APPENDIX J-4

FUEL MANAGEMENT OPTIONS FROM ANALYSIS OF FIRE MANAGEMENT CONCERNS AT MMR

Fuel Management Options for Makua Military Reservation

5.1 Summary

Fuel management options were discussed on site with Bob Burgan, Francis Fujioka, Pat Costales, Don Studebaker, Sammy Houseberg, Gayland Enriques, and Ron Borne. All existing fuel management techniques were considered for use at MMR, however, many were unacceptable due to the UXO and cultural resource concerns. Fuel modifications and treatments are shown on map 5. Long term refinement and prioritization of fuel treatments may be accomplished with a wildfire prevention analysis (WPA)[16]. There is currently not enough data to support a WPA as several years of reliable information are required. The longer the period of historical information, the better will be the results of the analysis. The fuel management options are listed by priority based on the best available information in regard to values and risks.

It is not the intent of this report to mandate fuel manipulations or other management policies and some of the options given here may exceed Army capabilities for engineering, environmental, cultural, or economic reasons. However, the first three treatments are considered to be of great importance to the preservation of the threatened and endangered species within MMR because they can be implemented immediately and provide significant protection to vulnerable areas.

5.4.1 Continue Current Treatments

Fuel loads within the south firebreak road have been kept down by mowing large portions of the area periodically. This should be continued barring the use of prescribed fire (discussed below) to accomplish the same objective. Helicopter landing zones, staging areas, and areas surrounding buildings and objectives should continue to be mowed as they are presently.

Herbicides are currently boom sprayed up to 10 feet out from the edge of most of the firebreak road. The lack of vegetation within this area is noticeable and this treatment should be continued as a method to widen the firebreak. However, the treatment area should be expanded to include the entire firebreak including the area along the north side of the south firebreak, a section not currently treated. (see section 5.4.5)

[16] For more information about WPAs contact Pat Durland, Fire Management Specialist at the National Interagency Fire Management Center in Boise, ID.

The firebreak roads are currently in good condition but in several places are in danger of being washed out by erosion induced by heavy rains. The roadside ditches and the road itself should be improved to better dissipate water flow wherever possible.

5.4.2 Prescribe Burn Areas Inside of Firebreaks

Because of the efficiency of fuel removal, prescribed burning should be the primary method utilized to control fuel loads within the firebreak road. Using fire to reduce these fuels instead of mechanical reduction will save time and money. Prescribed fire can be used to treat areas that are impossible to treat with mechanical reduction which support high risk of escape during a wildfire, such as the forested southeast corner of the south firebreak road. The risk of escaped prescribed fires will most likely be counter-balanced by the fact that the entire area inside the firebreak road can be treated, resulting in fewer wildfire escapes.

The area within the south firebreak road should be compartmentalized by improving existing and abandoned roads. These roads should be cleared of all vegetation to a width of no less than 10 ft and graded to the extent necessary for use by both Humvee and standard civilian wildland fire engines. If possible, a single graded road 10 feet wide should be constructed within the north firebreak road to compartmentalize this area. The location of this road should split the north area approximately in half. In addition, the old bulldozer line north of the northernmost extent of the north firebreak road should also be improved. With such a road network in place, compartments can be burned one at a time which will allow much better control of the timing of the prescribed fire in relation to weather conditions and require fewer resources per burn. Each compartment should be burned no less than once per year and more frequently if necessary. The Army may also want to consider widening the existing firebreak in areas of higher escape risk such as the forested southeast corner of the south firebreak.

Prescribed burns outside of the firebreak road have been used in the past to reduce the fuels on and around C-ridge. However, in 1995 an escaped prescribed fire ignited for this purpose led to the decision to restrict prescribed burns to the fuels inside the firebreak. This escape eliminated the possibility of using fire for fuels management elsewhere in the valley.

5.4.3 Treatments Along Farrington Highway

The threat of an ignition along Farrington Highway, either accidental or malicious, is very real. Because the firebreak roads are constructed from a root road at the entrance to the range, any fire starting along the highway will always be outside of the firebreak, and thus, difficult to contain if the ignition occurs under high fire danger conditions. Because of this threat, the fuels along Farrington Highway should be cut as short as possible. In the area where the north ridge meets the highway and the terrain is too steep for mowing, fuels should be cut back as far as possible with weed-whackers. If the terrain is deemed too steep for weed-whacking, boom spraying of herbicide should be utilized to diminish fuel loads as far from the highway as this method permits. This will have to be continued for several years before existing vegetation begins to degrade and the corresponding fuel loads decrease. If an initial cutting of this area can be accomplished followed by consistent herbicide application, this problem will be reduced greatly.

