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50 CFR Part 17

Endangered and Threatened Wildlife and Plants; Final Designation of Critical Habitat for *Chlorogalum purpureum*, a Plant From the South Coast Ranges of California; Final Rule

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RIN 1018–AG75

Endangered and Threatened Wildlife and Plants; Final Designation of Critical Habitat for *Chlorogalum purpureum*, a Plant From the South Coast Ranges of California

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), designate critical habitat pursuant to the Endangered Species Act of 1973, as amended (Act), for two varieties of purple amole: *Chlorogalum purpureum* var. *purpureum* (purple amole) and *Chlorogalum purpureum* var. *reductum* (Camatta Canyon amole). A total of approximately 2,443 ha (5,910 ac) of land fall within the boundaries of the critical habitat designation. Critical habitat is located in San Luis Obispo and Monterey counties, California. Located on Federal, State, and private lands, this critical habitat designation will require consultation by the Service under section 7 of the Act on actions carried out, funded, or authorized by a Federal agency. Section 4 of the Act requires us to consider economic and other relevant impacts when specifying any particular area as critical habitat. We solicited data and comments from the public on all aspects of this proposal, including data on economic and other impacts of the designation.

We have revised the proposal to eliminate lands at Camp Roberts under section 3(5)(A), and lands at Ft. Hunter Liggett under section 4(b)(2). It is our policy that if any areas containing the primary constituent elements are currently being managed to address the conservation needs of *Chlorogalum purpureum* management or protection, these areas would not meet the definition of critical habitat in section 3(5)(A)(i) of the Act and would not be included in this final rule. We have determined that this is the case at Camp Roberts due to their having an approved Integrated Natural Resources Management Plan which addresses the conservation needs of *Chlorogalum purpureum*.

We have also determined that the direct and indirect costs to the Army, including reduction in military readiness, from designation of critical habitat at Ft. Hunter Liggett are such that the benefits of excluding those lands exceed the benefits of their inclusion.

DATES: This rule becomes effective on November 25, 2002.

ADDRESSES: Comments and materials received, as well as supporting documentation used, in the preparation of this final rule will be available for public inspection, by appointment, during normal business hours at the Ventura Fish and Wildlife Office, U.S. Fish and Wildlife Service, 2493 Portola Road, Suite B, Ventura, CA, 93003.

FOR FURTHER INFORMATION CONTACT: Diane Noda, Field Supervisor, Ventura Fish and Wildlife Office (see **ADDRESSES** section) (telephone 805/644–1766; facsimile 805/644–3958).

SUPPLEMENTARY INFORMATION:

Background

The genus *Chlorogalum* is a member of Liliaceae (lily family). *Chlorogalum purpureum* is endemic to clay soils that occur in the south coast ranges of Monterey and San Luis Obispo counties. *Chlorogalum purpureum* var. *purpureum* occurs in the Santa Lucia Range of southern Monterey County on lands managed by the U.S. Army Reserve (Army Reserve) at Fort Hunter Liggett, and in northern San Luis Obispo County on lands managed by the California Army National Guard (CANG) at Camp Roberts. *Chlorogalum purpureum* var. *reductum* occurs in one region of the La Panza Range of San Luis Obispo County on both private lands and public lands managed by the U.S. Forest Service (the Los Padres National Forest (LPNF)) and California Department of Transportation (CalTrans). The two varieties of *Chlorogalum* were listed as threatened species on March 20, 2000 (65 FR 14878).

Chlorogalum purpureum is a low-growing lily that forms a rosette at the base of the plant (basal rosette) that is made up of linear and flat, bright green leaves. It is the only member of the genus *Chlorogalum* with bluish-purple flowers that open during daylight hours. *Chlorogalum purpureum* produces a rosette of typically 4 to 7 basal leaves that are 2 to 5 millimeters (mm) (0.1 to 0.2 inch (in)) wide with wavy margins. The bulb is between 2.5 and 3 centimeters (cm) (0.98 to 1.2 in) and is found in the upper few inches of soil. The inflorescence (flower-cluster of a plant or arrangement of the flowers on the flowering stalk) produces bluish-purple flowers in a raceme (single stem with multiple branches). Each flower has six ovules (structure that develops into a seed if fertilized), six tepals (petals and sepals that appear similar), and six stamens (pollen-producing male organs) with bright yellow anthers (pollen sacs). Most fruits that have been examined, both in the field and under cultivation, produce between three and six seeds (D. Wilken, Santa Barbara Botanic Garden, *in litt.*, 2001). *Chlorogalum purpureum* var. *purpureum* has an inflorescence that is 25 to 40 cm (10 to 16 in) high, in contrast to *C. p.* var. *reductum* which has a shorter inflorescence that is 10 to 20 cm (4 to 8 in) high (Hoover 1964, Jernstedt 1993, Wilken 2000). Studies are currently underway to examine the phylogenetic relationships within *Chlorogalum* species (D. Wilken, *in litt.*, 2001).

