *Community Response to High-Energy Impulsive Sounds*. National Council, Committee on Hearing, Bioacoustics, and Biomechanics. Chamberlain, L. 1956. *Tour around O'ahu, 1828*. Hawaiian Historical Society Annual Report for 1956: 25-41.
- Char, Alvin. 1977. *Heavy Metals Survey and an Estimation of Sediment Yield: Mākuā Military Reservation, O'ahu, Hawai'i*. Master of Science Thesis, University of Hawai'i. May 1977.
- \_\_\_\_\_. 2003. US Army, DPW. Personal communication with Leslie Garlinghouse, Tetra Tech Inc. April 2003.
- Chave, Edith. No date. University of Hawai'i. Personal communication cited in Char 1977 (not seen).
- C. H. Guernsey & Company. 2001. *Utility Risk Assessment*. Contract N62742-99-D-0010, Delivery Order No. 008, September 17, 2001.
- Chung, Albert. 2005. Resident Engineer, State of Hawai'i Department of Transportation, Highways Division, Design Branch. Personal communication with Dawn A. Lleces, Tetra Tech Inc. February 10, 2005.
- City and County of Honolulu. 1992. General Plan Objectives and Policies. Internet Web site: <http://honolulu.gov/planning/92gplan.pdf>. Accessed on June 26, 2002.
- \_\_\_\_\_. 2000a. Department of Planning and Permitting. *North Shore Sustainable Communities Plan*. July 2000.
- \_\_\_\_\_. 2000b. *Wai'anae Sustainable Communities Plan*. Prepared by the Department of Planning and Permitting. July 2000.
- \_\_\_\_\_. 2001. Honolulu Land Information System (HOLIS). Prepared by Department of Planning and Permitting. Internet Web site: [gis.hicentral.com](http://gis.hicentral.com). August 31, 2001.
- \_\_\_\_\_. 2003. *Annual Report on the Status of Land Use on O'ahu, Fiscal Year 2002*. Prepared by Jeremy Harris, Mayor, City and County of Honolulu, and Eric G. Crispin, Director, Department of Planning and Permitting. July 2003.
- \_\_\_\_\_. 2004. *Annual Report on the Status of Land Use on O'ahu, Fiscal Year 2003*. Prepared by Jeremy Harris, Mayor, City and County of Honolulu, and Eric G. Crispin, Director, Department of Planning and Permitting. September 2004.
- Clark, C., and P. Tyack. 1998. *Quick Look: Low-Frequency Sound Scientific Research Program. Phase III: Responses of Humpback Whales to SURTASS LFA off the Kona Coast, Big Island Hawai'i*. Report jointly prepared by Cornell University and Woods Hole Oceanographic Institution. August 31, 1998. 35 pp.

- Clark, Jeffrey T. 1981. *Archaeological Survey of the Proposed Lalamilo Agricultural Park, South Kohala, Island of Hawai'i*. Prepared for Department of Land and Natural Resources, State of Hawai'i. Department of Anthropology, Bernice P. Bishop Museum, Honolulu.
- \_\_\_\_\_. 1987. *Waimea-Kawaihae, A Leeward Hawai'i Settlement System*. 2 Volumes. Ph.D. thesis, University of Illinois, Urbana.
- Clark, J. T., and P. V. Kirch. 1983. *Archaeological Investigations of the Mudlane-Waimea-Kawaihae Road Corridor, Island of Hawai'i: An Interdisciplinary Study of an Environmental Transect*. Report 83-1, Department of Anthropology, B. P. Bishop Museum, Honolulu, Hawai'i.
- Clark, John, R. K. 1977. *The Beaches of O'ahu*. University of Hawai'i Press.
- Cleghorn, P. L., J. Robins, T. Torres, S. D. Clark, and T. E. Moorman. 2002. *Initial Implementing Activities for the Historic Preservation Plan at Ukanipō Heiau, and Intensive Surface Survey and Mapping of Archaeological Sites, Ukanipō Heiau Vicinity, Mākua Military Reservation, Mākua Valley, O'ahu*. Report prepared by Ogden Environmental and Energy Services, Honolulu for USACE, Pacific Ocean Division, Fort Shafter, on file at USACE, Pacific Ocean Division, Fort Shafter.
- Construction Engineering Research Laboratory. 2001. Report ERDC/CERL TR-01-50.
- Cooper, B. A., R. E. David, and R. J. Blaha. 1996. *Radar and Visual Surveys of Endangered Seabirds and Bats in Pōhakuloa Training Area, Hawai'i During Summer 1995*. ABR, Inc., Forest Grove, Oregon and Rana Productions, Limited, Kaliua-Kona, Hawai'i.
- Cordy, R. 2002. *An Ancient History of Wai'anae. ka Moku o Wai'anae: he Mo'olelo o ka Wā Kahiko*. Mutual Publishing, Honolulu, Hawai'i.
- County of Hawai'i. 1989. General Plan. Internet Web site: [http://www.hawaiiicounty.com/planning/general\\_plan.htm#section4](http://www.hawaiiicounty.com/planning/general_plan.htm#section4). Accessed on June 24, 2002.
- \_\_\_\_\_. 2001. Planning Department Zone Maps. January 2, 2001. North and South Kohala Districts Zone Map, Section 25-95A; March 17, 2000. Kawaihae-Puako Zone Map, Section 25-95F; December 7, 1996. Hamākua District Zone Map, Section 7.11; December 7, 1996. Waikoloa Village Zone Map, Section 25-95H.
- Cox, David. 1983. Archaeological Technician, US Army Engineer District, Honolulu, Hawai'i. Site Visit and Archaeological Reconnaissance of the Firebreak Route along Pu'u Kūlua Road, Pōhakuloa Training Area (PTA), Island of Hawai'i. Memorandum for Record. December 5, 1983.

- CRAMP (The Hawai'i Coral Reef Assessment and Monitoring Program). 2003. Hawai'i Institute of Marine Biology. Internet Web site [http://cramp.wcc.hawaii.edu/Study\\_Sites/Oahu/Kahe\\_Point\\_Sector/](http://cramp.wcc.hawaii.edu/Study_Sites/Oahu/Kahe_Point_Sector/). Accessed on October 2003.
- \_\_\_\_\_. 2003. Hawai'i Institute of Marine Biology. Internet Web site: [http://cramp.wcc.hawaii.edu/Study\\_Sites/Hawaii/Kawaihae/](http://cramp.wcc.hawaii.edu/Study_Sites/Hawaii/Kawaihae/). Accessed February 11, 2003
- Cuddihy, L. W., and C. P. Stone. 1990. *Alteration of Native Hawaiian Vegetation: Effects of Humans, Their Activities and Introductions*. University of Hawai'i Cooperative National Park Resources Studies Unit, Honolulu. University of Hawai'i Press, Honolulu.
- David, R. E. 1995. Report: Endangered Vertebrate Species Inventory Survey of the Palila Critical Habitat, Pōhakuloa Training Area.
- DEI (Donaldson Enterprises, Inc). 2002. *After Action Report Phase I – November 2002. Surface Unexploded Ordnance (UXO) Clearance at Mākua Military Reservation (MMR), Island of O'ahu, Hawai'i*. December 2002.
- DeLong, R. L., and R. L. Brownell, Jr. 1977. *Hawaiian Monk Seal (Monachus Schauinslandi) Habitat and Population Survey in the Northwestern (Leeward) Hawaiian Seal*. April 1977. Northwest Alaska Fish Cent. Proc. Rep., 43 pp.
- Devera, Carol. 2003. Directorate of Public Works. Personal communication with John Chung, Belt Collins Hawai'i Ltd. April 14, 2003.
- DLNR (Hawaii Department of Land and Natural Resources). 1999a. *Title 13, Chapter 123, Rules Regulating Game Mammal Hunting*. Division of Forestry and Wildlife. Revised November 1999.
- \_\_\_\_\_. 1999b. *Title 13, Chapter 122, Rules Regulating Game Bird Hunting*. Division of Forestry and Wildlife. Revised November 1999.
- \_\_\_\_\_. 2001. Commission of Water Resource Management, May 2001.
- \_\_\_\_\_. 2002. *Endangered and Threatened Animals in Hawai'i (Federal and State Status)*. Hawai'i Division of Forestry and Wildlife 2/01. E-mailed from Carol J. Terry, Nongame Wildlife Biologist. June 25, 2002.
- \_\_\_\_\_. 2003. Press Release, Fire Danger Leads DLNR to Close All Forest Reserves, Public Hunting and Game Management Areas in the Waianae Range, September 11, 2003. Internet Web site: <http://www.state.hi.us/dlnr/chair/pio/HtmlNR/03-68.htm>. Accessed on October 21, 2003.

- \_\_\_\_\_. 2004a. *Fire Management*. Internet Web site: <http://www.hawaii.gov/dlnr/dofaw/fmp/default.html>. Accessed on January 23, 2004.
- \_\_\_\_\_. 2004b. *State Parks on the Island of O'ahu*. Internet Web site: <http://www.state.hi.us/dlnr/dsp/oahu.html>. Accessed on June 11, 2004.
- Dohmen, Richard. 2004. Aviation Brigade, 25th Infantry Division (Light), Standardization Office. Personal communication with Quent Gillard, Q Analysis and Research, Inc. January 20, 2004.
- Dollar, Stephen. 1999. *Marine Environmental Investigations. US Marine Corps Amphibious Training O'ahu, Moloka'i, and Kaua'i, Hawai'i*. Marine Research Consultants. Honolulu Hawai'i. Draft. July 1999.
- DoN (Department of the Navy). 1998. *Final Environmental Impact Statement Shock Testing the Seawolf Submarine*. May 1998.
- \_\_\_\_\_. 2001. *Final Environmental Impact Statement Shock Testing the USS Churchill*. February 2001.
- Dooling, R. J. No date. *The Effects of Environmental Noise on Communication in Birds*. Internet Web site: <http://www.bsos.umd.edu/psyc/dooling/enviro~1.htm>. Accessed on October 1, 2001.
- Dunn, Ed. 2003. Sergeant First Class, US Army. Personal communication with Leslie Garlinghouse, Tetra Tech, Inc., regarding UXO training procedures. April 2, 2003.
- Earth Tech. 2002. *Final Phase II EE/CA, Former Waikoloa Maneuver Area and Nansay Sites, Hawai'i*. Prepared for US Army Corps of Engineers, January 2002. Internet Web site: <http://www.poh.usace.army.mil/waikoloa/EECA/Ch02.pdf>. Accessed on February 28, 2003.
- Eblé, F., P. Cleghorn, and T. L. Jackson. 1995. *Archaeological Investigations at Proposed MK-19 Range, Mākua Military Reservation, Wai'anae District, O'ahu, Hawai'i*. Report prepared by BioSystems Analysis, Kailua for USACE, Pacific Ocean Division, Fort Shafter, on file at USACE, Pacific Ocean Division, Fort Shafter.
- EDR (Environmental Database Report). 2002d. *Environmental Database Report and Radius Maps for Mākua Military Reservation*. August 2002.
- Eidsness, J. P., P. Cleghorn, J. Cleghorn, F. Reinman, F. Eblé, and J. Pantaleo. 1998. *Historic Preservation Plan for Pōhakuloa Training Area, Island of Hawai'i, Hawai'i*. Prepared for the US Army Engineer District, Honolulu, Fort Shafter, Hawai'i. Pacific Legacy, Inc., Aptos. California and Garcia and Associates, Honolulu, Hawai'i.

- Emerson, N. B. 1915. *Pele and Hi'iaka*. Honolulu Star-Bulletin, Honolulu.
- Enos, Eric. 1998. *Taro Culture, in Preserving Hawai'i's Traditional Landscapes*, Conference Proceedings, September 15-17, 1995, William Chapman and Chris Kirk-Kuwaya, (eds.) Historic Preservation Program, Department of American Studies, University of Hawai'i at Mānoa, Honolulu, Hawai'i. June 1998.
- Enriques, Gayland. 2003a. Integrated Wildland Fire Program Manager. Personal communication with Derek Holmgren, Tetra Tech, Inc. June 19, 2003.
- \_\_\_\_\_. 2003b. Integrated Wildland Fire Program Manager. Personal communication with Derek Holmgren, Tetra Tech, Inc. August 11, 2003.
- \_\_\_\_\_. 2003c. Integrated Wildland Fire Program Manager. Personal communication with John Chung, Belt Collins Hawai'i Ltd. February 26, 2003.
- \_\_\_\_\_. 2004a. Integrated Wildland Fire Program Manager. Personal communication with Derek Holmgren, Tetra Tech, Inc. February 2, 2004.
- \_\_\_\_\_. 2004b. Integrated Wildland Fire Program Manager. Personal communication with Derek Holmgren, Tetra Tech, Inc. February 10, 2004.
- \_\_\_\_\_. 2005. Integrated Wildland Fire Program Manager. Personal communication with Derek Holmgren, Tetra Tech, Inc. January 18, 2005.
- Environet (2004). Results from Mass-Composite Soil and Plant Sampling at the OB/OD Unit at the Makua Military Reservation Project. Prepared for the United States Army Corps of Engineers.
- EPA (US Environmental Protection Agency). 1974. Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety. (EPA 550/9-74-004.) US Government Printing Office. Washington, DC.
- \_\_\_\_\_. 1998a. *Mobile Emissions*. EPA Report AP-42. 1998
- \_\_\_\_\_. 1998b. *Compilation of Air Emission Factors for Heavy Duty Diesel and Off-Road Vehicles*. EPA Report AP-42, Vol. II, 5th ed. Appendix H. 1998.
- \_\_\_\_\_. 1998c. National Water Quality Inventory: 1998 Report to Congress. Chapter 12.
- \_\_\_\_\_. 1999. Major Environmental Laws, Comprehensive Environmental Response, Compensation and Liability Act, USEPA, Region 5, June 25, 1999. Internet Web site: <http://www.epa.gov/region5/defs/html/cercla.htm>. Accessed on January 4, 2001.

\_\_\_\_\_. 2000. Office of Water Programs. Updated October 5, 2000. Internet Web site: <http://www.epa.gov/pesticides/whatis.htm>. Accessed on March 10, 2004.

\_\_\_\_\_. 2002a. Office of Pesticide Programs. Updated June 20, 2002. Internet Web site: <http://www.epa.gov/pesticides/whatis.htm>. Accessed on August 5, 2002.

\_\_\_\_\_. 2002b. Polychlorinated Biphenyls (PCBs): Welcome to the PCB Home Page at EPA. Updated July 23, 2002. Internet Web site: <http://www.epa.gov/opptintr/pcb/>. Accessed on August 7, 2002.

\_\_\_\_\_. 2002c. Wastes/Military Munitions Final Rule. Updated June 24, 2002. Internet Web site Address: <http://www.epa.gov/epaoswer/hazwaste/military/index.htm>. Accessed on August 16, 2002.

\_\_\_\_\_. 2002d. Current Drinking Water Standards, EPA 816-F-02-013, July 2002. Internet Web site: <http://www.epa.gov/safewater/mcl.html>. Accessed on November 8, 2002.

\_\_\_\_\_. 2002e. *National Ambient Air Quality Standards*. Internet Web site: <http://www.epa.gov/air/criteria.html>. Accessed on June 6, 2003.

\_\_\_\_\_. 2002f. *Revised Standards for Ozone and Particulate Matter*. Internet Web site: <http://www.epa.gov/ttn/oarpg/naaqsfm/>. Accessed on June 10, 2003.

EPA and HDOH (US Environmental Protection Agency and Hawai'i Department of Health). 1998. *Propose Delay of Closure Process for the Former Open Burning/Open Detonation Unit at Mākua Military Reservation*. September 1998.

Ernenwein, Rick, and Wes Henry. 1997. Progress toward natural quiet, in *Natural Resource Year in Review--1996*, published by the National Park Service, US Department of the Interior, in May 1997 (publication D-1182). Internet Web sites: [http://www2.nature.nps.gov/YearinReview/yr\\_rvw96/chapter6/natquiet.htm](http://www2.nature.nps.gov/YearinReview/yr_rvw96/chapter6/natquiet.htm)  
<http://www.fican.org/download/ERNEN.PDF> Accessed on July 29, 2004.

\_\_\_\_\_. 2003. *Policy and Regulation: Progress Toward Natural Quiet*, in *Natural Resource Year in Review—1996*, Pub. D-118, National Park Service, May 1977; Internet Web site: [http://www2.nature.nps.gov/YearinReview/yr\\_rvw96/chapter6/natquiet.htm](http://www2.nature.nps.gov/YearinReview/yr_rvw96/chapter6/natquiet.htm) Accessed on July 29, 2004.

ESE (Environmental Science and Engineering, Inc). 1984. *Installation Assessment of US Army Support Command, Hawai'i Installations, Vol. II*. Schofield Barracks and Pōhakuloa Training Area, Kīlauea Military Camp, Mākua Military Reservation, and Kipapa Ammunition Storage Sites, Hawai'i Report No. 338. Part III: Mākua Military Reservation and Upper and Lower Kipapa Ammunition Storage Sites.

- FAA (Federal Aviation Administration). 1976. Aviation Noise Abatement Policy. November 18, 1976.
- \_\_\_\_\_. 2001. FAA Order 7400.2E, Change 1, *Procedures for Handling Airspace Matters*. Washington, DC. July 7, 2001.
- \_\_\_\_\_. 2002. FAR/AIM (*Federal Aviation Regulations/Aeronautical Information Manual*). Aviation Supplies & Academics, Inc., Newcastle, Washington.
- Fancher, Howard. 2003a. Standardization Officer, Aviation Brigade, 25th Infantry (Light), Standardization Office, Schofield Barracks, HI. Personal communication with Quent Gillard, QAR, Inc., regarding flight patterns and use of Forward Area Rearm and Refuel Points during live-fire exercises at MMR. February 27, 2003.
- \_\_\_\_\_. 2003b. Aviation Brigade Standardization Officer, 25th Infantry Division (Light). Personal communication with Judith Charles, Tetra Tech, Inc. April 15, 2003.
- Federation of American Scientists. 1998. *M57 120mm High Explosive Cartridge*. Updated December 15, 1998. Internet Web site: <http://www.fas.org/man/dod-101/sys/land/m57.htm>. Accessed on January 16, 2004.
- \_\_\_\_\_. 2000a. *M-220 Tube-launched, Optically tracked, Wire-guided missile (TOW)*. Last updated February 22, 2000. Internet Web site: <http://www.fas.org/man/dod-101/sys/land/tow.htm>. Accessed on April 2, 2003.
- \_\_\_\_\_. 2000b. *MK77 750lb Napalm; MK78 500lb Napalm; MK79 1000lb Napalm*. Last updated April 23, 2000. Internet Web site: <http://www.fas.org/man/dod-101/sys/dumb/mk77.htm>. Accessed on April 18, 2003.
- \_\_\_\_\_. 2000c. *M109 155mm SP Howitzer*. Updated May 27, 2000. Accessed on January 15, 2004.
- \_\_\_\_\_. 2003. *Bullets for Beginners*. Internet Web site: <http://www.fas.org/man/dod-101/sys/land/bullets3.htm>. Accessed on February 28, 2003.
- FEMA (Federal Emergency Management Agency). 2004. FIRM, Flood Insurance Rate Map, City and County of Honolulu, Hawai'i, Panel 90 of 395. Map number 15003C0090F. Revised September 30, 2004.
- FICON (Federal Interagency Committee on Noise). 1992. Federal Agency Review of Selected Airport Noise Analysis Issues. August 1992.
- Fidell, S., D. Barber, and T. Schultz. 1991. *Updating a Dosage-Effect Relationship for the Prevalence of Annoyance Due to General Transportation Noise*.

- Finneran, J. J., C. E. Schlundt, D. A. Carder, J. A. Clark, J. A. Young, J. B. Gaspin, and S. H. Ridgway. 2000. Auditory and behavioral responses of bottlenose dolphins (*Tursiops truncatus*) and a beluga whale (*Delphinapterus leucas*) to impulsive sounds resembling distant signatures of underwater explosions. *J. Acoust. Soc. Am.* 108 (1).
- Finneran, J. J., C. E. Schlundt, R. Dear, D. A. Carder, and S. H. Ridgway. 2002. Temporary shift in masked hearing thresholds in odontocetes after exposure to single underwater impulses from a seismic water gun. *J. Acoust. Soc. Am.* 111 (6).
- Finneran, J. J., R. Dear, D. A. Carder, and S. H. Ridgway. 2003. Auditory and behavioral responses of California sea lions (*Zalophus californianus*) to single underwater impulses from an arc-gap transducer. *J. Acoust. Soc. Am.* 114 (3).
- Finneran, M.A. 1998. FARSITE: fire area simulator-model development and evaluation. Res Pap. RMRS-RP-4. US Department of Agriculture, Forest Service, Rocky Mountain Research Station, Ogden.
- Foote, D. E., E. L. Hill, S. Nakamura, and F. Stephens. 1972. *Soil Survey of the Islands of Kaua'i, O'ahu, Maui, Moloka'i, and Lana'i, State of Hawai'i*. USDA, Soil Conservation Service, in Cooperation with the University of Hawai'i Agricultural Experiment Station. Issued August 1972.
- Foster, B. R.. and E. Y. RaHS. 1983. *Mountain Goat Response to Hydroelectric Exploration in Northwestern British Columbia*. *Environ. Manage.* 7 (2): 189-197.
- Freed, Dr. Leonard. 1991. Birds and Mammals of the Pōhakuloa Training Area, Island of Hawai'i. May 23, 1991.
- Frid, A., and L. M. Dill. 2002. *Human-Caused Disturbance Stimuli as a Form of Predation Risk*. *Conservation Ecology* 6(1): 11. Internet Web site: <http://www.consecol.org/vol6/iss1/art11>. Accessed on April 24, 2003.
- GANDA (Garcia and Associates). 2002a. *Preliminary GPS data and site listing data for surveys at PTA and Ke'āmuku*. October 2002.
- \_\_\_\_\_. 2003a. Reconnaissance survey for the BAX and AALFTR study areas at PTA between April and July 2002. January 13, 2003.
- \_\_\_\_\_. 2003b. Draft end of field letter for SBCT surveys of Pōhakuloa Training Area and Military Vehicle Trail. December 2003.
- Garcia and Associates. 2003. Reconnaissance survey for the BAX and AALFTR study areas at PTA between April and July 2002.

- Geotechnical and Structures Laboratory. 2002. *Hydrologic Investigation Workplan for Mākuā Military Reservation*. May 2002.
- Giambelluca, T. W., M. A. Nullet, and T. A. Schroeder. 1986. *Rainfall Atlas of Hawai‘i*. Report R76. Water Resources Research Center and Department of Meteorology, University of Hawai‘i at Mānoa. Hawai‘i State Department of Land and Natural Resources, Division of Water and Land Development, Honolulu.
- Gisiner, Robert C. 1998. *Proceedings from the Workshop on the Effects of Anthropogenic Noise in the Marine Environment*. Pp 1-111. February 10-12, 1998.
- Gon, Samuel M., Luciana Honigman, Daniel Zevin, Wendy Fulks, and David E. Reginald. 1993. *Vertebrate Inventory Surveys at Multipurpose Range Complex Pōhakuloa Training Area (PTA) Island Of Hawai‘i*. November 1, 1992.
- Gonzales, Ed. 2003. Gecko Enterprises. Personal communication with John Chung, Belt Collins Hawai‘i Ltd. March 18, 2003.
- Grey, Keith. 2003. US Army 30th Signal Battalion. Personal communication with John Chung, Belt Collins Hawai‘i Ltd. February 26, 2003.
- Griffin, A., and M. Yent. 1977. *Results and Recommendation of the Archaeological Survey in the Interim Development Portion of Mākuā Beach*. Internal letter report prepared by Division of State Parks, Hawai‘i State Department of Land and Natural Resources, on file at Hawai‘i State Historic Preservation Office, Kapolei.
- Halbig, J. B., W. M. Barnard, S. E. Johnston, R. A. Butts, and S. A. Bartlett. 1985. *A Baseline Study of Soil Geochemistry in Selected Areas on the Island of Hawai‘i*. State of Hawai‘i Department of Planning and Economic Development, Marine Mining Program.
- Hall, E. O. 1839. *Notes of a Tour Around O‘ahu, Read Before the Sandwich Island Institute, August 28, 1839*. The Hawaiian Spectator.
- Hall, R. B. 1973. *Report: Disposal of Hazardous Materials*. Letter to James Misajon, Director, Special Services, University of Hawai‘i. August 30, 1973.
- Halliburton NUS Corporation. 1994. *Mākuā Military Reservation Soil and Groundwater Analysis Report, Part I – Technical Evaluations*. US Army Support Command, Hawai‘i, Hazardous Waste Remedial Actions Program. March 1994.
- Hammatt, Hallett H., David Borthwick, and David W. Shideler. 1988. *Intensive Archaeological Survey of 12.4 Acres for Proposed Lalamilo Houselots, Unit 2: Lalamilo, South Kohala, Hawai‘i*. Cultural Surveys Hawai‘i, Kailua, Hawai‘i.