Where the fenceline runs parallel to the highway, all vegetation between the fence and the highway and 10 feet inside of the fence should be cut as low as possible, including vegetation in drainages and low-lying areas. The area between the end of the fence and Makua Cave should be cut as low as possible within 25 feet of the highway. All areas that are cut should be maintained as often as is necessary to keep the vegetation less than 8 inches in height. A dozer line approximately 25 feet in from the highway and 10 to 15 feet wide should be constructed parallel to the highway wherever terrain, UXO, and cultural resources allow. The construction of this dozer line will provide a line of defense against wildfires starting on the highway and allow prescribed burning of the strip of vegetation between the dozer line and the highway. All of the recommendations made within this option assume that environmental and engineering obstacles can be overcome. At a minimum the fuels along the highway fenceline should be cut.

5.4.4 Construct a Firebreak to Protect C-Ridge

A second firebreak should be constructed to provide a second line of defense against fires moving up C-ridge. This area has been of particular concern for fire management because it provides a highly efficient pathway for fire to move into the native forest habitat at the top of the ridge. The firebreak should start at the Y intersection in the firebreak road, continue along the south flank of C-ridge, and tie in with the south firebreak road near its easternmost point (see

map 5). Once this break is constructed, fuels within the compartment created between the existing firebreak and the new firebreak should be cut, burned, or grazed, depending on feasibility.

This recommendation assumes that creating a firebreak in this area is both technically possible and sensitive to cultural and environmental resources. A less intrusive fuelbreak could be constructed using handline that doesn't tie into the firebreak road. While this is less likely to stop a fire, it will certainly slow it down. The time gained may give suppression crews the extra advantage needed to contain the fire.

However, firebreak construction and maintenance may not be possible in this area, regardless of the construction techniques used because of steep terrain, UXO, and cultural resources. If this is the case, the Army should mow the flat area immediately surrounding and east of the upper dip pond and north of the south firebreak whenever interior areas are mowed. This will reduce the likelihood of spotting across the firebreak in the direction of C-ridge and thus offer further protection from fires originating within the firebreak.

Constructing a second firebreak road outside of the first (thereby producing a second line of defense) has been considered as an option for several years by the Army but has been repeatedly set back by safety issues, engineering difficulties, and high costs. Sending bulldozers into the impact area to construct a road is not feasible due to UXO and constructing a road across the terrain involved would be a major engineering undertaking. Finally, the cost of such a project, even if safety and engineering issues could be overcome, would most likely be far too expensive to justify.

5.4.5 Herbicide Along the Firebreak

The area between the easternmost end of the south firebreak and the junction with the north firebreak is not currently sprayed with herbicide. This length of road should be added to the herbicide application locations to increase the protection of C ridge from fires occurring within the south firebreak.

Use of herbicides on a larger scale is likely to fail approval of regulatory agencies because of concerns over water quality, contamination of the soil, and fears that the herbicide will drift into sensitive habitats. Additionally, while chemical agents can kill vegetation, the fuel load remains and the situation can actually be worsened since the dead fuel component increases

to nearly 100% after application, thus decreasing average fuel moistures and increasing the fire danger. The resulting fuel matrix, if ignited, may very well result in an uncontrollable conflagration.

5.4.6 Grazing

If a livestock owner is willing to risk livestock loss to UXO detonation, cattle or sheep could be grazed at the east end of the north valley lobe and south of the south firebreak road. Because these animals are unlikely to move up slopes greater than 30 degrees, it is unlikely that they will be able to move into areas known to be inhabited by threatened or endangered species. Unfortunately, the biomass consumed by grazing animals may be patchy or inadequate to effectively reduce the fuel load. In addition, the logistics of moving livestock in and out of UXO restricted areas would have to be overcome. However, due to the low cost for this option (the Army would provide the land for free in exchange for the livestock owner assuming the risk of livestock loss), it should be considered as a viable alternative. This alternative would reduce fuel loads outside the firebreak road, and could be even more desirable if implemented in conjunction with burning or mowing in the north firebreak. For this option to be logistically possible the animals in the north valley lobe will probably have to be fenced within the north firebreak. This would negate the main advantage of grazing in this location, which is the ability to treat areas outside of the fuel break, making this option less attractive.

Cattle could graze the entire lower valley since they could be confined to the valley bottom by the topography. However, herding the cattle out of the range before each training session is prohibitively costly and time-consuming. Additionally, few ranchers are willing to accept the risk to their livestock posed by UXO and obtaining enough livestock to effectively reduce fuel loads valley-wide would be difficult.