Chlorogalum purpureum is a summer-dormant perennial herb that forms a bulb. The inflorescence develops during early spring, followed by flowering and fruit development during May and June. By the time the fruit has matured, the leaves wither and the inflorescence dries and turns light brown in color. Reproduction is primarily by seed, and the seed set apparently increases with insect pollination (D. Wilken, *in litt.*, 1998). Like other members of the lily family, *C. purpureum* is probably in a mycorrhizal relationship with a fungus (a close association between the plant and soil fungus, where the fungus aids in nutrient and water uptake), which can alter growth and competitive interactions between species (Allen 1991). The taxon has also been observed to grow on undisturbed soils that are cryptogamic or have cryptogamic crusts (E. L. Painter, pers. comm., 2002). Cryptogamic crusts consist of nonvascular photosynthetic plants (primarily cyanobacteria, green algae, lichens, and mosses) that protect the soils from erosion, aid in water infiltration, augment sites for seed germination, aid in carbon and nitrogen fixation, and increase soil nutrients (Beymer 1992, Belnap *et al.* 2001). These special crusts may enhance the habitat conditions (*e.g.*, retain soil moisture, reduce wind and water erosion, contribute to soil organic matter, etc.), thus increasing the likelihood that young bulbs will survive over the long term. Although the relationship is not well understood and more research is needed, presence of cryptogamic crusts is also known to discourage annual weed growth by functioning as a living mulch (Belnap *et al.* 2001).

Chlorogalum purpureum var. *purpureum*

Chlorogalum purpureum var. *purpureum* is located on Fort Hunter Liggett and Camp Roberts military

lands, which are located on the eastern side of the Santa Lucia Range in southern Monterey and northern San Luis Obispo counties. The known populations primarily exist within an open grassland community, with a smaller number of individuals found within scattered oak woodland communities and open areas within shrubland communities. A low amount of cover of herbaceous species is present, possibly reducing competition for resources. Cryptogamic crusts are frequently found where *C. p.* var. *purpureum* occurs in areas that have had little to no disturbance (E. L. Painter, pers. comm., 2001).

The species was first described by Townsend Stith Brandegee in 1893. Following the initial collection and description, historic occurrences of plants were identified at ''Milpitas Ranch,'' ''the plain west of Jolon,'' ''near Jolon,'' ''open grassy areas near Jolon,'' and a number of other locations within what is currently Fort Hunter Liggett property (Hoover 1940, Skinner and Pavlik 1994, Matthews 1997 and Painter 1999 *in* Wilken 2000). Although currently known to exist only on military property at Fort Hunter Liggett and Camp Roberts, recent surveys along the boundary of Training Area 13 at Fort Hunter Liggett suggest that the species may be found on privately-owned property adjacent to Fort Hunter Liggett (Wilken 2000).

While a thorough survey of the installation has not yet been completed, *Chlorogalum purpureum* var. *purpureum* has been found at a number of sites on Fort Hunter Liggett, including the cantonment, Ammunition Supply Point (ASP), and Training Areas 10, 13, 22, 23, 24, and 25. Surveys of *C. p.* var. *purpureum* conducted at Fort Hunter Liggett have found the plants to occur in scattered clusters. Recent surveys have characterized the species' habitat, including general soil types, topography, and microhabitat communities. Depending on the location, plants may occur on both deep and relatively thin soils (Wilken 2000). Most of the soils are loamy, underlain by clay, and support fine gravel on the surface that is generally less than 5 mm (0.2 in) in diameter (Wilken 2000). Cryptogamic crusts with a dominant component of early-stage cyanobacteria have been observed frequently on the installation; advanced-stage cryptogamic crusts, that include mosses, have been observed in areas of the cantonment where little to no activities appear to have disturbed the sites (E. L. Painter, pers. comm., 2001, 2002). Cyanobacterial organisms within a cryptogamic crust may be visible as black filaments on or near the soil's surface, primarily when soil conditions are moist (Belnap *et al.* 2001).