- Hammatt, Hallett H., and David W. Shideler. 1989. *Archaeological Investigations at the Ka La Loa Subdivision, Lalamilo, South Kohala, Hawai'i*. Prepared for Kohala Development, Inc. Cultural Surveys Hawai'i, Kailua, Hawai'i.
- Handy, E. S. C., E. G. Handy, and M. K. Pukui. 1972. *Native Planters in Old Hawai'i: Their Life, Lore, and Environment*. Bulletin No. 233. Bernice P. Bishop Museum Press, Honolulu.
- Haun, Alan E. 1986. Archaeological Survey and Testing at the Bobcat Trail Habitation Cave Site (50-10-30-5004), Pōhakuloa Training Area, Island of Hawai'i, Hawai'i. Prepared for the USACE, Honolulu District, Fort Shafter, Hawai'i by Paul H. Rosendahl, Inc.
- Hawai'i DOT (Hawai'i Department of Transportation). 2002. Air Traffic Statistics Calendar Year 2002. Airports Division. Internet Web site: <http://www.state.hi.us/dot/airports/publications.htm>. Accessed on August 14, 2002.
- \_\_\_\_\_. No date. Highway Division Planning Branch Traffic Data, 1981-2002. Mailed to Dowling Associates, Inc. on December 5, 2003 by Gail Okaneku.
- Hawaiian Electric Company. 2004. *HECO and Hawaii: A History Entwined – Post-war Boom*. Internet Web site: <http://www.heco.com/CDA/default/0,1999,TCID=0&LCID=0&CCID=2239&CTYP=ARTC,00.html>. Accessed on March 5, 2004.
- Hazlett, R. W., and D. W. Hyndman. 1996. *Roadside Geology of Hawai'i*. Mountain Press Publishing Company, Missoula, Montana.
- HCZMP (Hawai'i Coastal Zone Management Program). 1996. Hawai'i Coastal Nonpoint Pollution Control Program Management Plan. Internet Web site: <http://www.state.hi.us/dbedt/czm/6217.html>. Accessed on March 10, 2004.
- HDBEDT (Hawai'i Department of Business, Economic Development, and Tourism). 2001. Hawai'i's Expanding Tech Sector. Internet Web site: <http://www.hawaii.gov/dbedt/hets/index.html>. Updated May 2001. Accessed June 26, 2002.
- \_\_\_\_\_. 2003. *The State of Hawai'i Data Book 2001*. Internet Web site: <http://www.state.hi.us/dbedt>. Accessed February 25, 2003.
- HDLNR (Hawai'i Department of Land and Natural Resources). 1995. *Groundwater Hydrologic Units Map of Hawai'i*.
- HDOH (Hawai'i Department of Health). 1998a. *Clean Air Branch. Annual Summary, Hawai'i Air Quality Data 1997*. Honolulu, Hawai'i. Document downloaded from Hawai'i Department of Health, Clean Air Branch. Internet Web site: <http://www.hawaii.gov/doh/eh/cab/cabmaps/report.htm>. Accessed on July 1, 2002.

- \_\_\_\_\_. 1998b. The Hawai'i Unified Watershed Assessment. Clean Water Branch, Polluted Runoff Control Program. Internet Web site: <http://www.state.hi.us/dbedt/czm/UWAreport.htm>. Accessed on June 25, 2002.
- \_\_\_\_\_. 2000a. *Hawai'i 2000 Plan for Integrated Solid Waste Management*. Prepared by Hawai'i Department of Health, Office of Solid Waste Management. Internet Web site: <http://www.hawaii.gov/health/eh/shwb/sw/swmgmpln.pdf>. July 2000. Accessed on March 5, 2004.
- \_\_\_\_\_. 2000b. Hawai'i's Implementation Plan for Polluted Runoff Control. July 2000. Internet Web site: <http://www.state.hi.us/dbedt/czm/UWAreport.htm>. Accessed on March 5, 2004.
- \_\_\_\_\_. 2004. Final 2004 List of Impaired Waters in Hawai'i Prepared under the Clean Water Act 303(d). Hawaii Department of Health, Honolulu, Hawai'i.
- \_\_\_\_\_. HAR (Hawai'i Administrative Rules), Title 11, Chapter 46, Community Noise Control.
- \_\_\_\_\_. HAR, Title 11, Chapter 54, Water Quality Standards.
- \_\_\_\_\_. HAR, Title 11, Chapter 60.1, Air Pollution Control.
- Hefner, Milo. 2003. Director, Wai'anae Coast Comprehensive Health Center. Personal communication with John Chung, Belt Collins Hawai'i Ltd. February 5, 2003.
- Herman, L. M., C. S. Baker, P. H. Forestell, and R. C. Antinoja. 1980. *Right Whale, Balaena Glacialis, Sightings Near Hawai'i: A Clue to the Wintering Grounds?* Mar. Ecol. Prog. Ser. 2:271-275.
- HINHP (Hawai'i Natural Heritage Program). 1994b. *Biological Inventory and Management Assessment for the Schofield Barracks Training Area*. Hawai'i National Heritage Program, The Nature Conservancy of Hawai'i, Honolulu, Hawai'i. (Unpublished).
- \_\_\_\_\_. 1998. *Arthropod Survey at Pōhakuloa Training Area, Island of Hawai'i, Hawai'i*. Contract DAHC77-960C-0042. Prepared by The Nature Conservancy of Hawai'i, Honolulu in cooperation with Peter Oboyski, Entomological Consultant, for US Army Garrison, Hawai'i.
- \_\_\_\_\_. No date a. *Biological Inventory and Management Assessment for the Mākua Training Area*. Hawai'i National Heritage Program, The Nature Conservancy of Hawai'i, Honolulu, Hawai'i. Unpublished.

- \_\_\_\_\_. No date b. *Biological Inventory and Management Assessment for the Schofield Barracks Training Area*. Hawai'i National Heritage Program, The Nature Conservancy of Hawai'i, Honolulu, Hawai'i. Unpublished.
- \_\_\_\_\_. No date c. Database of Rare and Endangered Plants, Animals, and Natural Communities of the Island of Hawai'i and Island of O'ahu. Unpublished.
- Hoffman, Nancy. 2003. Biologist, USFWS O'ahu Refuge Complex, Hawai'i. Personal communication with Jeanette Weisman, Tetra Tech, Inc., regarding the Laysan albatross breeding season at Ka'ena Point NAR, O'ahu. March 11, 2003.
- Hommon, R. J. 1980. *An Intensive Cultural Survey of Ukanipō Heiau and Kahanahāiki Terrace, Kahanahāiki, Mākuā Military Reservation, O'ahu*. Report prepared by Hawai'i Marine Research, Honolulu for USACE Division, Pacific Ocean, Honolulu, on file at USACE, Pacific Ocean Division, Fort Shafter.
- Hommon, Robert J., and Hamilton M. Ahlo, Jr. 1983. *A Research Design for Archeological Studies at the Pōhakuloa Training Area, Island of Hawai'i*. Prepared for the USACE, Pacific Ocean Division, Fort Shafter, Hawai'i by Science Management Inc., Honolulu, Hawai'i.
- Honolulu Advertiser. 2002. *Marines Seek Approval To Train At Kualoa Ranch*. Saturday, October 19, 2002.
- Howarth, F.G., F.D. Stone, and Hawai'i Natural Heritage Program. 1996. *Biological Inventory of Caves and Lava Tubes within the Pohakuloa Training Area*. Final Draft Report. The Nature Conservancy, Honolulu, HI. 313 pp.
- HPower. 2003. *About HPower: Keeping O'ahu Clean & Beautiful by Recycling Waste Into Energy*. Internet Web site: <http://www.honoluluhpower.com>. Accessed on March 5, 2004.
- HQDA (Headquarters, Department of the Army). 1992. *Training Circular 25-8 Training Ranges*. February 1992.
- \_\_\_\_\_. 1994. *Field Manual 21-16, Unexploded Ordnance*. August 30, 1994.
- \_\_\_\_\_. 1999. Army Regulation 200-5 Environmental Quality Pest Management. October 29, 1999.
- \_\_\_\_\_. 2001. *Improved Conventional Munitions and Submunitions*. March 2, 2001.
- Hunt, C.D. 1996. Geohydrology of the Island of O'ahu, Hawai'i. USGS Professional Paper 1412B.

- Husemann, Tom. 2002. Range Manager, Mākua Military Reservation. Personal communication with Derek Holmgren, Tetra Tech, Inc. August 14, 2002.
- \_\_\_\_\_. 2003a. Range Manager, Mākua Military Reservation. Personal communication with John Chung, Belt Collins Hawai‘i Ltd. January 31, 2003.
- \_\_\_\_\_. 2003b. Range Manager, Mākua Military Reservation. Personal communication with John Chung, Belt Collins Hawai‘i Ltd. February 26, 2003.
- \_\_\_\_\_. 2003c. Range Manager, Mākua Military Reservation. Personal communication with Derek Holmgren, Tetra Tech, Inc. October 3, 2003.
- \_\_\_\_\_. 2003d. Range Manager, Mākua Military Reservation. Personal communication with Leslie Garlinghouse and Holly Prohaska, Tetra Tech, Inc. February 2003.
- HWRRS (Hawai‘i Water Resources Regional Study). 1975. *Study Element Report: Erosion and Sedimentation*. Honolulu, Hawai‘i.
- Illman, P. E. 1993. *The Pilot’s Air Traffic Control Handbook, 2nd Edition*. TAB Books. New York, New York.
- Institute of Transportation Engineers. 1991. *Traffic Access and Impact Studies for Site Development, A Recommended Practice*. Washington, DC, 1991, page 5.
- \_\_\_\_\_. 1998. *Trip Generation Handbook*. Washington, DC.
- Ishihara, Glenn. 2003. The Gas Company, / Citizens Energy Service, Map and Records. Personal communication with John Chung, Belt Collins Hawai‘i Ltd. February 4, 2003.
- Jefferson, Mr. 2004. US Army Hawai‘i, Division Transportation Office. Personal communication with Gary Floyd, Tetra Tech, Inc. March 2004.
- Jenkins, T. F. No date. Use of Snow-Covered Ranges to Estimate the Amounts of Residues Produced by High-Order Detonations. Poster presentation of research results. Internet Web site: [http://www.environmental.usace.army.mil/info/technical/chem/chemtrain/chemmeetings/chem-meet/Use\\_of\\_SnowCovered\\_Ranges\\_to\\_Estimate\\_the\\_Amounts\\_of\\_Residues\\_Produced\\_by\\_High-Order\\_Detonations\\_--\\_Tom\\_Jenkins.pdf](http://www.environmental.usace.army.mil/info/technical/chem/chemtrain/chemmeetings/chem-meet/Use_of_SnowCovered_Ranges_to_Estimate_the_Amounts_of_Residues_Produced_by_High-Order_Detonations_--_Tom_Jenkins.pdf) . Accessed on March 18, 2003.
- Jenkins, T. F., T. A. Ranney, M. E. Walsh, P. H. Miyares, A. D. Hewitt, and N. H. Collins. 2000. Evaluating the Use of Snow-Covered Ranges to Estimate the Explosives Residues that Result from Detonation of Army Munitions. USACE Cold Regions Research & Engineering Laboratory, CRREL Technical Report ERDC/CRREL TR-00-15. August 2000. Internet Web site: [http://www.crrel.usace.army.mil/techpub/CRREL\\_Reports/reports/TR00-15.pdf](http://www.crrel.usace.army.mil/techpub/CRREL_Reports/reports/TR00-15.pdf). Accessed on July 2, 2003.

- Jenkins, T. F., M. E. Walsh, P. G. Thorne, P. H. Miyares, T. A. Ranney, C. L. Grant, and J. R. Esparza. 1998. *Site Characterization for Explosives Contamination at a Military Firing Range Impact Area*. USACE Cold Regions Research & Engineering Laboratory, CRREL Special Report 98-9. August 1998.
- JMPR (Joint Management Plan Review). 2003. National Marine Sanctuary Program, Cordell Bank, Gulf of the Farallones and Monterey Bay Sanctuaries Home Page. Monterey Bay Issue Name: Wildlife Disturbance – Marine Mammals, Seabirds and Turtles. Internet Web site: [http://www.sanctuaries.nos.noaa.gov/jointplan/mb\\_mammals.html#description](http://www.sanctuaries.nos.noaa.gov/jointplan/mb_mammals.html#description). Accessed on April 22, 2003.
- Johnson, C. S. 1967. Sound detection thresholds in marine mammals, in *Marine Bio-Acoustics*, edited by W. N. Tavolga. Pergamon, New York, Vol. 2, pp. 247–260.
- Judd, G. S. 1932. *Botanical Bonanzas*. Hawaiian Annual for the Year 1932: 61-69.
- Juvik, Sonia P., and James O. Juvik. (eds). 1998. *Atlas of Hawai‘i*, Third Edition. 1998. Department of Geography, University of Hawai‘i at Hilo. University of Hawai‘i Press. Honolulu, Hawai‘i.
- Kalima, Lehau, and Paul H. Rosendahl. 1991. Supplemental Environmental Report Archaeological Survey of 138 Transmission Line No.2, Districts of North and South Hilo, HaMākua, and South Kohala, Island of Hawai‘i. Prepared for CH2M Hill, Hilo, Hawai‘i by Paul H. Rosendahl, Ph.D., Inc.
- Kamakau, Samuel M. 1961. *Ruling Chiefs of Hawai‘i*. Kamehameha Schools Press, Honolulu, Hawai‘i.
- \_\_\_\_\_. 1964. *Ka Po‘e Kahiko: The people of Old*. Bernice P. Bishop Museum Special Publication, 51. Bishop Museum Press, Honolulu, Hawai‘i.
- \_\_\_\_\_. 1992. *Ruling Chiefs of Hawai‘i*. Kamehameha Schools Press, Honolulu.
- Kastelein, R. A., M. Hagedoorn, W. W. L. Au, and D. de Haan. 2003. Audiogram of a striped dolphin (*Stenella coeruleoalba*). 1130 J. Acoust. Soc. Am. 113 (2).
- Kelly, M., and S. M. Quintal. 1977. *Cultural History Report of Mākua Military Reservation and Vicinity, Mākua Valley, O‘ahu, Hawai‘i*. Prepared for Department of the Army, US Army Engineer Division, Fort Shafter, Hawai‘i. By Department of Anthropology, Bernice P. Bishop Museum, Honolulu, Hawai‘i. May 1977.
- Kennedy, Randy. 2003. State Native Resources Program Manager, Department of Land and Natural Resources, State of Hawai‘i. Personal Communication with Edward Yates, Tetra Tech, Inc. June 12, 2003.

- Kim, Steve. 2003. Personal communication with Leslie Garlinghouse, Tetra Tech, Inc. April 2003.
- Kubota, Gary. 1998. Maui officials ask for help saving fallen birds. Honolulu Star-Bulletin, October 19, 1998. Internet Web site: <http://starbulletin.com/98/10/19/news/story4.html>. Accessed on June 25, 2003.
- Kuykendall, R. S. 1968. *The Hawaiian Kingdom 1778-1854: Foundation and Transformation*. University of Hawai'i Press, Honolulu.
- Labak, Stanley. 2003. Marine Acoustics, Inc. Personal communication with Ann Zoidis, Tetra Tech, Inc. June 18, 2003.
- \_\_\_\_\_. 2004. Marine Acoustics, Inc. Personal communication with Ann Zoidis, Tetra Tech, Inc. January 30, 2004.
- Lai, Steve. 2002. US Army, 25th ID(L) and USARHAW. Personal communication with Jennifer Saufler, Tetra Tech, Inc. September 12, 2002.
- Lammers, M. O., W. W. L. Au, and D. Feinholz. 2000. The Occurrence and Distribution of Marine Mammals along O'ahu's Ewa/ Honolulu Coast: A study to Assess Potential Interactions Between High-speed Ferry Traffic and Local Populations. MMRP/HIMB Technical Report 20001. Prepared for Pacific Marine & Supply Co., Ltd. July 17, 2000.
- Lammers, M. O. 2003a. *The behavior and broadband acoustic signaling of Hawaiian spinner dolphins* (*Stenella longirostris*). Doctoral dissertation. University of Hawai'i.
- \_\_\_\_\_. 2003b. Letter to Gary Floyd, Tetra Tech, Inc., regarding potential effects of live-fire training exercises in Mākua Valley on resident spinner dolphins. November 25, 2003.
- Lancott, Ed. 2005. US Army DPW, Real Property Planning Branch. Personal communication with Dawn A. Lleces, Tetra Tech Inc. February 10, 2005.
- Lanctot, G. 2003. US Army, DPW. Personal communication with Edward Yates, Tetra Tech, Inc. May 2003.
- Langenheim, V. A. M., and D. A. Clague. 1987. *The Hawaiian-Emperor Volcanic Chain, Part II, Stratigraphic Framework of Volcanic Rocks of the Hawaiian Islands*, Chapter 1 of R. W. Decker, T. L. Wright, and P. H. Stauffer (eds). *Volcanism in Hawai'i*. USGS Professional Paper 1350, Vol. 1, pp. 55-84.
- Langlas, C. Wolforth, T. J. Head, and P. Jensen. 1997. *Archaeological Inventory Survey and Historic and Traditional Cultural Assessment for the Hawai'i Defense Access Road A-AD-6(1) and Saddle Road (SR 200) Project*. Prepared for Rust Environmental & Infrastructure, Inc. (RUST). Paul H Rosendahl, Ph.D., Inc., Hilo, Hawai'i.

- Lau, L. S. 1983. *Hawai'i In Ground Water in the Pacific Region*. Natural Resources/Water Series No. 12, pp. 81-96, United Nations, New York.
- Leatherwood, S., F. T. Awbrey, and J. A. Thomas. 1982. *Minke Whale Response to a Transiting Survey Vessel*. Rep. Int. Whal. Comm. 32:795-802, as cited in Richardson et al. 1995.
- Leatherwood, S., R. R. Reeves, W. F. Perrin, and W. E. Evans. 1982. *Whales, Dolphins and Porpoises of the Eastern North Pacific and Adjacent Arctic Waters: A Guide to their Identification*. NOAA Technical Report. NMFS 444.
- Lee, Leland. 2003. Sanitary Engineer, Belt Collins Hawai'i Ltd. Personal communication with John Chung, Belt Collins Hawai'i Ltd. March 19, 2003.
- Lehman, Deputy G4 Major Robert. 2004. US Army Hawai'i, Division Transportation Office. Personal communication with Gary Floyd, Tetra Tech, Inc. February, March 2004.
- Liesemeyer, Brent. 2003. Department of Land and Natural Resources Natural Area Reserve System Coordinator. Personal Communication with Jen Saufler, Tetra Tech, Inc. May, June 2003.
- Ljungblad, D.K., S.E. Moore, D.R. Van Schoik and C.S. Winchell. 1982a. *Aerial Surveys of Endangered Whales in the Beaufort, Chukchi, and Northern Bering Seas*. NOSC TD 486. US Naval Ocean Systems Cent., San Diego, CA. 406 p. NTIS AD-A126542/0, as cited in Richardson et al. 1995.
- Lowe, Aaron. 2003. Department of Land and Natural Resources Trails and Access Specialist. Personal communication with Jen Saufler, Tetra Tech, Inc. May, June, July 2003.
- Lundquist, Sergeant Major. 2004. US Army Hawai'i, Division Transportation Office. Personal communication with Gary Floyd, Tetra Tech, Inc. January, February, March 2004.
- MacArthur, R. A., V. Geist and R. H. Johnston. 1982. *Cardiac and Behavioral Responses of Mountain Sheep to Human Disturbance*. J. Wildl. Manage. 46 (2): 351-358.
- Malo, D. 1951. *Hawaiian Antiquities (Mo'olelo Hawai'i)*. Translated by N.B. Emerson. Special Publication No. 2. Bernice P. Bishop Museum Press, Honolulu.
- Maly, Kepâ. 1999. Mauna Kea Science Reserve and Hale Pôhaku Complex: Oral History and Consultation Study, and Archival Literature Research, Ahupua'a of Ka'ohé (Hâmâkua District) and Humu'ula (Hilo District), Island of Hawai'i. Prepared for Group 70 International. Kumu Pono Associates, Hilo, Hawai'i.

- Marine Acoustics, Inc. 2005. *Acoustic Analysis of Potential Impacts from Covering Live-fire Training and Combined Arms Live-fire Exercises (CALFEX) at the Mākua Military Reservation (MMR)*. Prepared by Marine Acoustics, Inc., Middletown, Rhode Island. February 23, 2005.
- Masaki, Y. 1977. *The Separation of the Stock Units of Sei Whales in the North Pacific*. Rep. Int. Whaling Comm. Special Issue 1:71-77.
- McAllister, J.G. 1933. *Archaeology of O‘ahu*. Bulletin No. 104. Bernice P. Bishop Museum Press, Honolulu.
- McDonald, M.A. and C.G. Fox. 1999. *Passive Acoustic Estimates Applied to Fin Whale Population Density Estimation*. J. Acoust. Soc. Am. 105:2643-2651.
- McEldowney, Holly. 1982. Report 1. Ethnographic Background of the Mauna Kea Summit Region. In Cultural Resources Reconnaissance of the Mauna Kea Summit Region by H. McEldowney and P. McCoy. Report prepared for Group 70, Honolulu, Hawai‘i. Prepared by the Department of Anthropology, Bernice P. Bishop Museum, Honolulu, Hawai‘i.
- McGrath, E.J., K.M. Brewer, and R. Krauss. 1973. *Historic Wai‘anae: A Place of Kings*. Island Heritage, Norfolk Island, Australia.
- McGregor, Daviana. 1998. *The Native Hawaiian Landscape, in Preserving Hawai‘i's traditional Landscapes*, Conference Proceedings, September 15-17, 1995, William Chapman and Chris Kirk-Kuwaya, (eds.), Historic Preservation Program, Department of American Studies, University of Hawai‘i at Mānoa, Honolulu, Hawai‘i. June 1998.
- Menard, Theresa. 2003. Hawaiian hoary Bat specialist, Menard Biological Consulting. Personal communication with Jeanette Weisman, Tetra Tech, Inc. July 2003.
- Mink, J.F., and L.S. Lau. 1990. *Aquifer Identification and Classification for the Island of O‘ahu: Groundwater Protection Strategy for Hawai‘i*. Water Resources Research Center, Technical Report No. 191. Revised February 1990. University of Hawai‘i at Mānoa, Honolulu, Hawai‘i.
- \_\_\_\_\_. 1993. *Aquifer Identification and Classification for the Island of Hawai‘i: Groundwater Protection Strategy for Hawai‘i*. Water Resources Research Center, Technical Report No. 191. University of Hawai‘i at Mānoa, Honolulu, Hawai‘i. May 1993.
- MIT (Mākua Implementation Team), Wil Chee-Planning, Inc., and Hawai‘i Natural Heritage Program. 2003. *Implementation Plan, Mākua Military Reservation, Island of O‘ahu*. Sections 1-3 and Appendices. May 2003.