During surveys conducted in 1999, most (78 percent) of the sites where the species occurs were associated with flat topography (Wilken 2000). The majority of the other sites were on slopes of less than 10 percent (Wilken 2000). Sites were commonly associated with flat topography or found along the base of hills; a few populations occurred along ridge-top terraces (H. Crowell, Service, pers. obs., 2001; D. Wilken, *in litt.,* 2001; Wilken 2000). These areas are between 300 and 620 meters (m) (1,000 and 2,050 feet (ft)) in elevation. Examination of digital data shows a small percentage of plants occur on slopes up to 50 percent at Fort Hunter Liggett. No strong association appears to exist between presence of plants and slope aspect (Wilken 2000).

Of the known sites surveyed in 1999, approximately 42 percent were found in grassland communities, 29 percent were found between tree canopies in oak savanna or woodland communities, 13 percent were found to occur along ecotones between grassland and either oak woodland or shrubland communities, and the remaining were located within open areas between shrub species, most commonly *Eriogonum fasciculatum* (California buckwheat) and *Adenostoma fasciculatum* (chamise) (Wilken 2000). Within the grassland community, the most common grass species (*e.g.*, nonnative *A. caryophylla* and *B. hordeaceus*) did not always dominate in terms of frequency or cover; the most frequent species were native annual forbs such as *Lasthenia californica, Linanthus liniflorus, Micropus californicus,* and *Navarretia* spp. (Navarretia) (Wilken 2000). Insect species, which may contribute to *C. p.* var. *purpureum* pollination, were observed during recent surveys and include unidentified native bees and an unidentified, small blue butterfly (L. Clark, Fort Hunter Liggett, pers. comm., 2002). Detailed studies of pollinators need to be conducted. During surveys conducted by the Fort Hunter Liggett Environmental Office since 1999, new patches of plants have been documented within the same range and localities of known occurrences (*i.e.*, Training Areas 10, 13, 22, 25, the ASP and the Cantonment.)

Surveys conducted at Camp Roberts have led to the discovery of *Chlorogalum purpureum* var. *purpureum* at one location on the west side of the installation. This occurrence is almost entirely restricted to claypan soils, which are frequently cryptogamic (CANG 2001a). The *C. p.* var. *purpureum* population (estimated at approximately 10,000 individuals in 2000 and over 200,000 individuals in 2001) at Camp Roberts occupies approximately 81 ha (200 ac) and occurs in annual grasslands north of the Nacimiento River in Training Areas O2 and O3 (CANG 2001a). *Chlorogalum purpureum* var. *purpureum* predominately occurs on soils with a high concentration of pebbles or gravel underlain by hard-packed clay (CANG 2001a). The claypan soils are of the Placentia complex (sandy loam soils, underlain by clay soils, which become very hard on a 5 to 9 percent slope), with a much smaller percentage of plants occurring on the Arbuckle-Positas complex (very deep, well-drained sandy and gravelly loam soils with a 9 to15 percent slope) (USDA 2000, CANG 2001a). As at Fort Hunter Liggett, the frequently observed cryptogamic soil crusts are composed primarily of cyanobacteria (E. L. Painter, pers. comm., 2001). The elevation of the *C. p.* var. *purpureum* population is lower than what is found at Fort Hunter Liggett, ranging between 244 and 256 m (800 and 840 ft) at Camp Roberts. At Camp Roberts, *C. p.* var. *purpureum* occupies microhabitat sites found within open grasslands or surrounded by scattered oak woodlands. Little cover by other grasses and forbs is present where *Chlorogalum purpureum* var. *purpureum* is found. Common plant associates include *Erodium* spp., *Hemizonia* spp. (tarplant, tarweed), *Trichostema lanceolatum* (vinegar weed), *Eremocarpus setigerus* (turkey mullein, dove weed), *Bromus* spp. (brome), *Amsinckia* spp. (fiddleneck), and *Nassella* spp. (needlegrass) (J. Olson *in* CANG 2001a). During recent surveys, *Erodium* spp. were the most common associate (J. Olson in CANG 2001a). Based on their recent surveys, researchers at Camp Roberts believe grazing by sheep (through a Camp Roberts agricultural lease) may be beneficial to *C. p.* var. *purpureum* by reducing competition from nonnative herbaceous species and found that the direct impact to the plants was minimal during surveys (CANG 2000a). However, more research is needed to test this hypothesis.