- Miura, Beth. 2002. US Corps of Engineers, Honolulu District. Personal communication with Jennifer Saufler, Tetra Tech, Inc. September - October 2002.
- Mizroch, S.A., D. W. Rice and J.W. Breiwick. 1984. *The Sei Whale, Balaenoptera boreali*. Mar. Fish. Rev. 46:25-29.
- MMPA Bulletin. 1999. *Harassment of Hawaiian Spinner Dolphins by the General Public*. 4th Quarter 1999. Issue No. 17. Authors: Ania Driscoll-Lind and Jan Östman-Lind. Internet Web site accessed April 21, 2003. Available at: [http://www.nmfs.noaa.gov/prot\\_res/readingrm/MMBulletin/4th\\_quarter\\_1999.pdf](http://www.nmfs.noaa.gov/prot_res/readingrm/MMBulletin/4th_quarter_1999.pdf)
- Mobley, Jr., J.R., 2001b. Results of 2001 Aerial Surveys of Humpback Whales North of Kauai. Annual Report Submitted to: North Pacific Acoustic Laboratory (NPAL) Program Author: Joseph R. Mobley, Jr., Ph.D. of Marine Mammal Research Consultants. June 26, 2001.
- Mobley, Jr., J.R., M. Smultea. T. Norris, and D. Weller. 1996. *Fin Whale Sighting North of Kaua'i, Hawai'i*. Pacific Science. 50:230-233.
- Mobley, Jr., J.R., S.S. Spitz, K.A. Forney, R.A. Grotefendt, and P.H. Forestell. 2000. *Distribution and Abundance of Odontocete Species in Hawaiian Waters: Preliminary Results of 1993-98 Aerial Surveys*. Admin Report LJ.-99-XXC Southwest Fisheries Science Center. National Marine Fisheries Service. La Jolla, California. 26 pp.
- Mobley, Jr., J.R., S.S. Spitz, Grotefendt, R.A. 2001a. Abundance of Humpback Whales in Hawaiian Waters; Results of 1993-2000 Aerial Surveys. Prepared for the Hawaiian Islands Humpback Whale National Marine Sanctuary and the State of Hawai'i Department of Land and Natural Resources. September 2001. [http://hawaiihumpbackwhale.noaa.gov/research/HHWNMS\\_Research\\_Mobley.pdf](http://hawaiihumpbackwhale.noaa.gov/research/HHWNMS_Research_Mobley.pdf).
- Moniz-Nakamura, Jadelyn J. 1999. Annual Report: Cultural Resources Management Projects Performed Under the Ecosystems Management Program at the Pōhakuloa Training Area, Island of Hawai'i, Hawai'i. Prepared for the US Army Garrison, Hawai'i, US Army Corps of Engineers, Honolulu District by the Cultural Resource Specialist, Pōhakuloa Training Area, Hawai'i.
- Moreno, Joseph. 2002. Installation Safety Officer, Schofield Barracks Military Reservation. Personal communication with Derek Holmgren, Tetra Tech, Inc. November 7, 2002.
- Morrow, J.W. 2007. Pōhakuloa Training Area (PTA) Air Monitoring Project. Unpublished Preliminary Report. J.W. Morrow, Honolulu, Hawai'i. 6 pages.

- Mullin, K., W. Hoggard, C. Roden, R. Lohofener, C. Rogers and B. Taggert. 1991. *Cetaceans on the Upper Continental Slope in the North-Central Gulf of Mexico*. OCS Study MMS 91-0027. Rep. from US NMFS, Pascagoula, Mississippi, for US Minerals Management Service, New Orleans, Louisiana. 108 pp. (not seen)
- Nachtigall, P. E., Lemonds, D. W., and Roitblat, H. L. 2000. Psychoacoustic Studies of Whale and Dolphin Hearing. In: AU, W.W. L., Popper, A. N. and Fay, R. J. (Eds). *Hearing by Whales and Dolphins*, Springer Verlag, New York. pp. 330-364.
- Nachtigall, P. E., Pawlowski, J. L., and Au W. W. L. Temporary threshold shifts and recovery following noise exposure in the Atlantic Bottlenosed dolphin (*Tursiops truncatus*). Submitted – *Journal of the Acoustical Society of America*. (in press)
- Nachtigall, P. E., Supin, A., Pawloski, J. L., and Au, W. W. L. 2001. Measuring recovery from temporary threshold shifts with evoked auditory potentials in the bottlenosed dolphin *Tursiops truncates*. *J. Acoust. Soc. Am.* 110, 2749.
- NACO (National Aeronautic Charting Office). 2002. *Hawaiian Islands Sectional Aeronautical Chart*. National Aeronautical Charting Office, Federal Aviation Administration, US Department of Transportation, Washington, DC. October 31, 2002.
- Nakata Planning Group, LLC. 2002a. *Final Submittal Range and Training Land Program Land Use Requirement Study*. Prepared for the USARHAW (US Army Hawai‘i) and 25th ID (L) (25th Infantry Division Light). May 2002.
- \_\_\_\_\_. 2002b. *Final Submittal Range and Training Land Program Development Plan*. Prepared for the USARHAW (US Army Hawai‘i) and 25th ID(L) (25th Infantry Division (Light)). July 2002.
- National Park Service. 1994. Report to Congress on Effects of Aircraft Overflights on the National Park System. National Park Service, Washington, DC.
- \_\_\_\_\_. 2004. Pu‘u Koholaā Heiau. Internet Web site: <http://www.nps.gov/puhe/>. Accessed on March 18, 2004.
- National Research Council of the National Academies. 2003. *Ocean Noise and Marine Mammals*. National Academies Press, Washington, DC.
- Nature Sounds Society. 2001. *Effects of Noise on Wildlife*. Internet Web site: <http://www.naturesounds.org/conservENW.html>. Accessed on September 25, 2001.
- NatureServe. 2001. NatureServe Explorer: An online encyclopedia of life [web application]. Version 1.6. Arlington Virginia, USA: NatureServe. Internet Web site: <http://www.natureserve.org/explorer>. Accessed on June 17, 2002.

- \_\_\_\_\_. 2002. NatureServe Explorer: An online encyclopedia of life [web application]. 2002. Version 1.6 . Arlington, Virginia, USA: NatureServe. Internet Web site: <http://www.natureserve.org/explorer>. Accessed on February 25, 2003.
- NCES (National Center for Education). 2002. Common Core of Data (CCD) Public School District Information for the 2000-2001 School Year. Internet Web site: <http://nces.ed.gov/ccd>. Accessed on February 10, 2003.
- Nichols, W. D., P. J. Shade, and C. D. Hunt, Jr. 1996. Summary of the O‘ahu, Hawai‘i, Regional Aquifer-System Analysis. US Geological Survey Professional Paper 1412-A.
- NIEHS (National Institute of Environmental Health Sciences). 2002. Executive Summary. Internet Web site: [http://www.niehs.nih.gov/emfrapid/html/EMF\\_DIR\\_RPT/Exsu18fT.htm](http://www.niehs.nih.gov/emfrapid/html/EMF_DIR_RPT/Exsu18fT.htm). Accessed on October 30, 2002.
- NOAA Fisheries (National Marine Fisheries Service). 1997. *NOAA Fisheries Strategic Management Plan*. US Department of Commerce, National Oceanic and Atmospheric Administration. May 1997. Internet Web site: <http://www.nmfs.noaa.gov/om2/download.html>. Accessed on January 5, 2004.
- \_\_\_\_\_. 2000a. Office of Protected Resources. Endangered Species Program. Cetacean Stock Assessment Program. Humpback Whale. Internet Web site: [http://www.nmfs.noaa.gov/prot\\_res/PR2/Stock\\_Assessment\\_Program/Cetaceans/Humpback\\_Whale\\_\(Western\\_N.\\_Pacifc\)/AK00humpbackwhale\\_WesternN.Pacific.pdf](http://www.nmfs.noaa.gov/prot_res/PR2/Stock_Assessment_Program/Cetaceans/Humpback_Whale_(Western_N._Pacifc)/AK00humpbackwhale_WesternN.Pacific.pdf). Accessed on July 5, 2002.
- \_\_\_\_\_. 2000b. Office of Protected Resources. Endangered Species Program. Cetacean Stock Assessment Program. Fin Whale. Internet Web site: [http://www.nmfs.noaa.gov/prot\\_res/PR2/Stock\\_Assessment\\_Program/Cetaceans/Fin\\_Whale\\_\(Hawaii\)/PO00finwhale\\_hawaii.pdf](http://www.nmfs.noaa.gov/prot_res/PR2/Stock_Assessment_Program/Cetaceans/Fin_Whale_(Hawaii)/PO00finwhale_hawaii.pdf). Accessed on July 8, 2002.
- \_\_\_\_\_. 2000c. Office of Protected Resources. Endangered Species Program. Cetacean Stock Assessment Program. Blue Whale. Internet Web site: [http://www.nmfs.noaa.gov/prot\\_res/PR2/Stock\\_Assessment\\_Program/Cetaceans/Blue\\_Whale\\_\(Hawaii\)/PO00bluewhale\\_hawaii.pdf](http://www.nmfs.noaa.gov/prot_res/PR2/Stock_Assessment_Program/Cetaceans/Blue_Whale_(Hawaii)/PO00bluewhale_hawaii.pdf). Accessed on July 8, 2002.
- \_\_\_\_\_. 2000d. Office of Protected Resources. Endangered Species Program. Cetacean Stock Assessment Program. Sei Whale. Internet Web site: [http://www.nmfs.noaa.gov/prot\\_res/PR2/Stock\\_Assessment\\_Program/Cetaceans/Sei\\_Whale\\_\(ENP\)/PO00seiwhale\\_ENP.pdf](http://www.nmfs.noaa.gov/prot_res/PR2/Stock_Assessment_Program/Cetaceans/Sei_Whale_(ENP)/PO00seiwhale_ENP.pdf). Accessed on July 8, 2002.
- \_\_\_\_\_. 2000e. Office of Protected Resources. Endangered Species Program. Cetacean Stock Assessment Program. Northern Right Whale. Internet Web site: [http://www.nmfs.noaa.gov/prot\\_res/PR2/Stock\\_Assessment\\_Program/Cetaceans/Northern\\_Right\\_Whale\\_\(Eastern\\_N.\\_Pacific\)/AK00northernrightwhale\\_easternNpacific.pdf](http://www.nmfs.noaa.gov/prot_res/PR2/Stock_Assessment_Program/Cetaceans/Northern_Right_Whale_(Eastern_N._Pacific)/AK00northernrightwhale_easternNpacific.pdf). Accessed on July 9, 2002.

- \_\_\_\_\_. 2000f. Office of Protected Resources. Endangered Species Program. Cetacean Stock Assessment Program. Bryde's Whale. Internet Web site: [http://www.nmfs.noaa.gov/prot\\_res/PR2/Stock\\_Assessment\\_Program/Cetaceans/Bryde's\\_Whale\\_\(Hawaii\)/PO00brydeswhale\\_hawaii.pdf](http://www.nmfs.noaa.gov/prot_res/PR2/Stock_Assessment_Program/Cetaceans/Bryde's_Whale_(Hawaii)/PO00brydeswhale_hawaii.pdf). Accessed on July 10, 2002.
- \_\_\_\_\_. 2000g. Office of Protected Resources. Endangered Species Program. Cetacean Stock Assessment Program. Pygmy sperm Whale. Internet Web site: [http://www.nmfs.noaa.gov/prot\\_res/PR2/Stock\\_Assessment\\_Program/Cetaceans/Pygmy\\_Sperm\\_Whale\\_\(Hawaii\)/PO00pygmyspermwhale\\_hawaii.pdf](http://www.nmfs.noaa.gov/prot_res/PR2/Stock_Assessment_Program/Cetaceans/Pygmy_Sperm_Whale_(Hawaii)/PO00pygmyspermwhale_hawaii.pdf). Accessed on July 10, 2002.
- \_\_\_\_\_. 2000h. Office of Protected Resources. Endangered Species Program. Cetacean Stock Assessment Program. Dwarf sperm Whale. Internet Web site: [http://www.nmfs.noaa.gov/prot\\_res/PR2/Stock\\_Assessment\\_Program/Cetaceans/Dwarf\\_Sperm\\_Whale\\_\(Hawaii\)/PO00dwarfspermwhale\\_hawaii.pdf](http://www.nmfs.noaa.gov/prot_res/PR2/Stock_Assessment_Program/Cetaceans/Dwarf_Sperm_Whale_(Hawaii)/PO00dwarfspermwhale_hawaii.pdf). Accessed on July 10, 2002.
- NOAA Fisheries (National Marine Fisheries Service). 2000i. Office of Protected Resources. Endangered Species Program. Cetacean Stock Assessment Program. Killer Whale. Internet Web site: [http://www.nmfs.noaa.gov/prot\\_res/PR2/Stock\\_Assessment\\_Program/Cetaceans/Killer\\_Whale\\_\(Hawaii\)/PO00killerwhale\\_hawaii.pdf](http://www.nmfs.noaa.gov/prot_res/PR2/Stock_Assessment_Program/Cetaceans/Killer_Whale_(Hawaii)/PO00killerwhale_hawaii.pdf). Accessed on July 11, 2002.
- \_\_\_\_\_. 2000j. Office of Protected Resources. Endangered Species Program. Cetacean Stock Assessment Program. False Killer Whale. Internet Web site: [http://www.nmfs.noaa.gov/prot\\_res/PR2/Stock\\_Assessment\\_Program/Cetaceans/False\\_Killer\\_Whale\\_\(Hawaii\)/PO01falsekillerwhale\\_hawaii.pdf](http://www.nmfs.noaa.gov/prot_res/PR2/Stock_Assessment_Program/Cetaceans/False_Killer_Whale_(Hawaii)/PO01falsekillerwhale_hawaii.pdf). Accessed on July 12, 2002.
- \_\_\_\_\_. 2000k. Office of Protected Resources. Endangered Species Program. Cetacean Stock Assessment Program. Pygmy Killer Whale. Internet Web site: [http://www.nmfs.noaa.gov/prot\\_res/PR2/Stock\\_Assessment\\_Program/Cetaceans/Pygmy\\_Killer\\_Whale\\_\(Hawaii\)/PO00pygmykillerwhale\\_hawaii.pdf](http://www.nmfs.noaa.gov/prot_res/PR2/Stock_Assessment_Program/Cetaceans/Pygmy_Killer_Whale_(Hawaii)/PO00pygmykillerwhale_hawaii.pdf). Accessed on July 12, 2002.
- \_\_\_\_\_. 2000l. Office of Protected Resources. Endangered Species Program. Cetacean Stock Assessment Program. Pilot Whale. Internet Web site: [http://www.nmfs.noaa.gov/prot\\_res/PR2/Stock\\_Assessment\\_Program/Cetaceans/Short-Finned\\_Pilot\\_Whale\\_\(Hawaii\)/PO00short-finnedpilotwhale\\_hawaii.pdf](http://www.nmfs.noaa.gov/prot_res/PR2/Stock_Assessment_Program/Cetaceans/Short-Finned_Pilot_Whale_(Hawaii)/PO00short-finnedpilotwhale_hawaii.pdf). Accessed on July 9, 2002.
- \_\_\_\_\_. 2000m. Office of Protected Resources. Endangered Species Program. Cetacean Stock Assessment Program. Cuvier's Beaked Whale. Internet Web site: [http://www.nmfs.noaa.gov/prot\\_res/PR2/Stock\\_Assessment\\_Program/Cetaceans/Cuvier's\\_Beaked\\_Whale\\_\(Hawaii\)/PO00cuviersbeakedwhale\\_hawaii.pdf](http://www.nmfs.noaa.gov/prot_res/PR2/Stock_Assessment_Program/Cetaceans/Cuvier's_Beaked_Whale_(Hawaii)/PO00cuviersbeakedwhale_hawaii.pdf). Accessed on July 10, 2002.

- \_\_\_\_\_. 2000n. Office of Protected Resources. Endangered Species Program. Cetacean Stock Assessment Program. Blainsville's Beaked Whale. Internet Web site: [http://www.nmfs.noaa.gov/prot\\_res/PR2/Stock\\_Assessment\\_Program/Cetaceans/Blainsville's\\_Beaked\\_Whale\\_\(Hawaii\)/PO00blainvillesbeakedwhale\\_hawaii.pdf](http://www.nmfs.noaa.gov/prot_res/PR2/Stock_Assessment_Program/Cetaceans/Blainsville's_Beaked_Whale_(Hawaii)/PO00blainvillesbeakedwhale_hawaii.pdf). Accessed on July 10, 2002.
- \_\_\_\_\_. 2000o. Office of Protected Resources. Endangered Species Program. Cetacean Stock Assessment Program. Melon Headed Whale. Internet Web site: [http://www.nmfs.noaa.gov/prot\\_res/PR2/Stock\\_Assessment\\_Program/Cetaceans/Melon-Headed\\_Whale\\_\(Hawaii\)/PO00melonheadedwhale\\_hawaii.pdf](http://www.nmfs.noaa.gov/prot_res/PR2/Stock_Assessment_Program/Cetaceans/Melon-Headed_Whale_(Hawaii)/PO00melonheadedwhale_hawaii.pdf). Accessed on July 9, 2002.
- \_\_\_\_\_. 2000p. Office of Protected Resources. Endangered Species Program. Cetacean Stock Assessment Program. Bottlenose Dolphin. Internet Web site: [http://www.nmfs.noaa.gov/prot\\_res/PR2/Stock\\_Assessment\\_Program/Cetaceans/Bottlenose\\_Dolphin\\_\(Hawaii\)/PO00bottlnosedolphin\\_hawaii.pdf](http://www.nmfs.noaa.gov/prot_res/PR2/Stock_Assessment_Program/Cetaceans/Bottlenose_Dolphin_(Hawaii)/PO00bottlnosedolphin_hawaii.pdf). Accessed on July 12, 2002.
- NOAA Fisheries (National Marine Fisheries Service). 2000q. Office of Protected Resources. Endangered Species Program. Cetacean Stock Assessment Program. Spinner Dolphin. Internet Web site: [http://www.nmfs.noaa.gov/prot\\_res/PR2/Stock\\_Assessment\\_Program/Cetaceans/Spinner\\_Dolphin\\_\(Hawaii\)/PO00spinnerdolphin\\_hawaii.pdf](http://www.nmfs.noaa.gov/prot_res/PR2/Stock_Assessment_Program/Cetaceans/Spinner_Dolphin_(Hawaii)/PO00spinnerdolphin_hawaii.pdf). Accessed on July 12, 2002.
- \_\_\_\_\_. 2000r. Office of Protected Resources. Endangered Species Program. Cetacean Stock Assessment Program. Rough-toothed Dolphin. Internet Web site: [http://www.nmfs.noaa.gov/prot\\_res/PR2/Stock\\_Assessment\\_Program/Cetaceans/Rough\\_Tooth\\_Dolphin\\_\(Hawaii\)/PO00rough-tootheddolphin\\_hawaii.pdf](http://www.nmfs.noaa.gov/prot_res/PR2/Stock_Assessment_Program/Cetaceans/Rough_Tooth_Dolphin_(Hawaii)/PO00rough-tootheddolphin_hawaii.pdf). Accessed on July 12, 2002.
- \_\_\_\_\_. 2000s. Office of Protected Resources. Endangered Species Program. Cetacean Stock Assessment Program. Spotted Dolphin. Internet Web site: [http://www.nmfs.noaa.gov/prot\\_res/PR2/Stock\\_Assessment\\_Program/Cetaceans/Pantropical\\_Spotted\\_Dolphin/PO00pantropicalspotteddolphin\\_hawaii.pdf](http://www.nmfs.noaa.gov/prot_res/PR2/Stock_Assessment_Program/Cetaceans/Pantropical_Spotted_Dolphin/PO00pantropicalspotteddolphin_hawaii.pdf). Accessed on July 12, 2002.
- \_\_\_\_\_. 2000t. Office of Protected Resources. Endangered Species Program. Cetacean Stock Assessment Program. Striped Dolphin. Internet Web site: [http://www.nmfs.noaa.gov/prot\\_res/PR2/Stock\\_Assessment\\_Program/Cetaceans/Striped\\_Dolphin\\_\(Hawaii\)/PO00stripeddolphin\\_hawaii.pdf](http://www.nmfs.noaa.gov/prot_res/PR2/Stock_Assessment_Program/Cetaceans/Striped_Dolphin_(Hawaii)/PO00stripeddolphin_hawaii.pdf). Accessed on July 12, 2002.
- \_\_\_\_\_. 2000u. Office of Protected Resources. Endangered Species Program. Cetacean Stock Assessment Program. Risso's Dolphin. Internet Web site: [http://www.nmfs.noaa.gov/prot\\_res/PR2/Stock\\_Assessment\\_Program/Cetaceans/Risso's\\_Dolphin\\_%20\(Hawaii\)/PO00rissodolphin\\_hawaii.pdf](http://www.nmfs.noaa.gov/prot_res/PR2/Stock_Assessment_Program/Cetaceans/Risso's_Dolphin_%20(Hawaii)/PO00rissodolphin_hawaii.pdf). Accessed on July 12, 2002.

- \_\_\_\_\_. 2000v. Office of Protected Resources. Endangered Species Program. Cetacean Stock Assessment Program. Sperm Whale. Internet Web site: [http://www.nmfs.noaa.gov/prot\\_res/PR2/Stock\\_Assessment\\_Program/Cetaceans/Sperm\\_Whale\\_\(Hawaii\)/PO00spermwhale\\_hawaii.pdf](http://www.nmfs.noaa.gov/prot_res/PR2/Stock_Assessment_Program/Cetaceans/Sperm_Whale_(Hawaii)/PO00spermwhale_hawaii.pdf). Accessed on July 9, 2002.
- \_\_\_\_\_. 2000w. Office of Protected Resources. Endangered Species Program. Pinniped Stock Assessment Program. Hawaiian Monk Seal. Internet Web site: [http://www.nmfs.noaa.gov/prot\\_res/PR2/Stock\\_Assessment\\_Program/Pinnipeds/Hawaiian\\_Monk\\_Seal/PO01hawaiianmonkseal\\_hawaii.pdf](http://www.nmfs.noaa.gov/prot_res/PR2/Stock_Assessment_Program/Pinnipeds/Hawaiian_Monk_Seal/PO01hawaiianmonkseal_hawaii.pdf). Accessed on July 11, 2002.
- \_\_\_\_\_. 2000x. Office of Protected Resources. Endangered Species Program. Sea Turtles. Green Sea Turtle. Internet Web site: [http://www.nmfs.noaa.gov/prot\\_res/species/turtles/green.html](http://www.nmfs.noaa.gov/prot_res/species/turtles/green.html). Accessed on October 22, 2003.
- \_\_\_\_\_. 2000y. Office of Protected Resources. Endangered Species Program. Sea Turtles. Hawksbill Sea Turtle. Internet Web site: [http://www.nmfs.noaa.gov/prot\\_res/species/turtles/hawksbill.html](http://www.nmfs.noaa.gov/prot_res/species/turtles/hawksbill.html). Accessed on October 22, 2003.
- NOAA Fisheries (National Marine Fisheries Service). 2000z. Office of Protected Resources. Endangered Species Program. Sea Turtles. Leatherback Sea Turtle. Internet Web site: [http://www.nmfs.noaa.gov/prot\\_res/species/turtles/leatherback.html](http://www.nmfs.noaa.gov/prot_res/species/turtles/leatherback.html). Accessed on October 22, 2003.
- \_\_\_\_\_. 2000aa. Office of Protected Resources. Endangered Species Program. Sea Turtles. Olive Ridley Sea Turtle. Internet Web site: [http://www.nmfs.noaa.gov/prot\\_res/species/turtles/olive.html](http://www.nmfs.noaa.gov/prot_res/species/turtles/olive.html). Accessed on October 22, 2003.
- \_\_\_\_\_. 2000bb. Office of Protected Resources. Endangered Species Program. Sea Turtles. Loggerhead Sea Turtle. Internet Web site: [http://www.nmfs.noaa.gov/prot\\_res/species/turtles/loggerhead.html](http://www.nmfs.noaa.gov/prot_res/species/turtles/loggerhead.html). Accessed on October 22, 2003.
- \_\_\_\_\_. 2006. NOAA Fisheries NLAA Section 7 letter from William L. Robinson, NOAA Fisheries Regional Administrator, to Colonel Howard J. Killian, Commander US Army Garrison. October 13, 2006.
- NOAA (National Weather Service Forecast Office). 2009. December 2008 Precipitation Summary. Internet Web Site: <http://www.prh.noaa.gov/hnl/hydro/pages/dec08sum.php>
- Norris, K. S. 1991. *Dolphin Days – the Life and Times of the Spinner Dolphin*. Avon Books.
- Norris, K. S., B. Wursig, R. S. Wells, M. Wursig, S. M. Brownlee, C. Johnson, and J. Sulow. 1985. *The Behavior of the Hawaiian Spinner Dolphin* (Stenella Longirostris). Administrative Report LJ-85-06C. NOAA Fisheries, Southwest Center, La Jolla, California.