Chlorogalum purpureum var. *reductum*

Chlorogalum purpureum var. *reductum* has been found at only two sites in central San Luis Obispo County. The larger site, located near Camatta Canyon, is located on both sides of the two-lane State highway 58 on a narrow, flat-topped ridge that supports blue oak savannah on Forest Service lands within

the LPNF. The population continues north of the highway on private lands. A few plants (213 individuals counted in 2000) also exist on the right-of-way along the highway, which is designated as a Botanical Management Area by CalTrans (J. Luchetta, CalTrans, *in litt.*, 2001). The taxon occurs on hard, red claypan soils on flat or gently sloping terrain. *Chlorogalum purpureum* var. *reductum* occupies microhabitat sites found within open grasslands, oak (*Quercus douglasii*) woodlands and oak savannah, and open areas between shrub species, most commonly chamise (Borchert 1981, Warner 1991). Cover from other herbaceous species is minimal, with most herbaceous species not growing above 10 cm (4 in) high (Borchert 1981). As with *C. p.* var. *purpureum,* plants appear to be associated with a cryptogamic crust (E. L. Painter, pers. comm., 1998). The elevation of the larger site, located near Camatta Canyon, is between 305 and 625 m (1,000 and 2,050 ft). This population is estimated to cover approximately 3 ha (8 ac) on the south side of the highway, with additional plants found on private property on the north side of the highway covering likely a smaller amount of area (Gaskin 1990, Lopez 1992). Site visits during 2001 revealed a decrease in the number of flowering plants compared to 1994 and 1995 (A. Koch, California Department of Fish and Game (CDFG), pers. comm., 2001). The second site is located approximately 5 to 8 kilometers (km) (3 to 5 miles (mi)) south of the large site and is estimated to occupy less than 0.1 ha (0.25 ac), consisting of several hundred plants in two or more patches on private land (D. Chipping, California Polytechnic State University, *in litt.,* 1997; A. Koch, pers. comm., 2001).

The well-drained red clay soils where this taxon occurs contain a large amount of gravel and pebbles (Hoover 1964, Lopez 1992). A soil survey at LPNF found this general area to be made up of the Modesto-Yorba-Agua Dulce families of soils. Modesto soils (30 percent) are soft, grayish-brown coarse sandy loams with 10 percent pebbles. Yorba soils (30 percent) are slightly hard, light olive-brown loams with 10 percent pebbles. Agua Dulce soils (25 percent) are soft, brown sandy loams with 10 percent pebbles and 2 percent cobbles (USDA 1993). However, this soil survey may have been too general to have captured the exact soil type at this site. A substantial amount of gopher activity has been observed surrounding, but not within, the large *Chlorogalum purpureum* var. *reductum* population, suggesting that the hard soils where the plant occurs may be difficult for gophers to move through (M. Borchert, LPNF, pers. comm., 2001). Native plants associated with *C. p.* var. *reductum* include *Achyrachaena mollis* (blow-wives); chamise; *Allium* spp. (onion); *Brodiaea coronaria* (crown brodiaea); *Calystegia malacophylla* (morning-glory, Sierra false bindweed); *Clarkia purpurea* (winecup clarkia); *Crassula erecta* (= *Crassula connata* var. *connata,* sand pygmy weed); *Dichelostemma pulchellum* (= *Dichelostemma capitatum* ssp. *capitatum,* blue dicks); *Erigonum elongatum* (wild or longstem buckwheat); *Eriogonum fasciculatum* (California buckwheat); *Lasthenia chrysostoma* (goldfields); *Layia platyglossa* (tidy-tips); *Lepidium* spp. (peppergrass); *Linanthus liniflorus* (narrow flowered flaxflower); *Lupinus* spp. (lupine), including *L. concinnus* (Bajada lupine); *Malacothrix* spp. (desert dandelion); *Matricaria matricarioides* (pineapple weed); *Micropus californicus* (slender cottonweed); *Castilleja* spp. (Indian paintbrush); *Triphysaria* spp. (owl's clover); *Pinus sabiniana* (gray or foothill pine); *Plagiobothrys nothofulvus* (popcorn flower); *Poa* spp. (bluegrass); *Quercus douglasii* (blue oak); *Quercus lobata* (valley oak); *Sanicula* spp. (sanicle), including *Sanicula bipinnatifida* (purple sanicle); *Vulpia* microtachys *var. pauciflora* (Pacific fescue); and *Zigadenus* spp. (death camas); and nonnative plants, including *Avena barbata* (slender wild oat), *Bromus hordeaceus* (soft brome), *Bromus rubens* (red brome), *Erodium botrys* and *E. moschatum* (storksbill, filaree), *Hypochaeris glabra* (smooth cat's ear), and *Schismus barbatus* (Mediterranean grass).