- Norris, K. S., B. Würsig, R. Wells, M. Würsig, S. Brownlee, C. Johnson, and J. Solow. 1994. *The Hawaiian Spinner Dolphin*. Berkeley: University of California Press, Berkeley.
- Norris, T. F. 2003. SAIC. Personal communication with Ann Zoidis, Tetra Tech, Inc. April 24, 2003.
- Northrop, J., W. C. Cummings, and M. F. Morrison. 1971. *Underwater 20-Hz Signals Recorded Near Midway Island*. J. Acoust. Soc. Am. 49: 1909-1910.
- Northrop, J., W. C. Cummings, and P. O. Thompson. 1968. *20-Hz signals observed in the Central Pacific*. J. Acoust. Soc. Am. 43: 383-384.
- NPC (Noise Pollution Clearinghouse). 2001. *About Noise, Noise Pollution*. Internet Web site: <http://www.nonoise.org>. Accessed on August 22, 2001.
- NRDC (Natural Resources Defense Council). 1999. *Sounding the Depths. Supertankers, Sonar, and the Rise of Undersea Noise*. Chapter 2. The Laws Of Noise. Wildlife & Fish: Whales & Marine Animals: In Depth Report. Internet Web site: <http://www.nrdc.org/wildlife/marine/sound/chap2.asp#table2>. Accessed on April 21, 2003.
- NRS (Natural Resource Staff, Army). No date. Memorandum for Record: Mākua Military Reservation Natural Resource Post Fire Assessment. Unpublished.
- NTIS (National Technical Information Service). 1988. *Operational Noise Data for CH-47 and AH-64 Army Helicopters*. Report No. ADA191059. March 1988.
- Oki, D. S. 1998. *Geohydrology of the Central O‘ahu, Hawai‘i, Ground-Water Flow System and Numerical Simulation of the Effects of Additional Pumping*. USGS, Water-Resources Investigations Report 97-4276. Honolulu, Hawai‘i.
- OMPO (O‘ahu Metropolitan Transportation Organization). 2002. O‘ahu Transportation Improvement Program, FY 2002 Thru FY 2004. O‘ahu Metropolitan Transportation Organization Policy Committee, September 19, 2002, [http://oahumpo.org/TIP/TIP02-04/TIP02-04Amend02\\_Approved\\_071702.pdf](http://oahumpo.org/TIP/TIP02-04/TIP02-04Amend02_Approved_071702.pdf). Accessed on November 8, 2002.
- ONR (Office of Naval Research). 2002. *Environmental Impact Statement for the North Pacific Acoustic Laboratory*. Arlington, Virginia. US Department of Commerce, NOAA, National Marine Fisheries Service, Office of Protected Resources, Silver Spring, Maryland. State of Hawai‘i, Department of Land and Natural Resources, Honolulu, Hawai‘i.
- ONR, NOAA, and the State of Hawai‘i. 2000. *DEIS for the North Pacific Acoustic Laboratory*. May 2000.

- OSHA (Occupational Safety and Health Administration). 2002. Safety and Health Topics: ELF Radiation. Internet Web site: <http://www.osha.gov/SLTC/elfradiation/>. Accessed on October 30, 2002.
- Parker, P. L., and T. F. King. 1990. *Guidelines for Evaluating and Documenting Traditional Cultural Properties*. National Register Bulletin 38. US Department of the Interior, National Park Service, Interagency Resources Division, Washington, DC.
- Partnership for the Environment. 2000. *Wasteline: Recycling and Waste Prevention Solutions for Island Businesses*. Internet Web site: [http://www.opala.org/wasteline/04\\_00.html](http://www.opala.org/wasteline/04_00.html). Accessed on March 5, 2004.
- Patenaude, Nathalie J., John W. Richardson, Mari A. Smultea, William R. Koski, Gary W. Miller, Bernd Würsig, and Charles R. Greene, Jr. 2002. Aircraft Sound and Disturbance to Bowhead and Beluga Whales During Spring Migration in the Alaskan Beaufort Sea. *Marine Mammal Science*: Vol. 18, No. 2, pp. 309-335. April 2002. Internet Web site: <http://apt.allenpress.com/aptonline/?request=get-abstract&issn=0824-0469&volume=018&issue=02&page=0309>. Accessed on April 29, 2003.
- Pater, L. L. 1976. Noise Abatement Program for Explosive Operations at NSWC/DL. Presented at the 17th Explosives Safety Seminar of the DOD Explosives Safety Board, Denver, Colorado, September 1976.
- PCSU (Pacific Cooperative Studies Unit). 1999. *O'ahu Training Areas Natural Resource Management Final Report*. Prepared for USARHAW. August 1999.
- \_\_\_\_\_. 2000. *O'ahu Training Areas Natural Resource Management Final Report*. Prepared for USARHAW. August 2000.
- \_\_\_\_\_. 2001. *US Army Garrison Hawai'i, O'ahu Training Areas Natural Resource Management, Final Report*. Prepared for the Department of the Army Garrison Hawai'i. August 2001.
- \_\_\_\_\_. 2002. *US Army Garrison Hawai'i, O'ahu Training Areas Natural Resource Management, Final Report*. Prepared for the Department of the Army Garrison Hawai'i. August 2002.
- \_\_\_\_\_. 2004. *O'ahu Training Areas Natural Resource Management Final Report*. Prepared for USARHAW. August 2004.
- PDC (Pacific Disaster Center). 2001. Civil Defense Tsunami Evacuation Maps for Hawaiian Islands. Internet Web site: <http://www.pdc.org/pdc/pub/Tsunami/EvacuationMaps.htm>. Updated 7/9/01. Accessed on August 14, 2002.

- Pew Oceans Commission 2003. *America's Living Oceans: Charting a Course for Sea Change*. May 2003.
- Pickering, Captain Todd. 2003. Personal communication with Ann Zoidis, Tetra Tech, Inc. March 11, 2003.
- Plog, B.A. (ed.). 1993. *Fundamentals of Industrial Hygiene*. Fourth Edition. National Safety Council. Chicago, Illinois.
- Polovina, J. J., D. R. Kobayashi, D. M. Parker, M. P. Seki, and G. H. Balazs. 2000. Turtles on the edge: movement of loggerhead turtles (*Caretta caretta*) along oceanic fronts, spanning long line fishing grounds in the central North Pacific, 1997-1998. *Fish. Oceanogr.* 9, 71-82.
- PRC Environmental Management, Inc. 1997. Preliminary Assessment/Site Inspection, Pōhakuloa Training Area, Hawai'i Final PA/SI. February 1997.
- Pukui, M. K. 1983. *‘Ōlelo No‘eau: Hawaiian Proverbs and Poetical Sayings*. Bernice P. Bishop Museum Press, Honolulu.
- Pukui, M. K., and C. Curtis. 1981. *The Water of Kāne and other Legends of the Hawaiian Islands*. Kamehameha Schools Press, Honolulu.
- Pukui, M. K., S. H. Elbert, and E. T. Mookini. 1974. *Place Names of Hawai'i*. University of Hawai'i Press, Honolulu.
- Quinn, Dan. 2003. State Parks Administrator, Division of State Parks, Department of Land and Natural Resources, State of Hawai'i. Personal communication with Tetra Tech, Inc. October 15, 2003.
- Radle, A. L. No date. The Effect of Noise on Wildlife: A Literature Review. *World Forum for Acoustic Ecology*. Internet Web site: <http://interact.uoregon.edu/MediaLit/WFAE/readings/radle.html>>. Accessed on October 2, 2001.
- Reinman, Fred M., and Allan J. Schilz. 1993. *Aerial and Ground Archaeological Inventory Survey for Compilation of Environmental Impact Statement, Multi-Purpose Range Complex, Pōhakuloa Training Area, Island of Hawai'i*. Draft Report submitted to USACE, Corps of Engineers District, Honolulu, Hawai'i, Fort Shafter, Hawai'i by Ogden Environmental and Energy Services Company Inc., Honolulu, Hawai'i.
- \_\_\_\_\_. 1994. *Archaeological Data Recovery at the Multi-Purpose Range Complex Pōhakuloa Training Area, Island of Hawai'i, Hawai'i*. Prepared for the US Army Engineer District, Honolulu, Fort Shafter, Hawai'i. Ogden Environmental Energy Services Co., Inc., Honolulu, Hawai'i.

- \_\_\_\_\_. 1999. *Aerial and Ground Archaeological Inventory Survey for Compilation of Environmental Impact Statement, Multi-Purpose Range Complex, Pōhakuloa Training Area, Island of Hawai‘i*. Prepared for the USACE, Corps of Engineers District, Honolulu, Hawai‘i, Fort Shafter, Hawai‘i by Ogden Environmental and Energy Services Company Inc., Honolulu, Hawai‘i.
- Reinman, Fred M., and Jeffrey J. Pantaleo. 1998. *Archaeological Investigations of Two Work Areas for the Legacy Resource Management Program at the Pōhakuloa Training Area, Hawai‘i Island, Hawai‘i*. Prepared for the US Army Corps of Engineers, Pacific Ocean Division, Fort Shafter, Hawai‘i. Garcia and Associates, Honolulu, Hawai‘i. (Draft prepared by Lisa Shapiro and Paul L. Cleghorn 1995.)
- \_\_\_\_\_. 1998a. *Redleg Trail Archaeological Investigations for the Legacy Resource Management Program at Pōhakuloa Training Area, Hawai‘i Island, Hawai‘i*. Prepared for the US Army Engineer District, Honolulu, Fort Shafter, Hawai‘i. Garcia and Associates, Honolulu, Hawai‘i. (Draft prepared by Lisa Shapiro, William A. Shapiro, and Paul L. Cleghorn 1995.)
- Reinman, Fred M., Francis J. Eblé, and Jeffrey J. Pantaleo. 1998. *Historic Preservation Plan for Pōhakuloa Training Area, Island of Hawai‘i, Hawai‘i*. Prepared for the US Army Corps of Engineers, Pacific Ocean Division, Fort Shafter, Hawai‘i. Garcia and Associates, Honolulu, Hawai‘i.
- Richardson, W. John, Charles R. Greene, Jr., Charles I. Malme, and D. H. Thomson. 1995. *Marine Mammals and Noise*. Academic Press. San Diego, California.
- R. M. Towill Corporation. 1997a. *Endangered Species Management Plan Report for O‘ahu Training Areas*. Prepared for US Army Garrison, Hawai‘i, and USACE. Honolulu, Hawai‘i.
- \_\_\_\_\_. 1997b. *Final Outdoor Recreation Plan Report US Army Training Areas in Hawai‘i*. Prepared for USARHAW. September 1997.
- \_\_\_\_\_. 1998. *Ecosystem Management Plan Report for O‘ahu Training Areas*. Prepared for US Army Garrison, Hawai‘i, and USACE. Honolulu, Hawai‘i.
- \_\_\_\_\_. 2004. *Waianae Wastewater Treatment Plant*. Internet Web site: <http://www.rmtowill.com/cm-waianae-wwtp.htm>. Accessed on March 5, 2004.
- Roberts, A., and J. Robins. 2003. End of Field Report. Letter report to Kanalei Shun, Archaeologist, from Jennifer Robins, Garcia and Associates, regarding reconnaissance surveys at Mākua Military Reservation. September 19, 2003.

- Roberts, Alice, Jennifer Robins, and Amy Buffum. 2003. *Archaeological Surveys of Proposed Training Areas for the Stryker Brigade Combat Team, US Army Pōhakuloa Training Area, Island of Hawai‘i, Hawai‘i*. Prepared for the US Army Engineer District, Honolulu, Fort Shafter, Hawai‘i. Garcia and Associates, Honolulu, Hawai‘i.
- Rosendahl, P. H. 1977. *Archaeological Inventory and Evaluation Report for Installation Environmental Impact Statement*. Parts 1 and 2. Report prepared by Department of Anthropology, Bernice P. Bishop Museum, Honolulu for US Army Engineer Division, Pacific Ocean, Honolulu, on file at USACE, Pacific Ocean Division, Fort Shafter.
- Roussel, E. 2002. *Disturbance to Mediterranean Cetaceans Caused by Noise*. In: G. Notarbartolo di Sciara (ed.), *Cetaceans of the Mediterranean and Black Seas: state of knowledge and conservation strategies*. A report to the ACCOBAMS Secretariat, Monaco, February 2002. Section 13, 18 p. Internet Web site: [http://www.accobams.org/download/ceta\\_mbs\\_report/13\\_roussel.pdf](http://www.accobams.org/download/ceta_mbs_report/13_roussel.pdf). Accessed on April 21, 2003.
- Rowland, Kai. 2003. Honolulu Board of Water Supply, Service Engineering. Personal communication with John Chung, Belt Collins Hawai‘i Ltd. February 4, 2003.
- SAIC (Science Applications International Corporation). 1991. *RCRA Facility Assessment, Preliminary Review Report for Mākua Military Reservation, O‘ahu, Hawai‘i. Technical Enforcement Support at Hazardous Waste Sites TES11 – Zone 4*. Submitted to USEPA, Region IX. EPA ID No. HI7210022227.
- \_\_\_\_\_. 1992. *Final Report, RCRA Facility Assessment for Mākua Military Reservation, O‘ahu, Hawai‘i. Technical Enforcement Support at Hazardous Waste Sites TES 11 – Zone 4*. EPA ID No. HI7210022227. February 1992.
- Sato and Associates, Inc. 1996. *Pōhakuloa Training Area Master Plan*. April 1996.
- Sawyer, J. 2003. Aviation Safety Officer, US Army Pacific, Hawai‘i. Personal communication with Quent Gillard, QAR, Inc., regarding Army’s flight safety history in Hawai‘i. February 20, 2003.
- Schlundt, C. E., J. J. Finneran, D. A. Carder, and S. H. Ridgway. 2000. Temporary shift in masked hearing thresholds of bottlenose dolphins, *Tursiops truncatus*, and white whales, *Delphinapterus leucas*, after exposure to intense tones. *J. Acoust. Soc. Am.* 107 (6). 3496-3508.
- Schnell, L., S. Evans, and K. Sherry. 1998. Annual Report for the Ecosystem Management Program at Pōhakuloa Training Area, Island of Hawai‘i. Research Corporation of the University of Hawai‘i for US Army Garrison, Hawai‘i, Pōhakuloa Training Area, Hilo, Hawai‘i.

- Schubert, D. J., and J. Smith. 2000. The Impacts of Off-Road Vehicle Noise on Wildlife. *The Road-RIPorter* 5(1). Internet Web site: [http://www.wildlandscpr.org/notes/bibliionotes/ORV\\_noise\\_wildlife.html](http://www.wildlandscpr.org/notes/bibliionotes/ORV_noise_wildlife.html). Accessed on September 25, 2001.
- Schulz, T. J. 1978. *Synthesis of Social Surveys on Noise Annoyance*. Journal of the Acoustical Society of America 64(2):377-405.
- Shallenberger, E.W. 1981. *The Status of Hawaiian Cetaceans*. Final Report to the Marine Mammal Commission. MMC 77/23.
- Shallenberger, R. J. 1977. *Bird and Mammal Survey of Army Lands in Hawai'i*. Ahuimanu Production, Kailua, Hawai'i. Unpublished.
- Shallenberger, R. J., and G. K. Vaughn. No date. *Avifaunal Survey in the Central Ko'olau Range, O'ahu*. Ahuimanu Production, Kailua, Hawai'i. Unpublished.
- Shaw, Robert B. 1997. *Rare Plants of Pōhakuloa Training Area, Hawai'i*. Center for Ecological Management of Military Lands. Fort Collins, Colorado.
- Shaw, R., and J. M. Castillo 1997. *Plant Communities of Pōhakuloa Training Area, Hawai'i*. Center for Ecological Management of Military Lands. Technical Publications Series 97-23.
- Shelley, Kolleen. 2002. National RAWS Coordinator, US Forest Service. Personal communication with Derek Holmgren, Tetra Tech, Inc. August 16, 2002.
- Shimabukuro, Cora. 2002. US Army, 25th ID(L) and USARHAW. Personal communication with Jennifer Saufler, Tetra Tech, Inc. September 4, 2002.
- Sinton, J. M. 1986. *Revision of Stratigraphic Nomenclature of Wai'anae Volcano, O'ahu, Hawai'i*. US Geologic Survey Bulletin 1775-A. pp. A9-A15.
- Smultea, M. A. 1992. *Habitat Utilization Patterns of Humpback Whales (Megaptera Novaeangliae) off the Island of Hawai'i*. Prepared for US Marine Mammal Commission, Washington, DC.
- Social Research Pacific (SRP), Inc. 2001. *Planning Level Oral History Survey, Mākua and Kahanahāiki Valleys, for Traditional Cultural Properties at the US Army Mākua Military reservation, Wai'anae, O'ahu Island, Hawai'i*. Report prepared by Social Research Pacific Incorporated, Kāne'ōhe for US Army Engineering District, Honolulu, on file at USACE, Pacific Ocean Division, Fort Shafter.
- \_\_\_\_\_. 2002. *Planning Level Oral History Survey of Traditional Cultural Properties on US Army Pōhakuloa Training Area, Hawai'i Island, Hawai'i*. Draft report prepared for US Army Engineering District, Honolulu. SRP, Kailua.

- \_\_\_\_\_. 2003a. Final Report, Cultural Impacts on Traditional Cultural Properties from Continued Military Use of US Army Mākuā Military Reservation, Waianae, O‘ahu Island, Hawai‘i. Prepared by Social Research Pacific, Inc. Prepared for United States Army Engineering District, Honolulu, Directorate of Engineering, Environmental Branch. June 19, 2003.
- \_\_\_\_\_. 2003b. Final Report. Planning level Oral History Survey Mākuā and Kahanahāiki Valleys for Traditional Cultural Properties at the US Army Mākuā Military Reservation Wai‘anae, O‘ahu Island, Hawai‘i. Prepared by Social Research Pacific, Inc. Prepared for United States Army Engineering District, Honolulu, Directorate of Engineering, Environmental Branch. June 20, 2003.
- Society of Vertebrate Paleontology. 1995. *Assessment and mitigation of adverse impacts to nonrenewable paleontologic resources: standard guidelines*, Society of Vertebrate Paleontology News Bulletin, No. 163, 22-27.
- Soehren, Lloyd J. 1980. An Archaeological Reconnaissance Survey of a Portion of Kawaihae 2, South Kohala, Hawai‘i. Report on file, Mauna Kea Land Corporation, Honolulu, Hawai‘i.
- Sox, D. G. 1977. *Addendum to Cultural History Report of Mākuā Military Reservation and Vicinity Mākuā Valley, O‘ahu, Hawai‘i*. USACE, Pacific Ocean Division, Fort Shafter, Hawai‘i.
- Spradlin, T. 2002. NOAA, NMFS. Personal communication with Ann Zoidis, Tetra Tech, Inc. December 20, 2002.
- State of Hawai‘i. 1964. State General Lease No. S-3848 (US Lease, Contract No. DA-94-626-ENG-79), Department of Land and Natural Resources. August 17, 1964.
- \_\_\_\_\_. 2001b. Department of Transportation, 2002, Air Traffic Statistics Calendar Year 2001. Airports Division. Internet Web site: <http://www.state.hi.us/dot/airports/publications.htm>. Accessed on March 3, 2002.
- \_\_\_\_\_. 2002a. Office of Planning. Hawai‘i Statewide GIS Program. Internet Web site: [www.state.hi.us/dbedt/gis/](http://www.state.hi.us/dbedt/gis/). Accessed from August to October 2002.
- \_\_\_\_\_. 2002b. *Turtle Bay Resort Expansion and Renovation*. In: The Environmental Notice, Office of Environmental Quality Control, State of Hawai‘i. September 8, 2002.
- \_\_\_\_\_. 2002c. “Lā‘ie Wastewater Collection System Expansion, Phase II.” In: The Environmental Notice, Office of Environmental Quality Control. August 23, 2002.

- \_\_\_\_\_. 2002d. Revised Perennial Streams Map of the Island of Hawai‘i. Department of Environmental Health, Environmental Planning Office. Internet Web site: <http://www.state.hi.us/doh/eh/epo/#Anchor-WQmaps>.
- \_\_\_\_\_. 2003. *Planning for Sustainable Tourism in Hawai‘i*. Department of Business, Economic Development and Tourism. January 2003. Internet Web site: <http://www.hawaiiitourismstudy.com/pdf/sustainable03.pdf>. Accessed on March 5, 2004.
- Stearns, H. T. 1946. *Geology of the Hawaiian Islands*. Hawai‘i Division of Hydrography, Bulletin 5.
- Stearns, H. T., and G. A. MacDonald. 1940. *Geologic Map of the Wai‘anae Range*, supp. in H. T. Stearns (ed.) *Geology and Ground-Water Resources of the Island of O‘ahu, Hawai‘i*. Hawai‘i Division of Hydrography Bulletin 5.
- \_\_\_\_\_. 1946. *Geology and Ground-Water Resources of the Island of Hawai‘i*. USGS, Bulletin 9. October 1946.
- Stearns, H. T., and K. N. Vaksvik. 1935. *Geology and Ground-Water Resources of the Island of O‘ahu, Hawai‘i*. Prepared in cooperation with the USGS. Territory of Hawai‘i, Department of Public Lands, Division of Hydrography, Bulletin 1. Maui Publishing Co., Ltd. Wailuku, Maui.
- Stelter, Richard. 2005. US Army, DPW, Real Property Planning Branch. Personal communication with Dawn A. Lleces, Tetra Tech Inc. February 10, 2005.
- Sterling, Elspeth P., and Catherine C. Summers. 1978. *Sites of O‘ahu*. Department of Anthropology, Bernice P. Bishop Museum, Honolulu.
- Stoffle, Richard W., David B. Halmo, and Diane E. Austin. 1997. *Cultural Landscapes and Traditional Cultural Properties: A Southern Paiute View of the Grand Canyon and Colorado River*. In: *American Indian Quarterly*, 21:2, Spring 1997; pp. 229-249.
- Streck, Charles. 1984. *Archaeological Reconnaissance Site Survey of Five Land Parcels at Pōhakuloa Training Area (PTA), Island of Hawai‘i, Hawai‘i*. US Army Corps of Engineers. Ms. on file, State Historic Preservation Division, Department of Land and Natural Resources, Kapolei, Hawai‘i.
- \_\_\_\_\_. 1986. *Trip Report, Aerial Reconnaissance Survey for Revised Proposed Site for Multi-Purpose Range Complex, Pōhakuloa Training Area, Hāmākua, Island of Hawai‘i*. USACE, Pacific Ocean Division, Fort Shafter, Hawai‘i.
- Takasaki, K. J. 1971. *Ground Water in the Wai‘anae District, O‘ahu, Hawai‘i*. USGS Hydrologic Investigations Atlas HA-358, 2 map sheets scale 1:62,500.

- Takasaki, K. J., and J. F. Mink. 1985. *Evaluation of Major Dike-Impounded Ground-Water Reservoirs, Island of O'ahu*. USGS Water-Supply Paper 2217.
- Tamanaha, Morris. 2004. State of Hawai'i, Department of Transportation, Airports Division. Personal communication with Quent Gillard, Q Analysis and Research, Inc. January 21 and 28, 2004.
- Tamaru, Richard. 2003. Directorate of Public Works. Personal communication with John Chung, Belt Collins Hawai'i Ltd. April 14 and April 22, 2003.
- TenBruggencate, Jan. 2003. Muted lights brighten sea birds' future. Honolulu Advertiser, June 5, 2003. Internet Web site: <http://the.honoluluadvertiser.com/article/2003/Jun/05/In/Ino4a.html>. Accessed on June 25, 2003.
- Tesoro Petroleum Corporation. 2004. Kapolei, Hawai'i. Internet Web site: <http://www.tesoropetroleum.com/kapolei.html>. Accessed on March 5, 2004.
- Tetra Tech. 2005. *Noise Monitoring Report, Mākuā Military Reservation, Hawai'i*. Prepared by Tetra Tech, Inc., San Francisco, CA. February 22, 2005.
- Thomas, Joseph. 2003a. Honolulu Board of Water Supply, Customer Service. Personal communication with John Chung, Belt Collins Hawai'i Ltd. February 26, 2003.
- \_\_\_\_\_. 2003b. Honolulu Board of Water Supply, Customer Service. Personal communication with John Chung, Belt Collins Hawai'i Ltd. March 3, 2003.
- Thompson, P. O., and W. A. Friedl. 1982. *A long-term study of low frequency sound from several species of whale off O'ahu, Hawai'i*. *Cetology*. 45:1-19.
- Thrum, T. G. 1906. *Heiaus and Heiau Sites throughout the Hawaiian Islands*. Hawaiian Annual for 1907: 36-48.
- \_\_\_\_\_. 1938. *Complete List of Heiaus (Temples) and Sites*. Hawaiian Annual for 1938: 121-142.
- \_\_\_\_\_. 1998. *Hawaiian Folk Tales: A Collection of Native Legends*. Mutual Publishing Company, Honolulu.
- Tinney, R. T., Jr. 1988. *Review of Information Bearing Upon the Conservation and Protection of Humpback Whales in Hawai'i*. Rep. for the US Mar. Mamm. Comm., Washington, DC. 56 p. NTIS PB88-195359, as cited in Richardson et al. 1995.