Chlorogalum purpureum var. *purpureum* and *C. p.* var. *reductum* appear to be narrowly distributed. Some discontinuities in their distribution are likely due to unsuitable intervening habitat and establishment of roadways that fragment the existing patches of plants. In addition, *C. p.* var. *purpureum* distribution was likely affected by the settlement of Jolon in Monterey County, row crop farming, establishment of nonnative invasive plant species such as *Centuarea solstitialis* (yellow star-thistle) and annual nonnative grasses, and possibly the establishment of the San Antonio Reservoir in southern Monterey County. Habitats for both varieties of *Chlorogalum* may change as a result of rainfall, fires, and other naturally occurring events. These factors may cause the habitat suitability of given areas to vary over time, thus affecting the distribution of *C. p.* var. *purpureum* and *C. p.* var. *reductum.*

Previous Federal Action

Federal actions for *Chlorogalum purpureum* began when a report (House Doc. No. 94–51) of plants considered to be endangered, threatened, or extinct in the United States was prepared by the Smithsonian Institution and presented to Congress on January 9, 1975. Both *C. p.* var. *purpureum* and *C. p.* var. *reductum* were included as endangered plant species. On July 1, 1975, the Service published a notice in the **Federal Register** (40 FR 27823) stating its acceptance of the report as a petition within the context of section 4(c)(2) (petition provisions are now found in section 4(b)(3)) of the Act and its intention to review the status of the plant taxa named therein.

On June 16, 1976, the Service published a proposed rule in the **Federal Register** (41 FR 24523) to determine approximately 1,700 vascular plant species to be endangered species pursuant to section 4 of the Act. This list included *Chlorogalum purpureum* var. *purpureum* and *C. p.* var. *reductum* based on comments and data received by the Smithsonian Institution and the Service in response to House Document No. 94–51 and the July 1, 1975, **Federal Register** publication. In 1978, amendments to the Endangered Species Act required that all proposals more than two years old be withdrawn. On December 10, 1979, the Service withdrew the portion of the June 16, 1976 proposal that had not been made final, including *C. p.* var. *purpureum* and *C. p.* var. *reductum.*

On December 15, 1980, the Service published an updated Candidate Notice of Review for plants (45 FR 82480) which included *Chlorogalum purpureum* var. *purpureum* and *C. p.* var. *reductum* as category 2 candidates (species for which data in our possession indicated listing may be appropriate, but for which additional biological information was needed to support a proposed rule). Both *Chlorogalum* taxa were included in the revised plant notices of review that were published on September 27, 1985 (50 FR 39526), February 21, 1990 (55 FR 6184), and September 30, 1993 (58 FR 51144) as category 1 candidates (species for which we had on file sufficient information on biological vulnerability and threats to support the preparation of listing proposals, but issuance of the proposed rule was precluded by other pending listing proposals of higher priority). In the Notice of Review published February 28, 1996 (61 FR 7596), we discontinued the use of

different categories of candidates, and defined ''candidate species'' as those meeting the definition of former category 1. We maintained *C. purpureum* var. *purpureum* and *C. p.* var. *reductum* as candidate taxa in that Notice.

The proposed rule to list both varieties of *Chlorogalum purpureum* as threatened species was published in the **Federal Register** on March 30, 1998 (63 FR 15158). The final rule listing them as threatened was published in the **Federal Register** on March 20, 2000 (65 FR 14878).

Section 4(a)(3) of the Act, as amended, and implementing regulations (50 CFR 424.12) require that, to the maximum extent prudent and determinable, the Secretary designate critical habitat at the time the species is determined to be endangered or threatened. Our regulations (50 CFR 424.12(a)(1)) state that designation of critical habitat is not prudent when one or both of the following situations exist—(1) The species is threatened by taking or other human activity, and identification of critical habitat can be expected to increase the degree of threat to the species, or (2) such designation of critical habitat would not be beneficial to the species. At the time *Chlorogalum purpureum* was listed, we found that designation of critical habitat was prudent but not determinable and stated that we would designate critical habitat once we had gathered the necessary data.

On June 17, 1999, our failure to issue final rules for listing *Chlorogalum purpureum* and eight other plant species as endangered or threatened, and our failure to make a final critical habitat determination for the nine species was challenged in *Southwest Center for Biological Diversity and California Native Plant Society* v. *Babbitt* (Case No. C99–2992 (N.D.Cal.)). On May 22, 2000, the judge signed an order for the Service to propose critical habitat for the species by September 30, 2001, and to make a final critical habitat designation for the species by May 1, 2002. Subsequently, the parties agreed to extend the deadline to submit a proposed critical habitat designation for publication in the **Federal Register** to November 2, 2001 and a final critical habitat designation to October 11, 2002. The proposed rule to designate critical habitat for the species was published on November 8, 2001 (67 FR 56508). In the proposal, we proposed to designate approximately 8,898 ha (21,980 ac) of land in Monterey and San Luis Obispo counties as critical habitat. The publication of the proposed rule opened a 60-day public comment period, which was scheduled to close on January 7, 2002. Due to unforeseen circumstances resulting from the closure of the Department of the Interior's internet service and subsequent inability for public comments to be sent through electronic mail by the closing date, comments were accepted until January 14, 2002. On May 7, 2002 we published a notice of availability of the draft economic analysis on the proposed determination (67 FR 30644). On May 15, 2002, we published a notice in the Monterey Herald and the San Luis Obispo Telegram Tribune announcing the reopening of the comment period on the proposal to designate critical habitat for *C. purpureum.* This second public comment period closed on June 6, 2002.

Summary of Comments and Recommendations

We solicited comments from appropriate Federal, State, and local agencies, scientific organizations, and other interested parties. Additionally, we invited public comment through the publication of a notice in the Monterey Herald on November 15, 2001, and in the San Luis Obispo Telegram Tribune on November 16, 2001, on the proposed critical habitat; we invited public comment again on May 15, 2002, for the publication of the draft economic analysis. We received individually written letters from 24 parties, which included 5 designated peer reviewers, 5 Federal agencies, 1 county jurisdiction outside of California, and 13 private citizens or interested nonprofit organizations. One Federal agency provided a letter commenting on the proposed critical habitat and one commenting on the draft economic analysis. One additional letter was received from a private party after the closing date. Of the 24 parties responding individually, 20 supported the proposed designation, 4 were opposed, and no responses were neutral. Ten of the individual letters that supported the proposal appeared to be identical. The four commenters opposing the proposal specifically opposed designation of critical habitat on lands they own or manage on Fort Hunter Liggett and Camp Roberts and requested that these areas be excluded from critical habitat designation.

We reviewed all comments received for substantive issues and new information regarding critical habitat and *Chlorogalum purpureum.* Similar comments were grouped into four general issues (*i.e.*, Biological Justification and Methodology, Economic Analysis, Site-specific Areas and Other Comments, Legal and Procedural Comments) relating specifically to the proposed critical habitat determination and draft economic analysis on the proposed determination. These are addressed in the following summary.

Issue 1: Biological Justification and Methodology

Comment 1: The proposed rule was not based on the best scientific data available, thus resulting in a ''broad-brush'' approach to the critical habitat proposal. The commenter believed the proposed critical habitat includes lands that do not contain the primary constituent elements (especially soils and plant communities).

Our Response: We disagree that the rule was not based on the best scientific data available. As stated in the proposed rule, we are required to make decisions based on the best information available at the time of designation. Our policy on information standards is found under the section entitled ''Critical Habitat'' in the rule. It states that we should use the listing package for the species as well as additional information obtained from recovery plans, articles in peer-reviewed journals, conservation plans developed by states and counties, scientific status surveys and studies, and biological assessments or other unpublished materials (*i.e.*, gray literature). In addition, we have consulted with biologists and experts who are familiar either with the species or the geographic area in which it occurs. The final critical habitat rule also incorporates new life-history information submitted during the comment periods by Fort Hunter Liggett and various individuals. Many new locations of *Chlorogalum purpureum* var. *purpureum* were reported to us following the publication of the proposed rule. In all cases, these sites occurred within the proposed critical habitat boundary. Therefore, we are confident that the GIS model we used to identify the proposed critical habitat boundaries represents the best current assessment of habitat that is essential for the long-term conservation of this taxon.

As stated in the proposed and final rules under the section entitled ''Criteria Used to Identify Critical Habitat,'' we made an effort to avoid developed areas, structures, facilities, or unsuitable areas that are unlikely to contain the primary constituent elements of *Chlorogalum purpureum* habitat. However, we did not map critical habitat in sufficient detail to exclude all areas not likely to contain the primary constituent elements essential for the conservation of the species (*i.e.*, too small a scale). Federal actions conducted in areas within the boundaries of the mapped

units that do not contain any of the primary constituent elements therefore would not trigger a section 7 consultation unless those activities may affect the species or primary constituent elements in the adjacent critical habitat.

Comment 2: Eleven commenters (including 10 identical comment letters) recommended that we conduct thorough surveys (preferably before the final designation) for plants at Fort Hunter Liggett and Camp Roberts to ascertain the full extent of the range of *Chlorogalum purpureum* var. *purpureum*. They suggested that optimal habitat for *C. purpureum* appears to be associated with the presence of cryptogamic crusts (biological soil crusts composed of cyanobacteria, green algae, lichens, mosses, microfungi, and other bacteria). Therefore, it seems appropriate to survey and map the occurrences of such crusts at both installations. Additionally, they recommended that surveys should be focused on areas with other suitable habitat features and species compositions, and with known historical occurrences.