- Tissot, B. 1998. *Changes in The Marine Habitat and Biota of Pelekane Bay, Hawai'i Over a 20- Year Period*. Prepared for US Fish & Wildlife Service Pacific Islands Office, Honolulu, Hawai'i. March, 1998. Marine Science Department, University of Hawai'i-Hilo.
- Toth, C. 2003. State Approves Expansion for Waimanalo Landfill. Honolulu Advertiser, 17 May 2003, Honolulu, Hawai'i. Internet Web site: <http://the.honoluluadvertiser.com/article/2003/May/17/ln/ln14a.html>. Accessed on March 5, 2004.
- Transportation Research Board. 2000. *Highway Capacity Manual*. National Research Council, Washington, DC. 2000.
- Tuggle, H. D. 1997. *The Archaeology of Mākua Beach: Background for an Environmental Assessment of Proposed Amphibious Training in Hawai'i, Mākua, Island of O'ahu*. Report prepared by International Archaeological Research Institute Incorporated, Honolulu for Belt Collins Hawai'i, Honolulu, on file at Hawai'i State Historic Preservation Office, Kapolei.
- Uchita, Ed. 2005. US Army, DPW. Personal communication with Dawn A. Lleces, Tetra Tech Inc. February 10, 2005.
- US Army. 1998. Army Manual for Installation Operations and Training June 1998.
- \_\_\_\_\_. 2001. *Environmental Noise Management: An Orientation Handbook for Army Facilities*. US Army Center for Health Promotion and Preventive Medicine. May 2001.
- \_\_\_\_\_. 2002b. Army Housing PCS House Express. Internet Web site: <http://www.pshousearmy.com>. Accessed on February 10, 2003.
- \_\_\_\_\_. AR (Army Regulations) 95-1, Flight Regulations.
- \_\_\_\_\_. AR 200-1, Environmental Protection and Enhancement.
- \_\_\_\_\_. AR 200-5, Pest Management, October 29, 1999 (incorporated into AR 200-1).
- \_\_\_\_\_. AR 350-1, Army Training and Leader Development.
- \_\_\_\_\_. AR 350-19, The Army Sustainable Range Program.
- \_\_\_\_\_. AR 385-14, Transportation Accident Prevention and Emergency Response Involving Conventional Munitions And Explosives. April 8, 1991.
- \_\_\_\_\_. AR 385-63, Range Safety.
- \_\_\_\_\_. AR 385-64, US Army Explosives Safety Program.

- 
- \_\_\_\_\_. AR 420-1, Army Facilities Management (supersedes 420-90, Facilities Engineering Fire and Emergency Services and implements DODI 6055.6 DOD Fire and Emergency Services (F&ES Program).
- \_\_\_\_\_. DA PAM (Department of Army Pamphlet) 200-1, January 17, 2002.
- \_\_\_\_\_. DA PAM 350-38, Standards in Weapons Training
- \_\_\_\_\_. DA PAM 350-63, Range Safety.
- \_\_\_\_\_. DA PAM 385-64, Ammunition and Explosives Safety Standards.
- \_\_\_\_\_. FM (Field Manual) 7-0, Training the Force.
- \_\_\_\_\_. FM 21-10, Field Hygiene and Sanitation.
- \_\_\_\_\_. FM 21-16, Unexploded Ordnance (UXO) Procedures.
- \_\_\_\_\_. FM 21-18, Procedures and Techniques of Foot Marches.
- \_\_\_\_\_. FM 90-4, Air Assault Operations.
- \_\_\_\_\_. TC (Training Circular) 7-9, Infantry Live-Fire Training.
- \_\_\_\_\_. TC 25-8, Training Ranges.
- \_\_\_\_\_. 32 CFR Part 651, Environmental Analysis of Army Actions (supersedes AR 200-1).
- USACE (US Army Corps of Engineers). 1988. *Visual Resource Assessment Procedure for USACE*.
- \_\_\_\_\_. 1998. *Construction Engineering Research Laboratory. Alternatives to Open Burning/Open Detonation of Energetic Materials: Summary of Current Technologies*. USACERL Technical Report 98/104. Champaign, Illinois. Document downloaded from document list generated using search for “emissions” on CERL Internet Web site: <http://www.cecer.army.mil/td/tips/browse/publications.cfm>. Accessed on May 12, 2002.
- \_\_\_\_\_. 1999. *Army Corp of Engineers Honolulu District Environmental Compliance Assessment Report*. March 30-April 23, 1999.
- \_\_\_\_\_. 2002a. *Hydrogeologic Investigation Workplan (Soil, Surface Water, Ground water) for Mākua Military Range*. Prepared by the USACE Engineer Research and Development Center, Geotechnical and Structures Laboratory, Waterways experiment Station, Prepared for the USACE Honolulu Office and the USAG-HI Department of Public Works. October 2002.

- \_\_\_\_\_. 2002b. *Air Sampling and Analysis Plan Supporting the 2002-2003 EIS on Military Training Activities, Mākuā Military Range, Hawai‘i, O‘ahu*. Prepared for the USACE Honolulu District. Prepared by Tetra Tech, Inc., San Francisco, CA. October 2002.
- \_\_\_\_\_. 2003. *Muliwai Sediment Sampling and Analysis Plan Supporting the 2002-2003 Environmental Impact Statement on Military Training Activities, Mākuā Military Reservation, O‘ahu, Hawai‘i*. Prepared for the USACE Honolulu District. Prepared by Tetra Tech, Inc., San Francisco, CA. March 2003.
- \_\_\_\_\_. 2005a. *Muliwai Sediment Sampling Report Supporting the Environmental Impact Statement on Military Training Activities, Mākuā Military Reservation, O‘ahu, Hawai‘i*. Prepared for the USACE Honolulu District. Prepared by Tetra Tech, Inc., San Francisco, CA. January 2005.
- \_\_\_\_\_. 2005b. *Air Sampling and Analysis Investigation Report Supporting the Environmental Impact Statement on Military Training Activities, Mākuā Military Reservation, O‘ahu, Hawai‘i*. Prepared for the USACE Honolulu District. Prepared by Tetra Tech, Inc., San Francisco, CA. February 2005.
- \_\_\_\_\_. 2006. *Hydrogeologic Investigation Report for Mākuā Military Reservation*. Prepared by Geotechnical and Structures Laboratory, Waterways Experiment Station, Environet, Inc., and US Army Corps of Engineers Engineer Research and Development Center. Prepared for Honolulu Engineer District, Environmental Division and the US Army Garrison – Hawai‘i, Directorate of Public Works. February 2006.
- \_\_\_\_\_. 2009. *Hydrogeologic Investigation Data for Mākuā Military Reservation (Updates 2002-2006 Hydrogeologic Data – Report Pending)*. Prepared by Geotechnical and Structures Laboratory, Waterways Experiment Station, Environet, Inc., and US Army Corps of Engineers Engineer Research and Development Center. Prepared for Honolulu Engineer District, Environmental Division and the US Army Garrison – Hawai‘i, Directorate of Public Works. March 2009.
- USACE/ERDC (Engineer Research and Development Center). 2001. *Assessment of Training Noise Impacts on the Red-Cockaded Woodpecker: 2000 Results*. US Army Corps of Engineers/Engineer Research and Development Center. June 2001.
- USAEC (US Army Environmental Center). 1998. *US Army Environmental Center’s Range XXI Team & US Army Training Support Center. Prevention of Lead Migration and Erosion From Small Arms Ranges*. August 13, 1998.
- U.S. Army Garrison Hawai‘i. 2003 Programmatic Biological Assessment for Transformation of the 2<sup>nd</sup> Brigade 25th Infantry Division (Light) U.S. Army, Island of Hawai‘i. Prepared by the Center for Environmental Management of Military Lands, Colorado State University, Fort Collins, Colorado. For the U.S. Army Corps of Engineers, Honolulu District, Hawai‘i.

- \_\_\_\_\_. 2003. Programmatic Biological Assessment for Routine Military Training and Transformation of the 2nd Brigade, 25th Infantry Division (Light), U.S. Army, Oahu, Hawaii. Prepared by Center for Environmental Management of Military Lands, Colorado State University Fort Collins, Colorado for the U.S. Army Corps of Engineers, Honolulu District, Hawai'i.
- \_\_\_\_\_. 2008. Implementation Plan Pōhakuloa Training Area Island Of Hawai'i. Prepared by the Pōhakuloa Implementation Team.
- USARHAW (US Army Hawai'i). 2000. *Pest Management Plan for US Army Garrison, Hawai'i*. June 1997. Updated December 2000.
- \_\_\_\_\_. 2001. *Asbestos Management Plan*. February 2001.
- \_\_\_\_\_. 2002. REFUSE 3rd Qtr 2002.xls. Spreadsheet of US Army installation refuse collected during the third quarter of 2002. Department of Public Works. August 8, 2002.
- USARHAW and 25th ID(L) (25th Infantry Division (Light)). 1996. Draft Environmental Assessment for Construction of Deep Well, Pōhakuloa Training Area, Hawai'i. August 1996.
- \_\_\_\_\_. 1998. *Biological Assessment for Programmatic Section 7 Consultation on Routine Military Training Mākua Military Reservation*. November 2, 1998.
- \_\_\_\_\_. 1999. 25th Infantry Division (Light) and US Army, Hawai'i Regulation 210-6, Installation Ranges and Training Areas.
- \_\_\_\_\_. 2000. *Wildland Fire Management Plan, Pōhakuloa and O'ahu Training Areas*. March 2000.
- \_\_\_\_\_. 2001a. *Supplemental Environmental Assessment for Routine Training at Mākua Military Reservation and PFC Pililā'au Range Complex, Hawai'i*. Prepared for G3 Range Division, 25th Infantry Division (Light), and US Army-Hawai'i. Prepared by the Onyx Group, San Diego, California. May 2001.
- \_\_\_\_\_. 2001b. *Integrated Natural Resources Management Plan and Environmental Assessment/Finding of No Significant Impact 2002-2006 O'ahu*. August 2001.
- \_\_\_\_\_. 2001c. *Integrated Natural Resources Management Plan and Environmental Assessment/Finding of No Significant Impact 2002-2006 Pōhakuloa Training Area*. August 2001.
- \_\_\_\_\_. 2002a. *Environmental Assessment for a Prescribed Burn at Mākua Military Reservation, Island of O'ahu*. August 2002.

- \_\_\_\_\_. 2003. *Final Environmental Assessment and Finding of No Significant Impact, Schofield Barracks Impact Area Prescribed Burn*. Prepared for Headquarters, 25th Infantry Division (Light) and US Army, Hawai‘i. April 2003.
- \_\_\_\_\_. 2003. *Integrated Wildland Fire Management Plan, O‘ahu and Pōhakuloa Training Areas*. Signed on December 2, 2003. October 2003.
- \_\_\_\_\_. 2004. Hourly rainfall data from three automated rain gages at Mākua Military Reservation. Data available from Western Regional Climate Center, Desert Research Institute, Reno, Nevada.
- \_\_\_\_\_. 2006. 2006 Status Update, Implementation Plan, Mākua Military Reservation, Island of O‘ahu. Directorate of Public Works, Environmental Division, Schofield Barracks.
- \_\_\_\_\_. 2007a. *Final Report, Archaeological Subsurface Survey Within the Company Combined Arms Assault Course (CCAAC) Circumscribed by the South Firebreak Road, Mākua Military Reservation, Mākua Ahupua‘a, Wai‘anae District, O‘ahu Island, Hawai‘i (TMK 8-2-01:020)*. US Garrison, Hawai‘i, Directorate of Public Works, Environmental Division. January 2007.
- \_\_\_\_\_. 2007b. *Report on Army Live Fire Ranges in the State of Hawai‘i*. March 2007.
- \_\_\_\_\_. 2007c. *Marine Resources Study, Field Sampling Results and Risk Assessment, Mākua Military Reservation, O‘ahu, Hawai‘i*. Prepared for the USACE Honolulu District. Prepared by Tetra Tech, Inc., Honolulu, HI. June 2007.
- \_\_\_\_\_. 2009. *Marine Resources Study, Field Sampling Results and Risk Assessment, Mākua Military Reservation, O‘ahu, Hawai‘i*. Prepared for the USACE Honolulu District and the U.S. Army Environmental Command. Prepared by Tetra Tech, Inc., Honolulu, HI. June 2007.
- \_\_\_\_\_. Undated. *Major Fire Report (Preliminary)*. Mākua Military Reservation wildland fire prescription burn for 22-25 July, 2003.
- US Army and USACE. 2004. *Final Environmental Impact Statement, Transformation of the 2nd Brigade, 25th Infantry Division (Light) to a Stryker Brigade Combat Team in Hawai‘i*. US Army and US Army Corp of Engineers, Honolulu Engineer District. May 2004.
- US Army and USAEC. 2008. *Final Environmental Impact Statement, Permanent Stationing of the 2/25<sup>th</sup> Stryker Brigade Combat Team*. US Army and US Army Environmental Command. February 2008.

- US Army CHPPM (US Army Center for Health Promotion and Preventive Medicine). 1999. *Installation Environmental Noise Management Plan, Fort Polk, Louisiana*. US Army Center for Health Promotion and Preventive Medicine. December 1999.
- \_\_\_\_\_. 2001. *Environmental Noise Management: An Orientation Handbook for Army Facilities. Aberdeen Proving Ground, Maryland*. Internet Web site: <http://chppm-www.apgea.army.mil/enp/enp.htm>. Accessed on June 3, 2002.
- \_\_\_\_\_. 2003. Personal communication between Tetra Tech and US Army Center for Health Promotion and Preventive Medicine. July 2003.
- US Army, Directorate of Public Works. 2000. *Draft Final Closure Plan for the OB/OD Unit at the Mākua Military Reservation*.
- \_\_\_\_\_. 2004. *Addendum, Implementation Plan, Mākua Military Reservation, Island of O‘ahu*. Prepared by Directorate of Public Works, Environmental Division. June 2004.
- \_\_\_\_\_. 2005. *Addendum to the Implementation Plan, Mākua Military Reservation, Island of O‘ahu*. Prepared by United States Army Garrison, Hawai‘i, Directorate of Public Works, Environmental Division. January 2005.
- USASCH (US Army Support Command, Hawai‘i). 1976. *Environmental Impact Assessment – Use of Mākua Military Reservation*.
- \_\_\_\_\_. 1979. *Draft Installation Environmental Impact Statement*.
- \_\_\_\_\_. 1982. *Environmental Assessment for 25th Infantry Division Field Training Exercise (FTX) on Island of Hawai‘i*.
- USATHAMA (US Army Toxic and Hazardous Materials Agency). 1984. *Installation Assessment of US Army Support Command, Hawai‘i, Vol. II, Part III, Mākua Military Reservation and Upper and Lower Kīpapa Ammunition Storage Sites*. Report No. 338.
- USCG (US Coast Guard). 2002. *US Coast Guard Integrated Deepwater System Project Final EIS*. March 2002.
- USDA (US Department of Agriculture). No date. Chapters 4-68, Hawai‘i Administrative Rules. Noxious Weed Rules.
- US Departments of the Air Force, the Army, and the Navy. 1978. *Environmental Protection: Planning in the Noise Environment. AFM 19-10, TM 5-803-2, and NAVFAC P-970. Washington, DC*. Internet Web site: [www.efdlant.navfac.navy.mil/down/Lantops\\_15](http://www.efdlant.navfac.navy.mil/down/Lantops_15). Accessed on June 4, 2002.

- US DOC BEA (US Department of Commerce, Bureau of Economic Analysis). 2002a. Total Full-time and Part-time Employment by Industry – Honolulu County, Hawai‘i. Internet Web site: <http://www.bea.doc.gov/bea/regional/reis/action.cfm>. Accessed on February 10, 2003.
- \_\_\_\_\_. 2002b. Local Area Personal Income: Hawai‘i Per Capita Personal Income. Internet Web site: <http://www.bea.doc.gov/bea/regional/reis/drill.cfm>. Accessed on February 10, 2003.
- US DOC Census (US Department of Commerce, Bureau of the Census). 1990. General Population and Housing Characteristics: 1990 Data Set: 1990 Summary Tape File 1 (STF1) – 100-Percent Data. Internet Web site: <http://factfinder.census.gov>. Accessed on February 10, 2003.
- \_\_\_\_\_. 2000. Profile of General Demographic Characteristics: 2000. Internet Web site: <http://factfinder.census.gov>. Accessed on February 10, 2003.
- \_\_\_\_\_. 2001. State and County QuickFacts. Internet Web site: <http://www.census.gov>. Accessed on February 10, 2003.
- US DOHHS (US Department of Health and Human Services). 1999. 2,4- and 2,6-Dinitrotoluene. Agency of Toxic Substances and Disease Registry. June 1999.
- U.S. Department of Transportation. 1998. Memorandum of Understanding, Regarding Implementation of the Saddle Road Palila Critical Habitat Impact Mitigation among U.S. Dept. Transportation, FHWA, HDOT, USAG-HI, MTMC, DLNR, USFWS, BRD/USGS. 8 pp.
- US Forest Service. 1997. Helicopter Landing Tours on the Juneau Icefield 2002 – 2006. Draft Environmental Impact Statement. Internet Web site: [http://www.fs.fed.us/r10/tongass/planning/helilanding/3\\_Wildlife.htm](http://www.fs.fed.us/r10/tongass/planning/helilanding/3_Wildlife.htm). Accessed on April 23, 2003.
- USFWS (US Fish and Wildlife Service). 1983b. *Hawaiian Seabirds Recovery Plan*. April 25, 1983.
- \_\_\_\_\_. 1983a. Letter to Mr. Brenneman, Acting Director of Facilities Engineering of the Department of the Army from Robert J. Shallenberger, Ph.D., Acting Pacific Islands Administrator and Biological Opinion. September 20, 1983.
- \_\_\_\_\_. 1983b. *Hawaiian Seabirds Recovery Plan*. April 25, 1983.
- \_\_\_\_\_. 1984. *Hawaiian Hawk Recovery Plan*. May 9, 1984.

- 
- \_\_\_\_\_. 1994. *Recovery Plan for Caesalpinia Kawaiiensis and Kokia Drynarioides*. USFWS Portland, Oregon. May 6, 1994.
- \_\_\_\_\_. 1996. *Recovery Plan for Moloka'i Plant Cluster*. September 26, 1996.
- \_\_\_\_\_. 1997. *Alectryon Macrocooccus Var. Macrocooccus Maui Plant Cluster*. July 29, 1997.
- \_\_\_\_\_. 1998. *Saddle Road Biological Opinion*. Robert P. Smith, Pacific Island Manager, Pacific Islands Ecoregion, Honolulu, Hawai'i.
- \_\_\_\_\_. 1998a. *Recovery Plan for the Hawaiian Hoary Bat*. Portland, Oregon. May 11, 1998.
- \_\_\_\_\_. 1998b. *Recovery Plan for the O'ahu Plants*. August 10, 1998.
- \_\_\_\_\_. 1999a. *Recovery Plan for Multi-Island Plants*. July 10, 1999.
- \_\_\_\_\_. 1999b. *Lasiurus cinereus semotus. Hawaiian hoary bat*.
- \_\_\_\_\_. 1999c. *Biological Opinion of the US Fish and Wildlife Service for Routine Military Training at Mākua Military Reservation*. July 23, 1999.
- \_\_\_\_\_. 1999d. *Mākua Endangered Species Mitigation Plan*. March 16, 1999.
- \_\_\_\_\_. 2000. *Endangered and Threatened Wildlife and Plants; Final Rule To List as Endangered the O'ahu 'Elepaio from the Hawaiian Islands and Determination of Whether Designation of Critical Habitat Is Prudent*. Federal Register April 18, 2000 . Vol. 65, No. 75. Pp 20760-20769 .
- \_\_\_\_\_. 2001a. *Supplement to the Biological Opinion and Conference Opinion for Proposed Critical Habitat of the US Fish and Wildlife Service for Routine Military Training at Mākua Military Reservation*. October 3, 2001.
- \_\_\_\_\_. 2001b. *Endangered and Threatened Wildlife and Plants; Determination of Critical Habitat for the O'ahu 'Elepaio (Chasiepis sandwichensis ibidis)*. Federal Register Vol. 66, No 237, pp63752. December 10, 2001. Internet Web site: [http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=2001\\_register&docid=fr10de01-11.pdf](http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=2001_register&docid=fr10de01-11.pdf). Accessed on June 26, 2002.
- \_\_\_\_\_. 2002a. *Notice of Proposed Designation of Critical Habitat for Plant Species from the Island of O'ahu, Hawai'i*. US Dept of the Interior, Fish and Wildlife Service Pacific Islands Ecoregion (with two enclosures). May 31, 2002.
- \_\_\_\_\_. 2002b. *Fish and Wildlife Service Proposed Rules Critical Habitat Designations for 99 plant Species from O'ahu, Hawai'i*. Draft. Federal Register May 28. Vol. 67, No. 102.

- \_\_\_\_\_. 2003a. *Endangered and Threatened Wildlife and Plants Final Designations or Nondesignations of 101 Plant Species from the Island of O‘ahu, HI*. Federal Register June 17, 2003. Vol. 68, No 116. Pp 35930-36406.
- \_\_\_\_\_. 2003b. Susan Machida, USFWS. Personal communication with Jeanette Weisman, Tetra Tech, Inc. E-mail message with attached Designated Plant Critical Habitat shapefiles. June 25, 2003.
- \_\_\_\_\_. 2003c. *Biological Opinion for Routine Military Activity and Transformation of the 2<sup>nd</sup> Brigade, 25<sup>th</sup> Infantry Division (Light), US Army Installation, Island of Hawai‘i*.
- \_\_\_\_\_. 2004. *Reinitiation of the 1999 Biological Opinion of the US Fish and Wildlife Service for Routine Military Training at Mākua Military Reservation, Island of O‘ahu*. September 24, 2004.
- \_\_\_\_\_. 2007a. *Migratory Bird Permits; Take of Migratory Birds by the Armed Forces; Final Rule*. Federal Register Vol. 72, No. 39. pp 8931-8950. February 28, 2007.
- \_\_\_\_\_. 2007b. Reinitiation. *Reinitiation of the 1999 Biological Opinion of the US Fish and Wildlife Service for Routine Military Training at Mākua Military Reservation, Island of O‘ahu*. June 22, 2007.
- \_\_\_\_\_. 2008. *Amendment of the Biological Opinion of the US Fish and Wildlife Service for Military Training at Mākua Military Reservation, Island of O‘ahu*. June 2008.
- USGS (US Geological Survey). 1967. Chemical Laboratory Report for O‘ahu Well 277-101. Analytical Data report of Samples collected 6/14/67 by K. J. Takasaki. USGS Water Resources Division, Hawai‘i. June 15, 1967.
- \_\_\_\_\_. 1996. Hawai‘i Hazard Maps 1996. Internet Web site: <http://geohazards.cr.usgs.gov/eq/>. Accessed on March 24, 2003.
- Hawai‘i Hazard Maps 1998: (Replace above web reference with more current web site as recommended by United States Department of the Interior, Office of the Secretary, Office of the Environmental Policy and Compliance): [http://earthquake.usgs.gov/research/hazmaps/products\\_data/Hawaii/his.php](http://earthquake.usgs.gov/research/hazmaps/products_data/Hawaii/his.php). Accessed on October 14, 2008
- \_\_\_\_\_. 1997. Earthquake Hazards. Internet Web site: <http://pubs.usgs.gov/gip/hazards/earthquakes.html>. Accessed on March 24, 2003.
- \_\_\_\_\_. 1997a. Living on Active Volcanoes – The Island of Hawai‘i. US Geological Survey Fact Sheet 074-97. Internet Web site: <http://wrgis.wr.usgs.gov/fact-sheet/fs074-97/>. Accessed on August 13, 2002.

(Replace above web reference with more current web site as recommended by United States Department of the Interior, Office of the Secretary, Office of the Environmental Policy and Compliance): <http://pubs.usgs.gov/fs/fs074-97/>. Accessed on October 14, 2008

\_\_\_\_\_. 2000a. Ground Water in Hawai'i. Fact Sheet 126-00.