Our Response: Both the Army Reserve at Fort Hunter Liggett and the CANG at Camp Roberts have conducted surveys for *Chlorogalum purpureum* var. *purpureum* in multiple areas containing suitable habitat with associated species (R. Root, pers. comm. 2002, L. Clark, pers. comm. 2002, D. Wilken 2000). Additional distribution surveys are expected by both installations according to the Service's review of recent draft INRMP documents or conversations with installation biologists (H. Crowell, pers. comm. 2002). In the last decade, surveys conducted for the military by Colorado State University, the Santa Barbara Botanic Garden, Jones and Stokes Associates, and the Fort Hunter Liggett Environmental Office have documented approximately 685 acres of *C. p.* var. *purpureum* of varying densities on the Fort Hunter Liggett installation (Fort Hunter Liggett unpublished digital data, 2002). Each year, the Fort Hunter Liggett Environmental Office continues to discover new sites where *Chlorogalum purpureum* var. *purpureum* occurs during their environmental review process for ongoing activities on the installation. However, new sites identified are generally clustered within the known range on Fort Hunter Liggett.

Chlorogalum purpureum var. *purpureum* was first discovered at Camp Roberts in 2000 (CANG 2001b). Approximately 200 acres of varying densities of plants have been documented in one location on the Camp Roberts installation based on surveys conducted by biologists from the Santa Barbara Botanic Garden, the Jepson Herbarium, and the Camp Roberts Environmental Office. Fairly thorough surveys have been conducted at Camp Roberts in 2000 and 2001 by the Santa Barbara Botanic Garden and the Camp Roberts Environmental Office staff and consultants; sensitive plant surveys will continue throughout the installation regularly (R. Root, CANG, pers. comm., 2002). According to their Integrated Natural Resource Management Plan (INRMP), an amendment to their INRMP, and recent coordination meetings, Camp Roberts also plans to survey and monitor impacts of rotational grazing, effects of military training activities on *Chlorogalum purpureum* var. *purpureum*, and the taxon's association with cryptogamic soils (CANG 2001b; R. Root, pers. comm., 2002). These studies and surveys will be conducted as part of their long-term *Chlorogalum purpureum* var. *purpureum* monitoring program.

Based on the life-history characteristics of the species (*e.g.*, timing of flowering, annual dormancy, etc.) there is a narrow period each year when the taxon is identifiable and within which surveys can be conducted. In addition, surveys are needed for multiple years to determine presence or absence of the species due to its potential to remain seasonally dormant for an extended period of time. The ongoing life-history study conducted at Fort Hunter Liggett has found known individual mature plants to be dormant for at least three years, indicating that it is likely common for this species to remain dormant during the growing season (Liz Clark, Fort Hunter Liggett, pers. comm., 2002). During dormancy, *Chlorogalum purpureum* is not detectable on the surface. Thus, thorough surveys to document the full range of *C. purpureum* in suitable habitat throughout the installation will likely require multiple years to be completed. In summary, new *C. p.* var. *purpureum* sites are being found within previously known locations at Fort Hunter Liggett, and the 2000 discovery of the Camp Roberts population is concentrated within one location. Additional surveys and research studies are expected to occur at both installations during the next five years that will assist both the Service and the military agencies in determining additional occurrences of *C. purpureum*, impacts of activities, and the taxon's association with other biological features (*e.g.*, cryptogamic crusts). While additional survey information would be helpful, we are using the best information available at this time, and we do not believe the lack of additional surveys hinders our ability to evaluate which areas should be designated as critical habitat.

Comment 3: One commenter questioned why Camp Roberts was included in the proposed critical habitat designation when the Service did not know *Chlorogalum purpureum* occurred there at the time the species was listed. The commenter specifically asked ''why critical habitat within the geographic area occupied by the taxon at the time the species was listed would be inadequate to ensure the conservation of the species.''

Our Response: While we were unaware of the Camp Roberts population at the time the species was listed, we believe that, based on information we have received regarding the Camp Roberts population and the species' life history, the population at Camp Roberts falls within the geographic area occupied by the species at the time it was listed. Although there are no historical records of the taxon *C. p. purpureum* at the Camp Roberts location, the location of its discovery in 2000 still falls within the range of the species, which, at the time of listing, ranged from Fort Hunter Liggett in southern Monterey County to the La Panza Range, LPNF, in San Luis Obispo County where *C. p.* var. *reductum* is known to occur. Because *C. p.* var. *purpureum* also has such a restricted range (*i.e.*, found at only two locations), it was important to include both locations in the proposed critical habitat. However, we have removed the Camp Roberts Unit from the final critical habitat because adequate conservation measures are now in place for the taxon. This removal is discussed further in comment #17 and the ''Relationship of Critical Habitat to Military Lands'' and ''Summary of Changes from the Proposed Rule'' sections of this document.