\_\_\_\_\_. 2000b. *Volcanic Air Pollution—A Hazard in Hawai'i*. S. Geological Survey Fact Sheet 169-97, Online Version 1.1, revised June 2000. Internet Web site: <http://wrgis.wr.usgs.gov/factsheet/fs169-97/>. Accessed on January 6, 2003.

(Replace above web reference with more current web site as recommended by United States Department of the Interior, Office of the Secretary, Office of the Environmental Policy and Compliance): <http://pubs.usgs.gov/fs/fs169-97/>. Accessed on October 14, 2008

\_\_\_\_\_. No date. Unpublished well completion reports and monitoring data. Water Resources Division, Honolulu, Hawai'i.

US Marine Corps. 2003. *Jungle Warfare Training Environmental Assessment (EA)*. Marine Corps Base Hawai'i. Internet Web site: [http://www.mcbh.usmc.mil/EA/ea\\_home.htm](http://www.mcbh.usmc.mil/EA/ea_home.htm). Accessed on October 21, 2003.

US Navy. 2001. *Final Overseas EIS and EIS for Surveillance Towed Array Sensor System Low Frequency Active (SURTASS LFA) Sonar*. Internet Web site: [http://enterprise.spawar.navy.mil/spawarpublicsite/docs/2001-01-29\\_surtasslfa\\_feis.pdf](http://enterprise.spawar.navy.mil/spawarpublicsite/docs/2001-01-29_surtasslfa_feis.pdf) and <http://www.surtass-lfa-eis.com/docs/FEIS%20Vol%20I.pdf>. Accessed on April 21 and 23, 2003.

\_\_\_\_\_. 2004a. *Naval Magazine Lualualei*. Internet Web site: <http://www.hawaii.navy.mil/CNBDATA/n4/NavMagLLL.htm>. Accessed on March 5, 2004.

\_\_\_\_\_. 2004b. *NCTAMS PAC RTF*. Internet Web site: <http://www.hawaii.navy.mil/CNBDATA/n4/NCTAMSPACRTF.htm>. Accessed on March 5, 2004.

\_\_\_\_\_. undated. Online Forecaster's Handbook: Section III – Forecasting. Naval Pacific Meteorology and Oceanography Center, Joint Typhoon Center, Pearl Harbor, Hawai'i. Internet Web site: <https://metoc.npmoc.navy.mil/handbook/page8.html>. Accessed on October 20, 2003.

VanderWerf, Dr. E., Y. Ebisu & Associates, and Wil Chee Planning. 2000. *Final Report A Study to Determine the Effects of Noise from Military Training on the Endangered O'ahu 'Elepaio*. July 1, 2000.

- VanderWerf, Eric. 2003. Wildlife Biologist, USFWS. Personal communication with Jeanette Weisman, Tetra Tech. July 9, 2003.
- Viray, Alex. 2003. AT&T. Personal communication with John Chung, Belt Collins Hawai'i Ltd. February 4, 2003.
- Virginia Tech. 1998. Endangered Species Information System. Internet Web site: <http://fwie.fw.vt.edu/WWW/esis/index.htm>. Accessed on July 2, 2002.
- Wagner, W. L., D. R. Herbst, S. H. Sohmer. 1999. *Manual of the Flowering Plants of Hawai'i, Revised Edition*. Vols. I & II.
- Waianae Ecological Characterization. 2005. *Evaluation Findings for the Hawai'i Coastal Zone Management Program from November 2001 through August 2004*. November 2005.
- WeatherDisc Associates 1990. *Worldwide Airfield Summaries (TD-9647)*. World WeatherDisc Version 2.1 [CD-ROM]. WeatherDisc Associates, Inc., Seattle, Washington.
- Welch, David J. 1993 *Archaeological Survey and Testing for the Saddle Road Improvement Project, Pōhakuloa Area, Island of Hawai'i, Hawai'i*. Prepared for Federal Highways Administration, Denver. International Archaeological Research Institute, Inc., Honolulu, Hawai'i.
- WES (Waterways Experiment Station). 2002. *Hydrogeologic Investigation Workplan (Soil, Surface Water, Ground Water) for Mākua Military Reservation*. Prepared by USACE, Engineer Research and Development Center, Geotechnical and Structures Laboratory, Waterways Experiment Station. Vicksburg, Mississippi. June 2002.
- Wilcox, B. A., E. B. Guinther, K. N. Duin, and H. Maybaum. 1998. Mōkapu: Manual For Watershed Health and Water Quality. Internet Web site: <https://www.denix.osd.mil/>. Accessed on April 29, 2003.
- Williams, Scott. 2002a. Ecosystem Management Program Cultural Resources Inventory Survey of Previously Unsurveyed Areas, Redleg Trail Vicinity, US Army Pōhakuloa Training Area, Island of Hawai'i, Hawai'i. Prepared for the US Army Engineer District, Honolulu, Fort Shafter, Hawai'i. Ogden Environmental and Energy Services Company, Inc., Honolulu, Hawai'i.
- \_\_\_\_\_. 2002b. Archaeological Reconnaissance Survey, US Army Pōhakuloa Training Area (PTA) for the US Army Garrison, Hawai'i, Ecosystem Management Program, Hawai'i Island, Hawai'i. Prepared for the US Army Engineer District, Honolulu, Fort Shafter, Hawai'i. Ogden Environmental and Energy Services Company, Inc., Honolulu, Hawai'i.

- Williams, Scott, Fred Reinman, and Richard Nees. 2002. Archaeological Reconnaissance Survey of Four Areas East of Redleg Trail. Section III, in S. Williams (ed.), *Archaeological Reconnaissance Survey, US Army Pōhakuloa Training Area (PTA) for the US Army Garrison, Hawai‘i, Ecosystem Management Program, Hawai‘i Island, Hawai‘i*. Prepared for the US Army Engineer District, Honolulu, Fort Shafter, Hawai‘i. Ogden Environmental and Energy Services Company, Inc., Honolulu, Hawai‘i.
- Williams, S. S., and T. Patolo. 2000. *Intensive Archaeological Survey and Monitoring for Proposed Modifications to the Company Combined Assault Course (CCAAC) and Construction of a Fire Access Trail at the US Army Mākuā Military Reservation, Mākuā Valley, Island of O‘ahu, Hawai‘i*. Report prepared by Ogden Environmental and Energy Services, Honolulu for USACE, Pacific Ocean Division, Fort Shafter, on file at USACE, Pacific Ocean Division, Fort Shafter.
- Wolfe, E. W., and J. Morris. 1996. Geologic Map of the Island of Hawai‘i. US Geological Survey. US Geological Survey Miscellaneous Investigations Series Map I-2524-A. 1:100,000.
- Wong, M.F. 1994. Estimation of Magnitude and Frequency of Floods for Streams on the Island of O‘ahu, Hawai‘i. US Geological Survey Water-Resources Investigations Report 94-4052. Honolulu, Hawai‘i.
- Work, T. M., G. H. Balazs, M. Wolcott, and R. Morris. 2003. Bacteraemia in free-ranging Hawaiian green turtles (*Chelonia mydas*) with fibropapillomatosis. *Dis Aquat Org* 53: 41–46.
- WRRC (Water Resources Research Center). 1992. *Federal Facility Preliminary Assessment/Site Inspection Review of Mākuā Military Reservation, O‘ahu, Hawai‘i*. Submitted to Hawai‘i Department of Health. May 18, 1992.
- Wu, I. 1967. *Hydrological Data and Peak Discharge Determination of Small Hawaiian Watersheds: Island of O‘ahu*. Water Resources Research Center, Technical Report No. 15. University of Hawai‘i, Honolulu, Hawai‘i. December 1967.
- Wursig, B. 1995. *Marine Mammals and Noise*. Academic Press. San Diego, California 1995. Page 410. Personal communication as cited in Richardson et al. 1995 (not seen).
- Yamamoto, George. 2003. Captain, Honolulu Police Department. Personal communication with John Chung, Belt Collins Hawai‘i Ltd. February 5, 2003.
- Yamamoto, Robin. 2002. US Army Directorate of Public Works. Personal communication with Leslie Garlinghouse, Tetra Tech, Inc. July and August 2002.

- Zones, C. P. 1961. *Discharge of Ground Water by Phreatophytes in the Wai‘anae District, O‘ahu, Hawai‘i*, in USGS Research: USGS Professional Paper 424-D, article 377, pp. D240-D242.
- Zug, G. R., G. H. Balazs, J. A. Wetherall, D. M. Parker, and K. K. Murakawa. 2002. Age and growth of Hawaiian green sea turtles (*Chelonia mydas*): an analysis based on skeletochronology. *Fish. Bull.* 100:117–127.
- Zulick, L., and D. Cox. 2001. *Phase I Inventory Survey of Cultural Resources on Mākuā Military reservation, O‘ahu Island, Hawai‘i*. Report prepared by Pacific Cooperative Studies Unit.

This page intentionally left blank

# CHAPTER 8

## CONSULTATION AND COORDINATION

---

### 8.1 US ARMY

Paul Ahching, US Army Air Traffic Control Chief, Hawai'i

Gary Akasaki, Directorate of Public Works

Donald Andera, Aviation Brigade, 25th Infantry Division (Light)  
Standardization Office

Cindy Barger, US Army Corps of Engineers, Honolulu Engineer District

Ken Bautista, US Army DPW, Transformation Office

Greg Block, COL, Staff Judge Advocate

Ron Borne, Transformation

Daniel Bow, 25th Infantry Division (Light), US Army, Hawai'i

Jeff Butler, MAJ, G3 Training, 25th Infantry Division (Light), US Army,  
Hawai'i

Michelle Cail, Public Affairs Office

Alvin Char, Directorate of Public Works

Richard Dohmen, Aviation Brigade, 25th Infantry Division (Light),  
Standardization Office

Gayland Enriques, Integrated Wildland Fire Program Manager

Harold E. Dunn, Operations Explosive Ordnance Disposal

Howard Fancher, Aviation Brigade, 25th Infantry Division (Light)  
Standardization Office

Tom Feir, LTC, G7, 25th Infantry Division (Light), US Army, Hawai'i

Tim Frey, SFC, 706th Explosive Ordnance Disposal  
Jon Fukuda, Directorate of Public Works  
Jeff Gall, CPT, (OSJA) Staff Judge Advocate  
Victor Garo, Jr., G3/DAM Range Officer  
William Godby  
Joel Godfrey, Directorate of Public Works  
Troy E. Griffin, Public Affairs Office  
Slappy Harmon, US Army Corps of Engineers, Honolulu Engineer District  
Oliver Hasse, CPT, ASAO/Fire Bucket  
Lawrence Hirai, IMA PARO  
Thomas Husemann, Range Manager, Mākuā Military Reservation  
LTC Michael Isacco, Staff Judge Advocate  
Kapua Kawelo, Army Natural Resources  
Kathleen Kelly, CPT, Staff Judge Advocate  
Mike Kelly, Staff Judge Advocate, US Army, Pacific  
Steve Kim, US Army Corps of Engineers, Honolulu Engineer District  
Molly Kihara, US Army Corps of Engineers, Honolulu Engineer District  
Steve Lai, 25th Infantry Division (Light)  
Ed Lancott, Real Property Planning Branch, Directorate of Public Works  
Allen Leth, CPT, I-27 IN  
Laurie J. Lucking, PhD, Directorate of Public Works  
Shari Madrid, DRM  
Paul Malaspina, US Army, Pacific  
William McGinnis, Directorate of Public Works  
Ben Meinze, DEI, Hawai‘i, EOD  
Lesa Meinze, ISG, 706th EOD  
Roger Miranda, CPT, G3 Training, 25th Infantry Division (Light)  
Beth Miura, US Army Corps of Engineers, Honolulu Engineer District  
Joseph Moreno, Installation Safety Officer  
Earl Nagasawa, US Army Corps of Engineers, Honolulu Engineer District  
Wes Nakamoto, Directorate of Public Works

Jeanne P. Ockerman, Staff Judge Advocate  
Tom Piskel, G3 Training, 25th Infantry Division (Light)  
Dijon Rolle, SPC, Public Affairs Office  
James Sawyer, Aviation Safety Officer, US Army Pacific, Hawai‘i  
Christi Shaw, US Army Corps of Engineers, Honolulu Engineer District  
Cora Shimabukuro, 25th Infantry Division (Light), US Army, Hawai‘i  
Gary Shirakata, US Army Corps of Engineers, Honolulu Engineer District  
Kanalei Shun, EL-E, US Army Corps of Engineers, Honolulu Engineer District  
Chief Charles Song, Directorate of Public Works  
Richard Stelter, Real Property Planning Branch, Directorate of Public Works  
Rick Totten, US Army Corps of Engineers, Honolulu Engineer District  
Uyen Tran, US Army Corps of Engineers, Honolulu Engineer District  
Ed Uchita, Directorate of Public Works  
Ed Yamada, US Army Corps of Engineers, Honolulu Engineer District  
Robin Yamamoto, Directorate of Public Works  
Peter Yuh, Directorate of Public Works  
David Howlett, Environmental Law Division, US Army Legal Services Agency  
Jerry Cox, US Army, Pacific  
Captain Peter V. Lee, 8th Theater Sustainment Command and US Army Garrison, Hawaii  
Dennis Drake, Public Affairs Office  
Len Housley, Director, Plans, Training, and Mobilization  
Paul Thies, PhD, US Army Environmental Command  
Virginia Busby, US Army Environmental Command  
Jay Rubinoff, US Army Environmental Command  
Dave Giffin, US Army Environmental Command  
Lieutenant Robert Kroning, US Army, Pacific  
Richard McCabe, US Army, Pacific  
Colonel Fabian Mendoza, US Army, Pacific  
Michael Harada, US Army, Pacific

Verne Tanigawa, US Army, Pacific  
Al Price, US Army, Pacific  
Colonel Jim Herring, 8th Theatre Support Command  
Dale Kanehisa, Directorate of Public Works  
Michelle Mansker, Directorate of Public Works

## **8.2 FEDERAL AGENCIES**

Margaret Akamine, Pacific Islands Regional Office, NOAA Fisheries  
Moses Akana, Support Specialist, FAA Honolulu Control Facility,  
Hawai'i  
Sarah Molloy, Pacific Islands Regional Office, NOAA Fisheries  
Gene Nitta, NOAA Fisheries  
Kolleen Shelley, National RAWS Coordinator, US Forest Service  
US Fish and Wildlife Service

## **8.3 STATE AGENCIES**

Emilio Baroga, Resident Engineer, State of Hawai'i Department of  
Transportation, Highways Division, Design Branch  
Albert Chung, Resident Engineer, State of Hawai'i Department of  
Transportation, Highways Division, Design Branch  
State Historic Preservation Division  
Morris Tamanaha, State of Hawai'i, Department of Transportation,  
Airports Division

## **8.4 LOCAL AGENCIES**

Randy Hara, Chief, Policy and Planning Branch, Honolulu Planning and  
Permitting Department

## **8.5 INDIVIDUALS AND ORGANIZATIONS**

Hy Adleman, Kuilima Resort Company  
William Aila, Jr., Citizen, Wai'anae, Hawai'i  
Whitlow Au, PhD, Marine Mammal Research Program, Hawai'i Institute  
of Marine Biology  
Kelly Benoit Bird, Hawai'i Institute of Marine Biology

Hank Bruckner, President, General Aviation Council of Hawai‘i  
Eric A. Brundage, Donaldson Enterprises, Inc.  
Kitty Courtney, Tetra Tech EMI  
David Cox, University of Hawai‘i  
Eric Heinen De Carlo, PhD, University of Hawai‘i at Manoa  
Frenchy DeSoto, Citizen, Wai‘anae, Hawai‘i  
Andrea Ferro, Technical Air Expert for Mālama Mākua, Department of  
Civil and Environmental Engineering, Stanford University  
James Finneran, US Space and Naval Warfare Systems Command  
Ann Hunter, Citizen, Wai‘anae, Hawai‘i  
Miriam Kelly, B. P. Bishop Museum, Honolulu  
Stan Labak, PhD Marine Acoustics, Inc.  
Joel Gaspin, Underwater Warheads Research & Technology Department,  
Naval Surface Warfare Center  
Marc Lammers, PhD, Oceanwide Science Institute and Hawai‘i Institute  
of Marine Biology  
Leland Lee, Sanitary Engineer, Belt Collins  
Aaron Lowe, Specialist, O‘ahu Trails and Access  
Mary Masters, Technical Soil Expert for Mālama Mākua  
Jim Messegee, Marine Acoustics, Inc.  
Bill Meyer, PhD, Technical Soil and Groundwater Expert for Mālama  
Mākua  
Paul Nachtigall, PhD, Hawai‘i Institute of Marine Biology  
Tom Norris, SAIC (Science Applications International Corporation)  
Paula Olson, NOAA Fisheries  
Captain Todd Pickering, Captain, Ko‘olina Ocean Adventures  
Susan H. Rickards, Dolphin Researcher, Hawai‘i  
Stephen Roberts, GANDA  
Frank Silva, Citizen, Wai‘anae, Hawai‘i  
Clay Spikes, Marine Acoustics, Inc.  
Kathy Vigness, Marine Acoustics, Inc.  
Loren Zulick, University of Hawai‘i

This page intentionally left blank

# CHAPTER 9

## LIST OF PREPARERS

---

### 9.1 US ARMY

**Alvin Char**

Chief, Environmental Division Directorate of Public Works, US Army Garrison Hawaii

**Rhonda Suzuki**

Chief, Environmental Compliance, Pollution Prevention, Restoration Branch, Directorate of Public Works, US Army Garrison Hawaii

**Peter Yuh**

Chief, Conservation Branch, Environmental Division, Directorate of Public Works, US Army Garrison, Hawai'i

**Dr. Paul Thies**

Chief, Environmental Planning Support Branch, US Army Environmental Command

**Nancy Natoli**

Chief, Conservation Branch, US Army Environmental Command

**Pat Billington**

Attorney, US Army Corps of Engineers, Honolulu Engineer District

**Virginia Busby**

US Army Environmental Command

**Michelle Mansker**

Chief, Natural Resource Section, Environmental Division Directorate of Public Works, US Army Garrison Hawaii

**Silas DeRoma**

Attorney, Office of Staff Judge Advocate, 25th Infantry Division and US Army, Hawai'i

**Scott Farley**

US Army Environmental Command

**Dave Giffin**

Special Programs, US Army Environmental Command

**Lawrence Hirai**

Environmental Planning Support Branch, US Army Environmental Command

**David Howlett**

US Army Environmental Law Division

**Jay Rubinoff**

Conservation Branch, US Army Environmental Command

**Mike Kelly**

Attorney, Office of Staff Judge Advocate, US Army, Pacific/Installation Management Agency, Pacific Region Office

**Laurie Lucking**

Archaeologist, Environmental Division, Directorate of Public Works, US Army Garrison, Hawai'i

**Elena Onaga**

Attorney, Office of Staff Judge Advocate, 25th Infantry Division and US Army, Hawai'i

**Kanalei Shun**

Archaeologist, US Army Corps of Engineers, Honolulu Engineer District

**Susan Thompson**

US Army Environmental Command

**James Rice**

Clean Water Program Manager, Directorate of Public Works, US Army Garrison Hawaii

**Steve Turnbull**

Hydrogeologist, Environmental Division, Directorate of Public Works, US Army Garrison, Hawai'i

**Peter V. Lee**

Attorney Advisor, 8<sup>th</sup> Theater Sustainment Command and US Army Garrison Hawaii

**Leonard A. Housley**

Director, Directorate of Plans, Training, Mobilization, and Security, US Army Garrison Hawaii

**Captain Meek**

Civil Law Attorney, 8<sup>th</sup> Theater Sustainment Command and US Army Garrison Hawaii

**William Rogers**

NEPA Manager, US Army Garrison Hawaii

**Cathy Kropp**

US Army Environmental Command, Public Affairs Officer

**Carrie Nelson**

Environmental Division Directorate of Public Works, US Army Garrison Hawaii

**Danny Harrelson**

Research Geologist, US Army Engineer Research and Development Center, Geotechnical Engineering and Geosciences Branch

**9.2 TETRA TECH**

**820 Mililiani Street, Suite 700  
Honolulu, HI 96813**

**John Bock**

BS, Environmental Toxicology  
Years of Experience: 14  
(Deputy Project Manager)

**Michelle Cannella**

BS, Mineral Economics

Years of Experience: 13  
(Socioeconomics and Environmental Justice)

**Gary Floyd**

MS, Environmental Management  
BS, Natural Resources Management  
Years of Experience: 21  
(Project Manager)

**Leslie Garlinghouse**

BS, Environmental Science and Policy  
Years of Experience: 8  
(Hazardous Materials and Waste)

**Derek Holmgren**

MPA, Environmental Policy and Natural Resource Management  
MSES, Water Resources Specialization  
BS, Environmental Science  
BA, International Studies  
Years of Experience: 9  
(Wildfires)

**Alan Karnovitz**

MPP, Public Policy  
BS, Biology of Natural Resources  
Years of Experience: 13  
(Socioeconomics and Environmental Justice)

**Dawn Lleces**

BA, Environmental Sciences  
Years of Experience: 4  
(Visual Resources)

**Mike Moran**

PhD, Biochemistry  
BS, Chemistry  
Years of Experience: 25  
(Air Quality, Noise)

**Holly Prohaska**

MS, Environmental Management  
BA, Marine Science  
Years of Experience: 9  
(Hazardous Materials and Waste)

**George Redpath**

MS, Ecology  
BS, Fish and Wildlife Biology  
Years of Experience: 34  
(SBCT/Mākua Coordination)

**Jen Saufler**

BA, Botany  
Years of Experience: 6  
(Biological Resources)

**Bob Sculley**

MS, Ecology  
BS, Zoology  
Years of Experience: 34  
(Air Quality, Noise)

**Randolph B. Varney**

BA, Technical and Professional Writing  
Years of Experience: 18  
(Technical Editor)

**Jeanette Weisman**

BS, Zoology  
Years of Experience: 7  
(Biological Resources)

**Tom Whitehead**

MS, Hydrology  
BS, Geology  
BA, Anthropology  
Years of Experience: 18  
(Water Resources, Geology and Soils)

**Ed Yates**

JD  
BA, Political Science  
Years of Experience: 15  
(Land Use and Recreation)

**Ann Zoidis**

MS, Physiology and Behavioral Biology

BA, Geology

Years of Experience: 11

(Biological Resources)

**9.3 BELT COLLINS HAWAI'I, LTD.  
2153 N. King Street, Suite 200  
Honolulu, HI 96819**

**John Chung**

BS, Civil Engineering

Years of Experience: 11

(Public Services and Utilities)

**Susan Uejo**

MA, Regional and Urban Planning

BS, Civil Engineering

Years of Experience: 27

(Traffic and Transportation)

**9.4 DOWLING ASSOCIATES  
180 Grand Avenue, Suite 250  
Oakland, CA 94612**

**Alice Chen**

MS, Transportation Planning

BA, Urban Studies and Civil Engineering

Years of Experience: 13

(Traffic and Transportation)

**Phil Trom**

MA, Urban and Regional Planning

BA, Political Science

Years of Experience: 5

(Traffic and Transportation)

**9.5 INTERNATIONAL ARCHAEOLOGICAL RESEARCH INSTITUTE  
2081 Young Street  
Honolulu, HI 96826-2231**

**J Steven Athens**  
PhD, Anthropology  
MA, Anthropology  
BA, Economics  
Years of Experience: 28  
(Cultural Resources)

**Mike Carson**  
PhD, Anthropology  
MA, Anthropology  
BA, Anthropology  
Years of Experience: 13  
(Cultural Resources)

**David Welch**  
PhD, Anthropology  
MA, Anthropology  
BA, Anthropology  
Years of Experience: 37  
(Cultural Resources)

**9.6 PCR SERVICES CORPORATION**  
**233 Wilshire Boulevard, Suite 130**  
**Santa Monica, CA 90401**

**Mitch Marken**  
PhD, Maritime (Historic) Archaeology  
Years of Experience: 15  
(Cultural Resources)

**9.7 Q ANALYSIS & RESEARCH**  
**62211 Deer Trail Road, Suite 101**  
**Bend, OR 97701**

**Quent Gillard**  
PhD, Geography  
MS, Geography  
BA (Honors), Geography  
Years of Experience: 30  
(Airspace)

**9.8 POTOMAC-HUDSON ENGINEERING, INC.**  
**7830 Old Georgetown Road, Suite 220**  
**Bethesda, MD 20814**

**Debra Walker**

BA, Biology  
Years of Experience: 32  
(Project Manager, Quality Assurance)

**Robin Griffin**

MS, Environmental Management  
BA, English Composition  
Years of Experience: 13  
(Editorial, Quality Assurance)

**Richard Ellenson**

BA, Journalism  
Years of Experience: 5  
(Editorial, Quality Assurance)

**Joe Grieshaber**

MBA, Finance  
MS, Biology  
Years of Experience: 30  
(Editorial, Quality Assurance)

**Catherine Wade**

BS, Environmental Science and Policy  
Years of Experience: 2  
(Editorial, Quality Assurance)

**9.9 BOOZ ALLEN HAMILTON, INC.  
8283 Greensboro Drive  
McLean, VA 22102**

**Rick Williams**

BS, Biology  
BS, Environmental Science & Marine Science  
Years of Experience: 9  
(Project Manager, Final EIS Staffing and Completion)

**Julie Hong**

MS, Environmental Science  
BS, Environmental Science and Policy  
Years of Experience: 12  
(NEPA Coordinator and Public Outreach Support)

**Kirk Durante**

MBA, Business Management  
BBA, Business Management  
Years of Experience: 20  
(Public Outreach Support and NEPA Coordination, Supervisory)

**Jennifer Kajiyama**

MA, International Policy Studies  
BA, East Asian Studies  
BA, International Relations  
Years of Experience: 3  
(Public Outreach Support and NEPA Coordination)

**Brian Leiby**

BS, Wildlife Management  
Years of Experience: 30  
(Administrative Record)

**Terri Bright**

MS, Administration  
BS, Environmental Analysis and Planning  
Years of Experience: 12  
(Quality Assurance, Filesharing Website Administrator)

**Shani Arbel**

MES, Environmental Policy  
Years of Experience: 1  
(Quality Assurance, Filesharing Website Administrator)

This page intentionally left blank

# CHAPTER 10

## GLOSSARY

---

**Aerodynamic equivalent diameter**—A standardized method for characterizing the aerodynamic properties of suspended particles according to their relative settling velocities. The aerodynamic equivalent diameter of a particle is the diameter of a sphere with a 1 gram per cubic centimeter density which would have the same settling velocity as the real particle.

**Aerosol**—Solid or liquid material having size, shape, and density characteristics that allow the material to remain suspended in the atmosphere for more than a few minutes. A synonym for suspended particulate matter.

**Affected environment**—The physical features, land, and area or areas to be influenced, affected by, or created by an alternative under consideration; also includes various social and environmental factors and conditions pertinent to an area.

**Air assault**—The movement of friendly assault forces (combat, combat support, and combat service support) by rotary-wing aircraft to engage and destroy enemy forces or to seize and hold key terrain.

**Air basin**—A regional area defined for air quality management purposes based on considerations that include the constraints of topographic features on meteorology and pollutant transport patterns, and political jurisdiction boundaries that influence the design and implementation of air quality management programs.

**Alien**—A species (plant or animal) that differs in nature or character from the local vegetation or wildlife species. Often used to refer to invasive species that cause difficulties for the local, native species.

**Ambient air quality standards**—A combination of air pollutant concentrations, exposure durations, and exposure frequencies that are established as thresholds above which adverse impacts to public health and welfare may be expected. Ambient air quality standards are set on a national level by the EPA. Ambient air quality standards are set on a state level by public health or environmental protection agencies as authorized by state law.

**Ambient air**—Outdoor air in locations accessible to the general public.

**Aromatics**—A class of organic compounds with a chemical structure based on a six-member double-bonded carbon ring; examples include benzene, toluene, xylene, and naphthalene.

**Attainment area**—An area considered to have air quality as good as or better than the NAAQS. An area may be an attainment area for one pollutant and a nonattainment area for others.

**Average daily traffic volumes**—The total traffic volume during a given time in 24-hour periods, greater than one day and less than one year, divided by the number of days in that period.

**A-weighted decibel (dBA)**—A frequency-weighted decibel scale that approximates the relative sensitivity of human hearing to different frequency bands of audible sound.

**Ballistic effect**—Relating to the trajectory and fall of a ballistic projectile.

**Ballistic**—Guided in the ascent of a high-arch trajectory and freely falling in the descent.

**Battalion**—Military unit generally composed of multiple companies with a headquarters section (approximately 700 to 1,000 Soldiers).

**Benthic**—Of, relating to, or occurring at the bottom of a body of water.

**Best management practices**—Methods adopted as standard practice as the most effective and practical means of preventing damage to a resource or reducing pollution while performing an action or activity.

**Billet**—Shelter for troops.

**Bivouac/bivouacking**—Temporary settlement or shelter; to watch at night or be on guard as a whole army.

**Brigade**—A military unit smaller than a division, usually composed of multiple battalions with a headquarters section, to which are attached smaller units tailored to meet anticipated requirements (approximately 4,000 to 5,000 Soldiers).

**Caliber**—The diameter of a firearm projectile in inches. For example, a .50-caliber firearm uses an ammunition round that has a diameter of .50 inches.

**Call-for-fire**—A request for gunfire containing data necessary for obtaining the required gunfire on a target.

**Cancer**—A class of diseases characterized by uncontrolled growth of somatic cells. Cancers are typically caused by one of three mechanisms: chemically induced mutations or other changes to cellular DNA; radiation-induced damage to cellular chromosomes; or viral infections that introduce new DNA into cells.

**Canopy**—The uppermost spreading branchy layer of a forest.

**Cantonment area**—Permanent military station, usually containing administration buildings, barracks, and support facilities.

**Carbon monoxide (CO)**—A colorless, odorless gas which is toxic because it reduces the oxygen-carrying capacity of the blood.

**Carcinogen**—A chemical substance or type of radiation that can cause cancer in living organisms.

**Ceded lands**—Either Crown or government lands until 1893, when the Hawaiian Kingdom was overthrown. The successor government, the Republic of Hawai‘i, assumed ownership and control of these lands and continued their public use. When the Republic of Hawai‘i was annexed as a territory of the United States in 1898, it ceded these lands to the United States, which took ownership of them in fee simple. During the territorial era, the United States set some of these lands aside for military and other public purposes. When Hawai‘i became a state in 1959, the United States retained ownership of the ceded lands it needed for military and public purposes and conveyed the remaining ceded lands to the State of Hawai‘i.

**Cetacean**—Any of an order (Cetacea) of aquatic mostly marine mammals that includes the whales, dolphins, and porpoises.

**Chemistry**—Any chemical reactions that transform pollutant emissions into other chemical substances.

**Chlorofluorocarbons (CFCs)**—A family of inert, nontoxic, and easily-liquefied chemicals used in refrigeration, air conditioning, packaging, insulation, or as solvents or aerosol propellants. Because CFCs are not destroyed in the lower atmosphere they drift into the upper atmosphere where they can be decomposed by high intensity ultraviolet radiation. The chlorine released when CFCs decompose reacts with and destroys ozone in the stratosphere.

**Community noise equivalent level (CNEL)**—A 24-hour average noise level rating with a 5 dB penalty factor applied to evening noise levels and a 10 dB penalty factor applied to nighttime noise levels.  $L_{dn}$  is a seldom-used alternative unit designation.

**Company**—A military unit usually composed of multiple platoons with a headquarters section (at least 150 Soldiers).

**Concentration units**—The ratio of the quantity of a substance in a mixture to the quantity of the mixture is its concentration in the mixture. Concentrations are often expressed in units of mass (weight) or volume of a substance per unit of mass or volume of the mixture. If the concentration is very high, then the concentration might be given in terms of a percentage. Percentage concentrations are equivalent to “parts per hundred.” In many environmental applications, the concentrations of interest are very dilute, and it is convenient to express concentrations in parts per thousand (ppt), parts per million (ppm), or parts per billion (ppb). Concentrations in water are typically given either in units of mass per mass or in mass per volume. For example, there are approximately 35 grams of salt in 1,000 grams of seawater. The concentration of salt in seawater, in units of mass per mass, is therefore approximately 35 parts of salt per thousand parts of seawater, or 35 ppt. The “parts” in this case are units of mass for both the salt and the seawater. If, instead of 35 grams, there were only 35 milligrams (mg) of salt in the same mass of water and salt (i.e., less salt in the mixture by a magnitude of 1,000), then the concentration would be 35 ppm, and if there were only 35 micrograms ( $\mu\text{g}$ ) in water, then the concentration would be one thousand time more dilute, or 35 ppb. Because 35 mg of salt takes up only a very small volume, adding 35 mg of salt to 1 liter of pure water does not change the volume of the solution much. One liter of pure water has a mass of 1,000 grams, or 1 kilogram. Therefore, at dilute concentrations, 35 ppm can be expressed as 35 milligrams per liter (mg/L). Similarly, 35 ppb is nearly the same as 35  $\mu\text{g}/\text{L}$ . Concentrations in soils are nearly always given in units of mass per mass. Concentrations in air are typically given in units of

volume per volume, or, because volume of air depends on the temperature and pressure, in units of mass per volume at a specified pressure and temperature.

**Contingency force**—A force reserved in order to be deployed as needed.

**Convoy**—An organized and controlled group of vehicles that moves over the same route at the same time and under one commander.

**Corps**—A tactical unit usually consisting of two or more divisions and auxiliary arms and services.

**County Census Division (CCD)**—A statistical subdivision of a county, established and delineated cooperatively by the Census Bureau and state, local, and tribal officials for data presentation purposes. CCDs have been established in 21 states that do not have minor civil divisions suitable for data presentation; that is, minor civil divisions have not been legally established, do not have a governmental or administrative purpose, have boundaries that are ambiguous or change frequently, and/or generally are not well known to the public.

**Criteria pollutant**— An air pollutant for which there is a national ambient air quality standard (carbon monoxide, nitrogen dioxide, ozone, sulfur dioxide, inhalable particulate matter, fine particulate matter, or airborne lead particles).

**Critical Habitat**—A description of the specific areas with physical or biological features essential to the conservation of a listed species and that may require special management considerations or protection. These areas have been legally designated via Federal Register notices.

**Cumulative effects**—Effects that are the result of incremental impacts of an action, when added to other past, present, and reasonably foreseeable future actions, regardless of which agency (federal or non-federal) or person undertakes such actions.

**Current Force**—Army units and structure currently in place.

**Cutpoint diameter (D50 diameter)**—A term used to characterize the collection efficiency of particulate matter sampling devices. The 50 percent mass collection efficiency size (D50 diameter) is commonly used as a simple description of sampling device performance. The D50 cutpoint diameter is not a particle size limit; it is merely the size range (as an aerodynamic equivalent diameter) at which the sampling device collects 50 percent of the ambient particle mass. Size categories of suspended

particulate matter are typically designated according to the D50 cutpoint of the relevant sampling equipment.

**C-weighted decibel (dBC)**—A frequency-weighted decibel scale that correlates well with the physical vibration response of buildings and other structures to airborne sound.

**Day-night average sound level ( $L_{dn}$ )**—A 24-hour average noise level rating with a 10 dB penalty factor applied to nighttime noise levels. DNL is an alternative unit designation.

**De minimis level**—A threshold for determining whether various regulatory requirements apply to a particular action or facility. In an air quality context, *de minimis* thresholds typically are based on emissions, facility size, facility activity levels, or other indicators.

**Decibel (dB)**—A generic term for measurement units based on the logarithm of the ratio between a measured value and a reference value. Decibel scales are most commonly associated with acoustics (using air pressure fluctuation data); but decibel scales sometimes are used for ground-borne vibrations or other types of measurements.

**Depleted uranium (DU)**—DU is a dense, slightly radioactive heavy metal used by the United States and other countries in making ammunition, armor, aircraft counterweights, and other materials. Because of its density and penetrating power, DU is an excellent material for making armor and armor-piercing weapons.

**Deployment**—The movement of forces within operational areas.

**Detachment**—A temporary military or naval unit formed from other units or parts of units.

**Direct fire**—Gunfire delivered on a target, using the target itself as a point of aim for either the gun or the director.

**Division**—A major administrative and tactical unit/formation that combines the necessary arms and services required for sustained combat; larger than a regiment/brigade and smaller than a corps (approximately 15,000 to 20,000 Soldiers).

**Dry fire**—Simulated gunfire; used only for training.

**Dud rounds**—Explosive munitions that has not been armed as intended or that has failed to explode after being armed.

**Easement**—An interest in land owned by another that entitles its holder to a specific limited use. A right-of-way is usually an easement.

**Ecosystem**—A community of interacting organisms (including people) and their environment that functions together to sustain life.

**Emission standard**—A requirement established under the federal Clean Air Act that limits the quantity, rate, or concentration of emissions of air contaminants on a continuous basis.

**Emission**—The release of air contaminants into the ambient air.

**Emissions**—The types, amounts, and locations of pollutants emitted into the atmosphere.

**Endangered species**—Any species or subspecies of bird, mammal, fish, amphibian, reptile, or plant that is in serious danger of becoming extinct throughout all, or a significant portion, of its range. Federally endangered species are officially designated by the US Fish and Wildlife Service or the National Marine Fisheries Service, and the designation is published in the Federal Register.

**Endemic**—Restricted or peculiar to a locality or region.

**Environmental consequences**—The impacts on the affected environment that are expected from implementing a given alternative.

**Environmental impact statement**—As defined in the Council on Environmental Quality regulations, a detailed written report that provides a “full and fair discussion of significant environmental impacts and (informs) decision-makers and the public of the reasonable alternatives which would avoid or minimize adverse impacts or enhance the quality of the human environment.” The draft EIS evaluates a range of reasonable alternatives and their associated impacts and presents a preferred alternative if one option is clearly favored above the others. After departmental review, the draft EIS is circulated among agencies and the public for comment. Following the public hearing held to formally record comments on the draft, a final EIS is prepared incorporating public and agency input and recommending a selected alternative.

**Environmental**—1) In a scientific context, a combination of natural conditions. 2) In a planning context, a category of analytical studies of aesthetic values, ecological resources, cultural (historical) resources, sociological and economic conditions, etc.

**Equivalent Average Sound Pressure Level (or Energy-Averaged Sound Level,  $L_{eq}$ )**—The decibel level of a constant noise source that would have the same total acoustical energy over the same time interval as the actual time-varying noise condition being measured or estimated.  $L_{eq}$  values must be associated with an explicit or implicit averaging time in order to have practical meaning. The use of A-weighted, C-weighted, or unweighted (flat) decibel units sometimes is indicated by  $LA_{eq}$ ,  $LC_{eq}$ , or  $LF_{eq}$ , respectively.

**Estuarine**—Of, relating to, or formed in an estuary.

**Executive Order 12898, Federal Actions to Address Environmental Justice in Minority and Low-Income Populations**—Issued February 11, 1994. To the greatest extent practicable and permitted by law, and consistent with the principles set forth in the report on the National Performance Review, each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States and its territories and possessions, the District of Columbia, the Commonwealth of Puerto Rico, and the Commonwealth of the Mariana Islands.

**Executive Order 13045, Protection of Children from Environmental Health and Safety Risks. Issued April 21, 1997**—To the extent permitted by law and appropriate, and consistent with the agency's mission, each Federal agency: (a) shall make it a high priority to identify and assess environmental health risks and safety risks that may disproportionately affect children; and (b) shall ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks.

**Executive order**—Order issued by the President by virtue of his authority vested by the Constitution or by an act of Congress. An executive order has the force of law.

**Facilities**—Buildings and the associated infrastructure, such as roads, trails, and utilities.

**Farmland Protection Policy Act**—Soil phases/areas protected by the FPPA and 7 CFR 658. FPPA soils include prime farmland, unique farmland, farmland of statewide importance, and farmland of local importance.

**Federal Register**—A daily publication of the US Government Printing Office that contains notices, announcements, regulations, and other official pronouncements of US Government administrative agencies. Various printed announcements and findings related to specified environmental matters and transportation projects and activities appear in this publication.

**Fee simple**—Fee simple ownership means possession of a piece of real estate in totality, generally not subject to any other person's ownership interests. Also referred to as "fee simple absolute" or "owned in fee."

**Field artillery**—1) A basic branch and arm of the Army. The branch name identifies personnel and units that use cannons, and rockets and missile systems, with target acquisition means, assisting in land combat operations. (2) Artillery weapons that are sufficiently mobile to accompany and support infantry, mechanized, armored, airborne, and air mobile units in the field.

**Fire power**—The capacity of an individual or unit to deliver accurate and effective gunfire on a target or area to kill or suppress the enemy in its position, to deceive the enemy, and to support tactical maneuvers.

**Forced entry**—To enter a property by use of force, usually without permission.

**Force-on-force**—A force engaging another force, usually from within the same army, in a nonlive-fire situation, for the purpose of training and practice.

**Frustrated algae**—Leafy "sea weeds."

**Fugitive emissions**—Emissions that could not reasonably be confined or collected in a stack, vent, or similar device that would allow application of emission control equipment.

**Habituation**—Decrease in responsiveness upon repeated exposure to a stimulus.

**Hazardous air pollutant (HAP)**—Air pollutants which have been specifically designated by relevant federal or state authorities as being hazardous to human health. Most HAP compounds are designated due to concerns related to carcinogenic, mutagenic, teratogenic properties; severe acute toxic effects; or ionizing radiation released during radioactive decay processes.

**Hazardous material**—A substance that, due to its quantity, concentration, or physical and chemical characteristics, poses a potential hazard to human health and safety or to the environment if improperly used.

**Hazardous waste**—An environmental impact category encompassing all types of permitted and unregulated materials, sites, and substances that require prudent handling and treatment to prevent harm or danger. Sites are often referred to as waste management sites.

**Heavy brigade**—A brigade that is composed of heavy artillery and armored vehicles and designed to contain, repel, or defeat a heavily armed enemy force.

**Heavy forces**—A large force designed for sustained battlefield combat, usually composed largely of armored vehicles.

**Hertz (Hz)**—Sound wave cycles per second. A standard unit for describing acoustical frequencies measured as the number of air pressure fluctuation cycles per second. For most people, the audible range of acoustical frequencies is from 20 Hz to 20,000 Hz.

**Hydrocarbons**—A class of organic compounds composed solely of carbon and hydrogen atoms; often used loosely to include substituted hydrocarbons. Hydrocarbons are a subclass of organic compounds. This term is frequently misused as a synonym for “organic compounds”.

**Impacts**—Positive or negative effects on the natural or social environment resulting from transportation projects.

**Improved conventional munitions (ICMs)**—Cluster bombs, artillery munitions that contain multiple submunitions.

**Incendiaries**—A weapon, such as a bomb, designed to ignite fires.

**Indirect fire**—Gunfire delivered on a target that is not itself used as a point of aim for the weapon or the director.

**Infantry**—Soldiers trained, armed, and equipped to fight on foot.

**Instantaneous peak sound pressure level ( $L_{pk}$ )**—The highest instantaneous decibel level detected during a monitoring interval. The reported value depends somewhat on the instrument detector setting (slow, fast, or impulse sampling rate). Some sound level meters allow the decibel weighting for the  $L_{pk}$  measurement to be set independently from the

decibel weighting used for the normal time-integrated monitoring.  $L_{pk}$  will differ from  $L_{max}$  when the instrument samples more frequently than the minimum integration time. For many modern sound level meters, the slow sampling rate is 8 readings per second and the fast sampling rate is either 16 or 32 readings per second. A separate impulse sampling rate also may be available (typically at the fast sampling rate but with a special detector that can track a noise level rise over time intervals as short as 20 to 60 microseconds (0.02 to 0.06 milliseconds). The use of A-weighted, C-weighted, or unweighted (flat) decibel units sometimes is indicated by  $LA_{pk}$ ,  $LC_{pk}$ , or  $LF_{pk}$ , respectively.

**Interim force**—The force between the Current Forces and the Objective Force.

**Inter-theater support operations**—Operations designed to convey supplies, personnel, and equipment between the originating theater and points outside the theater, to include the continental United States and other theaters.

**Intra-theater**—Within a theater (see theater definitions, below).

**Jurisdictional determination**—A site survey performed by the US Army Corps of Engineers to officially determine whether or not a given parcel of land is subject to wetlands regulations, and if so, the extent of the area.

**Kaiahi Gulch**—Gulch located at the southern end of MMR, which extends from the *makai* end of the range inward for approximately 1 mile (1.6 kilometers). Also known as Ko‘iahi Gulch.

**Ko‘iahi Gulch**—Also known as Kaiahi Gulch. See Kaiahi Gulch.

**Land navigation training**—Maneuvers designed to train troops in techniques for navigating to a given destination.

**Level of service**—Combinations of operating conditions that can occur in a given lane or roadway when it is accommodating various traffic volumes.

**LFA**—The Surveillance Towed Array Sensor System Low Frequency Active Sonar system is proposed to support the Navy’s national defense mission. It uses an array of sound sources suspended from a ship to provide improved submarine detection capabilities. The LFA sonar system is a long-range, low frequency sonar (between 100 and 500 Hertz) that has both active and passive components.

**Light brigade**—A force composed primarily of foot-mobile fighters employing artillery, mortars, tactical air, Army aviation, naval gunfire, and reconnaissance assets to support the tactical operations plan.

**Light forces**—Small agile forces designed for quick deployment and redeployment, usually not involving armored vehicles.

**Light infantry**—Composed of light arms and hand-held weapons and lacking heavy artillery.

**Limu**—Aquatic plants, such as seaweed, living in freshwater or saltwater.

**Live-fire exercise**—Training activities using “live” or lethal ammunition.

**Maintenance area**—An area that currently meets federal ambient air quality standards but which was previously designated as a nonattainment area. Federal agency actions occurring in a maintenance area are still subject to Clean Air Act conformity review requirements.

**Maneuver**—A movement to place ships, aircraft, or land forces in a position of advantage over the enemy.

**Materiel**—All items necessary to equip, operate, maintain, and support military activities without distinction as to its application for administrative or combat purposes. Examples of materiel are ships, tanks, self-propelled weapons, and aircraft and related spares, repair parts, and support equipment, but excluding real property, installations, and utilities.

**Maximum sound pressure level ( $L_{\max}$ )**—The highest decibel level measured during a stated or implied monitoring period or noise event. The  $L_{\max}$  value recorded by a sound level meter depends on the time factor used for integration of instantaneous sound pressure level measurements. For most modern sound meters, this is 1 second when the instrument is set for the slow sampling rate and 1/8 second when the instrument is set for the fast sampling rate. The use of A-weighted, C-weighted, or unweighted (flat) decibel units sometimes is indicated by  $LA_{\max}$ ,  $LC_{\max}$ , or  $LF_{\max}$ , respectively.

**Mesic**—Characterized by, relating to, or requiring a moderate amount of moisture.

**Meteorology**—The physical processes affecting the distribution, dilution, and removal of these pollutants

**Microgram ( $\mu\text{g}$ )**—One one-millionth of a gram.

**Micron ( $\mu\text{m}$ )**—A unit commonly used to describe particle size. One one-millionth of a meter (one micrometer).

**Mine-clearing line charge (MICLIC)**—A rocket-propelled, explosive line charge. It is used to reduce minefields that contain single-impulse, pressure-activated antitank mines and mechanically activated antipersonnel mines.

**Minimum sound pressure level ( $L_{\text{min}}$ )**—The lowest decibel level measured during a stated or implied monitoring period or noise event. The  $L_{\text{min}}$  value recorded by a sound level meter depends on the time factor used for integration of instantaneous sound pressure level measurements. For most modern sound meters, this is 1 second when the instrument is set for the slow sampling rate and 1/8 second when the instrument is set for the fast sampling rate. The use of A-weighted, C-weighted, or unweighted (flat) decibel units sometimes is indicated by  $LA_{\text{min}}$ ,  $LC_{\text{min}}$ , or  $LF_{\text{min}}$ , respectively.

**Mission essential**—That materiel, equipment, personnel, projects, etc. that are authorized for and available to combat, combat support, combat service support, and combat readiness training forces in order to accomplish their assigned missions.

**Mitigation measure**—A specific design commitment made with the resource agencies and other agencies during the environmental evaluation and study process that serve to moderate or lessen impacts derived from the Proposed Action. This might include planning and development commitments, environmental measures, and right-of-way improvements. A mitigation measure is implemented during construction or post-construction.

**Modular packed mine system**—A man portable anti-tank and anti-personnel mine system.

**Muliwai**—Brackish water pools near the mouths of streams created by seasonal barriers of sand or sediment. They are generally considered to be estuarine wetlands.

**Mutagen**—A chemical substance or physical agent that causes a permanent change to the genes of a cell.

**Nap of the earth flight (also called terrain flight)**—Flight close to the Earth's surface during which airspeed, height, and altitude are adapted to the contours and cover of the ground in order to avoid enemy detection and gunfire.

**National Environmental Policy Act of 1969 (NEPA)**—Our nation’s basic charter for protecting the environment. It establishes policy, sets goals, and provides means for carrying out the policy. In accordance with NEPA, all federal agencies must prepare a written statement on the environmental impact of a Proposed Action. The provisions to ensure that federal agencies act according to the letter and spirit of NEPA are the Council on Environmental Quality regulations for implementing NEPA (43 CFR 1500-1508).

**Nitric oxide (NO)**—A colorless toxic gas formed primarily by combustion processes that oxidize atmospheric nitrogen gas or nitrogen compounds found in the fuel. A precursor of ozone, nitrogen dioxide, numerous types of photochemically generated nitrate particles (including PAN), and atmospheric nitrous and nitric acids. Most nitric oxide formed by combustion processes is converted into nitrogen dioxide by subsequent oxidation in the atmosphere over a period that may range from several hours to a few days.

**Nitrogen dioxide (NO<sub>2</sub>)**—A toxic reddish gas formed by oxidation of nitric oxide. Nitrogen dioxide is a strong respiratory and eye irritant. Most nitric oxide formed by combustion processes is converted into nitrogen dioxide by subsequent oxidation in the atmosphere. Nitrogen dioxide is a criteria pollutant in its own right, and is a precursor of ozone, numerous types of photochemically generated nitrate particles (including PAN), and atmospheric nitrous and nitric acids.

**Nitrogen oxides (NO<sub>x</sub>)**—A group term meaning the combination of nitric oxide and nitrogen dioxide; other trace oxides of nitrogen may also be included in instrument-based NO<sub>x</sub> measurements. A precursor of ozone, photochemically generated nitrate particles (including PAN), and atmospheric nitrous and nitric acids.

**Nonattainment area**—An area that does not meet a federal or state ambient air quality standard. Federal agency actions occurring in a federal nonattainment area are subject to Clean Air Act conformity review requirements.

**Nonlive-fire exercise**—Training exercise using training rounds or nonlethal ammunition or blanks.

**Notice of intent**—Announcement in the Federal Register advising interested parties that an EIS will be prepared and circulated for a given project.

**Noxious**—Physically harmful or destructive to living beings.

**North Pacific Acoustic Laboratory (NPAL)**—This project is a continuation of the research that was conducted by the Acoustic Thermometry of Ocean Climate project. Funded by the Office of Naval Research and performed by Scripps Institution of Oceanography, University of California San Diego, in conjunction with the Applied Physics Laboratory of the University of Washington. NPAL broadcasts low frequency sound transmissions in the ocean over long distances. Source is located off Kaua‘i.

**Objective Force**—The future forces of the Army. Legacy Forces, Army wide, will undergo transformation in training, equipment, and weapons over an estimated 20 years to become the Objective Force.

**Ordnance impact area**—An area having designated boundaries, within the limits of which all ordnance will detonate on impact.

**Organic compounds**—Compounds of carbon containing hydrogen and possibly other elements (such as oxygen, sulfur, or nitrogen). Major subgroups of organic compounds include hydrocarbons, alcohols, aldehydes, carboxylic acids, esters, ethers, and ketones. Organic compounds do not include crystalline or amorphous forms of elemental carbon (graphite, diamond, carbon black, etc.), the simple oxides of carbon (carbon monoxide and carbon dioxide), metallic carbides, or metallic carbonates.

**Ozone (O<sub>3</sub>)**—A compound consisting of three oxygen atoms. Ozone is a major constituent of photochemical smog that is formed through chemical reactions in the atmosphere involving reactive organic compounds, nitrogen oxides, and ultraviolet light. Ozone is a toxic chemical that damages various types of plant and animal tissues and which causes chemical oxidation damage to various materials. Ozone is a respiratory irritant, and appears to increase susceptibility to respiratory infections. A natural layer of ozone in the upper atmosphere absorbs high energy ultraviolet radiation, reducing the intensity and spectrum of ultraviolet light that reaches the earth’s surface.

**Pantropical**—Occurring or distributed throughout the tropical regions of the earth.

**Particulate matter**—Solid or liquid material having size, shape, and density characteristics that allow the material to remain suspended in the atmosphere for more than a few minutes. Particulate matter can be characterized by chemical characteristics, physical form, or aerodynamic properties. Categories based on aerodynamic properties are commonly described as being size categories, although physical size is not used to

define the categories. Many components of suspended particulate matter are respiratory irritants. Some components (such as crystalline or fibrous minerals) are primarily physical irritants. Other components are chemical irritants (such as sulfates, nitrates, and various organic chemicals). Suspended particulate matter also can contain compounds (such as heavy metals and various organic compounds) that are systemic toxins or necrotic agents. Suspended particulate matter or compounds adsorbed on the surface of particles can also be carcinogenic or mutagenic chemicals.

**Parts per \*\*\***—See concentration units.

**Pathogenic**—Causing or capable of causing disease

**Percentile sound pressure level ( $L_x$ )**—The decibel level exceeded “x” percent of the time during a monitoring episode. Sometimes designated as  $L_n$  or  $L_{nn}$ , although those designations are easily confused with the nighttime average noise level descriptor used for  $L_{dn}$  and CNEL estimates.

**Permissible exposure limit (PEL)**—An occupational air quality standard adopted by the Occupational Safety and Health Administration (OSHA). OSHA PELs are typically adopted as 8-hour time-weighted averages.

**Peroxyacetyl nitrate (PAN)**—A toxic organic nitrate compound formed by photochemical reactions in the atmosphere. PAN is a strong respiratory and eye irritant, and a strong necrotic agent affecting plant tissues. Also called peroxyacetic nitric anhydride. A number of similar organic nitrate compounds are formed along with PAN during photochemical smog reactions. In relatively remote rural areas PAN and related organic nitrates, together with nitric acid, are often the dominant atmospheric nitrogen compounds.

**Pesticide**—Any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any pest; the term pesticide also applies to herbicides, fungicides, avicides (bird agents), rodenticides, and various other substances used to control pests.

**Pinniped**—Any of a suborder (Pinnipedia) of aquatic carnivorous mammals (as a seal or walrus) with all four limbs modified into flippers.

**Platoon**—A subdivision of a company-size military unit, normally consisting of two or more squads or sections (approximately 30 Soldiers).

**PM<sub>10</sub> (inhalable particulate matter [EPA])**—A fractional sampling of suspended particulate matter that approximates the extent to which suspended particles with aerodynamic equivalent diameters smaller than

50 microns penetrate to the lower respiratory tract (tracheo-bronchial airways and alveoli in the lungs). In a regulatory context, PM<sub>10</sub> is any suspended particulate matter collected by a certified sampling device having a 50 percent collection efficiency for particles with aerodynamic equivalent diameters of 9.5-10.5 microns and an maximum aerodynamic diameter collection limit less than 50 microns. Collection efficiencies are greater than 50 percent for particles with aerodynamic diameters smaller than 10 microns and less than 50 percent for particles with aerodynamic diameters larger than 10 microns. NOTE: the ACGIH definition of inhalable particulate mass is based on a D50 of 100 microns aerodynamic equivalent diameter.

**PM<sub>2.5</sub> (fine particulate matter [EPA])**—A fractional sampling of suspended particulate matter that approximates the extent to which suspended particles with aerodynamic equivalent diameters smaller than 6 microns penetrate into the alveoli in the lungs. In a regulatory context, PM<sub>2.5</sub> is any suspended particulate matter collected by a certified sampling device having a 50 percent collection efficiency for particles with aerodynamic equivalent diameters of 2.0-2.5 microns and an maximum aerodynamic diameter collection limit less than 6 microns. Collection efficiencies are greater than 50 percent for particles with aerodynamic diameters smaller than 2.5 microns and less than 50 percent for particles with aerodynamic diameters larger than 2.5 microns.

**Precursor**—A compound or category of pollutant that undergoes chemical reactions in the atmosphere to produce or catalyze the production of another type of air pollutant.

**Proposed Action**—Plan that a federal agency intends to implement and that is the subject of an environmental analysis. Usually, but not always, the Proposed Action is the agency's preferred alternative for a project. The Proposed Action and all reasonable alternatives are evaluated against the no action alternative.

**Pyrotechnics**—A mixture of chemicals that, when ignited, is capable of producing light, heat, smoke, sound, or gas.

**Range impact area**—An area having designated boundaries, within the limits of which all ordnance will detonate on impact.

**Reactive organic compounds (ROC)**—The most technically accurate term for the organic precursors of ozone and other photochemically generated pollutants. The more commonly used term is “reactive organic gases (ROG)”.

**Reactive organic gases (ROG)**—Organic compounds emitted into the air which have photochemical reaction rates sufficient to be considered precursors of ozone. Organic compounds which are not considered reactive in the lower atmosphere include methane, ethane, acetone, methyl acetate, carbonic acid, ammonium carbonate, methylene chloride, methyl chloroform, and numerous fully-saturated chloro-fluorocarbon compounds. The term “reactive organic compounds” (ROC) would be technically more accurate, since many of the compounds of concern may be present in both gaseous and aerosol states (e.g., as atmospheric aerosols or as liquid films condensed on atmospheric particles in dynamic equilibrium with gas phase vapors). However, the acronym ROC is not in common use, and there are far too many acronyms already in use for organic compound emissions.

**Recommended exposure limit (REL)**—An occupational air quality guideline recommended by the National Institute of Occupational Safety and Health (NIOSH). NIOSH RELs are typically adopted as time-weighted averages for workdays of up to 10 hours in a 40-hour workweek.

**Regiment**—A military unit usually consisting of a number of battalions or squadrons.

**Region of influence (ROI)**— An ROI is a geographic area selected as a basis on which social and economic impacts of project alternatives are analyzed. The criteria used to determine the ROI are the geographic location of the installation or training area where the Proposed Action would occur; the residency distribution of the military and civilian personnel associated with these facilities; commuting distances and times; and the location of businesses providing goods and services to the affected facilities, their personnel, and their dependents.

**Respirable particulate matter (ACGIH definition)**—Approximately PM<sub>10</sub> with a 2 percent collection efficiency at 25 microns aerodynamic equivalent diameter. The collection efficiency curve may differ from EPA PM<sub>10</sub> certification requirements.

**Scoping**—A process conducted early in the project that is open to agencies and the general public to identify the range, or scope, of issues and alternatives to be addressed during the environmental studies and in the EIS. Even though scoping is the initial step in the EIS process, public involvement is a critical component that continues throughout the EIS process.

**Short-term exposure limit (STEL)**—An occupational exposure standard adopted by OSHA or an occupational exposure guideline recommended

by ACGIH or NIOSH that is typically based on a 15-minute time-weighted average which should not be exceeded at any time during a workday. In some cases, exposure duration periods shorter than or longer than 15 minutes are specified.

**Socioeconomic**—Of, relating to, or involving a combination of social and economic factors.

**Sound exposure level (SEL)**—Cumulative (not average) sound exposure during a particular noise event, integrated with respect to a 1-second time frame. SEL measurements are equivalent to the  $L_{eq}$  value of a 1-second noise event producing the same cumulative acoustic energy as the actual noise event being analyzed. In effect, an SEL measure “spreads” or “compresses” the noise event to fit a fixed one-second time interval. If the actual duration of the noise event is less than one second, the SEL value will be less than the  $L_{eq}$  value for the event. If the duration of the noise event exceeds 1 second, the SEL value will exceed the  $L_{eq}$  of the event. SEL values can have any specified decibel weighting. Blast noise SEL values frequently are given as C-weighted decibels. SEL values for sources such as aircraft flyover events or train passby events typically are given as A-weighted decibels.

**Sound pressure level (SPL)**—A decibel level calculation based on the measurement of instantaneous pressure fluctuations over and under the prevailing barometric pressure. The root mean squared (rms) pressure measurements are converted to a pressure ratio using 20 micropascals as the reference pressure. The sound pressure level in decibels is calculated as 10 times the logarithm of the square of the pressure ratio. Most sound level meters integrate the SPL readings over minimum time intervals that depend on user-set detector sampling rates. Most sound level meters also allow the user to specify a decibel weighting for the SPL measurements. Modern sound level meters typically sample 8 times per second at a slow setting and 16 or 32 times per second at a fast setting. When set to the slow sampling setting, modern sound level meters average SPL readings over a 1-second interval and use those 1-second  $L_{eq}$  values for other time period integrations. The basic data integration period will be 1/8 of a second when a fast sampling rate setting is used. SPL ( $L_p$ ),  $L_{max}$ ,  $L_{min}$ , and  $L_x$  data typically are based on the 1-second (slow response) or 1/8 second (fast response)  $L_{eq}$  values.

**Special Operation Forces**—Forces designed and equipped to deal with unusual or specific tasks, often involving foreign language capabilities, specialized equipment, training, and tactics.

**Special status species**—Those plants or animals that have a protective status designated by a state or federal agency because of general or localized population decline.

**Squad**—A small military unit, usually consisting of approximately 10 Soldiers.

**Squadron**—Battalion-sized ground unit in US Army cavalry regiments and in the SBCT, which consists of troops instead of companies.

**State implementation plan (SIP)**—Legally enforceable plans adopted by states and submitted to EPA for approval, which identify the actions and programs to be undertaken by the State and its subdivisions to achieve and maintain national ambient air quality standards in a time frame mandated by the Clean Air Act.

**Strike Force**—A force prepared to carry out an attack that is intended to inflict damage on, seize, or destroy an objective.

**Stryker Brigade Combat Team (SBCT)**—The interim force between the Current Force and the Objective Force. SBCT is a new concept that uses technology and information to improve the abilities of Army units. The SBCT uses the lighter more efficient Stryker vehicle to transport Soldiers more quickly to areas of conflict.

**Sulfur dioxide (SO<sub>2</sub>)**—A pungent, colorless, and toxic oxide of sulfur formed primarily by the combustion of fossil fuels. It is a respiratory irritant, especially for asthmatics. A criteria pollutant in its own right, and a precursor of sulfate particles and atmospheric sulfuric acid.

**Sulfur oxides (SO<sub>x</sub>)**—A group term meaning the combination of sulfur dioxide and sulfur trioxide; treated as a precursor of sulfur dioxide, sulfate particles, and atmospheric sulfuric acid.

**Sustainable yield**—The maximum rate of forced withdrawal from a source of water, which does not result in a loss of water quality or loss of rate of withdrawal.

**Tactical Force**—A combat force, together with any service force required for its direct support, organized under one commander to operate as a unit and to engage the enemy in combat.

**Tactical maneuver**—A maneuver designed to perform a specific task or a task with a specific goal.

**Tactical**—Using tactics in the use of weapons or forces deployed at the battlefield in such a way as to achieve a given objective.

**Tax map key**—The description of a physical land unit of the state, using the division, zone, section, plat, and parcel. It is prepared especially for taxation purposes and in accordance with the requirements of the City and County of Honolulu Real Property Assessment Division and the County of Hawai‘i Real Property Tax Division.

**Taxon/taxa**—The name applied to a taxonomic group in a formal system of nomenclature.

**Teratogen**—A chemical substance or physical agent that causes birth defects through abnormal development or malformation of a fetus.

**Theater of operational readiness**—A theater of operations in which forces are prepared to fight a prolonged battle or war.

**Theater of operations**—A subarea within a theater of war defined by the geographic combatant commander required to conduct or support specific combat operations.

**Thoracic particulate matter (ACGIH definition)**—Approximately PM<sub>4</sub> with a 1 percent collection efficiency at 10 microns aerodynamic equivalent diameter.

**Threshold limit value (TLV)**—An occupational air quality guideline recommended by the American Conference of Governmental Industrial Hygienists (ACGIH). ACGIH TLVs are typically adopted as 8-hour time-weighted averages.

**Toxic agent**—A chemical compound or a mixture of compounds that exerts an adverse physiological effect on a living organism.

**Toxic**—Poisonous. Exerting an adverse physiological effect on the normal functioning of an organism's tissues or organs through chemical or biochemical mechanisms following physical contact or absorption.

**Tracers**—Ammunition containing a chemical composition to mark the flight of projectiles by a trail of smoke or fire.

**Transportation control measures (TCMs)**—Steps taken by a locality to adjust traffic patterns (e.g., bus lanes, right turn on red) or reduce vehicle use (ridesharing, high-occupancy vehicle lanes) to reduce vehicular emissions of air pollutants.

**Troop**—The company-sized elements in the RSTA Squadron.

**Unexploded ordnance**—Explosive ordnance that has been primed, fuzed, armed, or otherwise prepared for action, and that has been fired, dropped, launched, projected, or placed in such a manner as to constitute a hazard to operations, installations, personnel, or material and remains unexploded either by malfunction or design or for any other cause.

**Ungulates**—Hoofed animals.

**Unique agricultural land**—Land other than prime agricultural land that is used for producing specific high-value food and fiber crops, as determined by the Secretary of Agriculture. Unique agricultural land possesses a special combination of soil quality, location, growing season, and moisture supply needed to economically produce sustained high quality or high yields of specific crops when treated and managed according to acceptable farm methods. Examples of such crops include citrus, tree nuts, olives, cranberries, fruits, and vegetables.

**Vehicle miles traveled (VMT)**—A measure of both the volume and extent of motor vehicle operation; the total number of vehicle miles traveled within a specified geographical area (whether the entire country or a smaller area) over a given period of time.

**Viewshed**—The landscape that can be directly seen under favorable atmospheric conditions, from a viewpoint or along a transportation corridor.

**Water Sector**—An area which generally exhibits a continuous aquifer or source of water. Sector boundaries may include mountain ridges or valley floors. Regulatory agencies utilize sector boundaries in governing the state's water supply.

# CHAPTER 11

## DISTRIBUTION LIST

---

### 11.1 ELECTED OFFICIALS

US Congressman Neil Abercrombie  
Sharon Ackles  
Honorable Lieutenant Governor James R.  
Aiona, Jr.  
US Senator Daniel K. Akaka  
Councilmember Todd K. Apo  
Senator Colleen Hanabusa  
US Congressman Mazie Hirono  
Eugene Imai  
US Senator Daniel K. Inouye

Representative Michael Puamamo  
Kahikina  
Walter Kaneakua  
Michael Kitamura  
Honorable Governor Linda Lingle  
Jimmy Nakatani  
Representative Jennifer Goto Sabas  
Maile S. L. Shimabukuro  
Andy Smith

### 11.2 FEDERAL AGENCIES

Council on Environmental Quality  
Federal Aviation Administration,  
Honolulu Control Facility  
Federal Fire Department  
Federal Highway Administration  
National Parks Service, Pacific Islands  
Support Office  
NOAA Fisheries  
Pacific Islands Fisheries Science Center  
US Department of Agriculture, Forest  
Service, Institute of Pacific Islands  
Forestry

US Department of Agriculture, Natural  
Resources Conservation Service  
US Department of the Interior, Office of  
Environmental Policy and Compliance  
US Environmental Protection Agency,  
Office of Federal Activities  
US Environmental Protection Agency,  
Pacific Islands Contact Office  
US Environmental Protection Agency,  
Region 9  
US Fish and Wildlife Service  
US Geological Survey

**11.3 MILITARY**

29th ESIB	Marine Corps Base Kaneohe
Army Reserve	Naval Base Pearl Harbor
Camp Smith	Navy Region Hawai‘i Attn: N46
Hawai‘i Army National Guard	US Coast Guard
Hickam Air Force Base	US Navy Pacific Division

**11.4 STATE AGENCIES**

Department of Business, Economic Development, and Tourism, Office of Planning	Department of Health, Solid and Hazardous Waste Branch
Department of Hawaiian Homelands	Department of Health, Wastewater Branch
Department of Health, Clean Air Branch	Department of Land and Natural Resources
Department of Health, Clean Water Branch	Department of Transportation, Harbors Division
Department of Health, Environmental Health Services Division	Department of Transportation, Highways Division
Department of Health, Environmental Management Division	Division of Aquatic Resources
Department of Health, Environmental Planning Office	Hawai‘i Coastal Zone Management Program
Department of Health, Hazard Evaluation & Emergency Response	Legislative Reference Bureau
Department of Health, Noise, Radiation and Indoor Air Quality Branch	Office of Environmental Quality Control
Department of Health, Safe Drinking Water Branch	Office of Hawaiian Affairs
	Office of Planning
	State Historic Preservation Office

**11.5 LOCAL AGENCIES**

City and County of Honolulu, Board of Water Supply	City and County of Honolulu, Department of Transportation Services
City and County of Honolulu, Department of Design and Construction	‘Ewa Neighborhood Commission Office
City and County of Honolulu, Department of Education, Facilities Branch	Honolulu Fire Department
City and County of Honolulu, Department of Environmental Services	Honolulu Police Department
City and County of Honolulu, Department of Parks and Recreation	Makakilo/Kapolei/Honokai Hale Neighborhood Board #34
City and County of Honolulu, Department of Planning and Permitting	Wahiawa Neighborhood Commission Office
	Wai‘anae Neighborhood Board
	Waipahu Neighborhood Commission Office

**11.6 SCHOOLS**

UH Environmental Center  
 UHM Environmental Center  
 UHM Marine Programs

UHM Water Resources Research Center  
 Wai‘anae High School-Hawaiian Studies

**11.7 LIBRARIES**

Hawai‘i State Library, Hawai‘i  
 Documents Center  
 Hilo Public Library  
 Kailua – Kona Public Library  
 Kapolei Public Library  
 Pearl City Public Library

Thelma Parker Memorial Public and  
 School Library  
 UHM Hamilton Library, Hawaiian  
 Collection  
 Wahiawa Public Library  
 Wai‘anae Public Library

**11.8 ORGANIZATIONS**

Adopt An Ahupua‘a  
 Ai Pohaku Workshop  
 American Friends Service Committee  
 Association of Hawaiian Civic Clubs  
 Chamber of Commerce of Hawai‘i  
 Communications-Pacific, Inc.  
 Concerned Citizens of Wai‘anae  
 Conservation Council for Hawai‘i  
 Earthjustice Legal Defense Fund  
 East Asia US Women’s Network  
 Estate of Samuel Damon  
 Hale Ola Ho‘opakolea  
 Hawaiian Civic Club of Wahiawa  
 Hoa ‘Āina O Mākaha  
 Honolulu Religious Society of Friends  
 Hui Malama I Na Kupuna O Hawai‘i Nei  
 Hui Mālama O Mākua  
 Ilio‘ulaokalani Coalition  
 Ka‘ala Farm  
 Kanaka Maoli Tribunal Komike  
 Kanupepa  
 Koa Mana  
 Kua‘ana Student Service  
 Kupuna O Nānākuli  
 Life of the Land

Makaha Ahupua‘a  
 Mark A. Robinson Trusts (PACOM)  
 Na Koa O‘ahu  
 Na Kupuna Ame Nakakuo  
 Nanaikapono Hawaiian Civic Club  
 Nānākuli Ahupua‘a Council  
 Nānākuli Hawaiian Homestead  
 Community Association  
 Nani O Wai‘anae  
 O‘ahu Island Burial Council  
 Queen Liliuokalani Trust  
 Sandwich Isles Communications, Inc.  
 Save Our Surf  
 Sierra Club, Hawai‘i  
 Sierra Club, O‘ahu Group  
 The Nature Conservancy of Hawai‘i  
 Ukanipo Heiau Advisory Council  
 Veterans of Foreign Wars, Hawai‘i  
 Wai‘anae Coast Coalition  
 Wai‘anae Hawaiian Civic Club  
 Wai‘anae Hawaiian Homestead  
 Wai‘anae Military Civilian Advisory  
 Council  
 Waipahu Community Association  
 Women of Wai‘anae

## 11.9 MEDIA

The Honolulu Advertiser  
Westside Stories

## 11.10 INDIVIDUALS

Henry K. Ahlo  
Bernard Alama  
Fred, Irene, and Theole Anderson  
David Bramlett  
Phyllis "Coochie" Cayan  
Roy Dahlin  
Mr. and Mrs. Jonathan Deenik  
Frenchy DeSoto  
Bud Ebel  
Eric Enos  
William Ho'ohuli  
Walt and Ann Hunter  
Dicky Johnson  
Helen and Marleen Kamana

Eldon Kaopua  
John Kaopua  
Leilani Kerr  
Maralyn Kurshals  
Anela O Maunakea  
William Meyer  
Mr. and Mrs. Edward Pilila'au  
Roberta Leihulu Searle  
Albert H. Silva  
Milo Sinapati  
D. Kapua Sprout  
Walter K. Tagawa  
Shelley Zemborelli