Comment 4: One commenter questioned the Service's statement that ''* * *some areas not included in the critical habitat designation * * *may include habitat appropriate for introduction of *Chlorogalum purpureum* in the future.'' The commenter questioned whether the Service refers to ''introduction'' of *C. purpureum* into unoccupied, suitable habitat in the future as an introduction by natural or human means.

Our Response: If an event triggers a decline in the *Chlorogalum purpureum* population to such an extent that human-induced introduction is warranted to prevent extinction of the

species, it may be necessary for the recovery of the species to ''introduce'' plants by human means. Introduction of plants would occur in suitable areas that the plant could naturally re-colonize, but is impeded by existing threats. These types of actions are more appropriately addressed as part of recovery planning for this species.

Comment 5: One commenter stated ''scientific data is lacking to support the Service's conclusion that military activities are likely to destroy any crypotgamic crusts and that *Chlorogalum purpureum* relies on cryptogamic crusts.''

Our Response: We disagree with the commenter's interpretation that the Service stated that *Chlorogalum purpureum* relies on cryptogamic crusts in the proposed critical habitat designation. We stated that ''the taxon frequently grows on soils that are cryptogamic or have cryptogamic crusts;'' ''these special crusts may enhance the habitat conditions, thus increasing the likelihood that young bulbs will survive over the long term;'' and that certain activities ''will likely destroy any cryptogamic crusts that are present, thus negatively affecting vascular plant germination and decreasing the amount of nutrients available for proper plant development.'' While we believe there may be an association between the species and cryptogamic crusts, we have no evidence demonstrating the relationship.

At least one species expert has identified a possible relationship between *Chlorogalum purpureum* and the presence of cryptogamic crusts (E. L. Painter, pers. comm., 1998, 2001, 2002). Therefore, we believe it is important to examine this association further when considering the long-term conservation and recovery of this species. Cryptogamic crusts are good indicators of physical disturbance, such as livestock, human foot traffic, and motorized vehicles (Belnap 1995 *in* Belnap *et al.* 2001). These activities can destroy the soil structure by compacting it into an impermeable surface layer that causes reduced infiltration rates and increased surface runoff (Belnap *et al.* 2001). Vehicles can also turn soils over and bury crustal organisms. Disturbance that removes or kills crustal organisms results in greater impact and slower recovery of the soil surface than disturbance that leaves crushed crust in place (Belnap *et al.* 2001). In addition, preliminary Land Condition Trend Analysis (LCTA) data from Fort Lewis, Washington, has documented negative impacts to cryptogamic crusts and vegetation in grassland ecosystems due to uses by M1A1 Abrams tanks, which are also used at Camp Roberts and Fort Hunter Liggett. We believe it is important to consider these potential vehicles impacts on cryptogamic soils (during *C. purpureum* monitoring and LCTA monitoring at Fort Hunter Liggett and Camp Roberts) when examining long-term effects on *C. purpureum* and its habitat, and potential impacts to other federally threatened and endangered species.

Comment 6: One commenter stated that scientific data is lacking to support the Service's conclusion that the model used for the proposed critical habitat designation for *Chlorogalum purpureum* var. *purpureum* (based on soil type) should be expanded to include additional areas beyond those identified in the model (*i.e.*, areas between the model boundaries and the nearest ridgeline). Additionally, the commenter stated that the Service inappropriately included formerly cultivated areas within the proposed critical habitat boundary.

Our Response: We disagree with the comment that formerly cultivated areas were inappropriately included within the proposed critical habitat boundary. We believe that habitat within formerly cultivated areas still contains the appropriate soil and vegetation types (which are crucial physical components the species requires) that could support *Chlorogalum purpureum* var. *purpureum*. These areas are essential to the conservation of the species because the species will require areas for dispersal. Some formerly cultivated areas are identified within a zone that provides connectivity between populations, and thus supports pollinator activity and gene flow between patches of plants, and are thus also essential to the conservation of the species.

During preparation of the proposed critical habitat designation for this species, we used SPOT Corporation 30 meter Imagery, dated June 1993, in an attempt to exclude areas that we knew were under cultivation or were formerly cultivated and were likely not essential to the conservation of the species. For the final critical habitat designation, we also excluded all areas identified by the military who provided additional information that was not available for the proposed rule. These excluded areas are formerly cultivated lands found throughout the proposed critical habitat on FHL property, or areas that do not provide population connectivity between patches of plants.

Issue 2: Economic Comments

Comment 7: Two commenters believed the negative economic impact on the CANG, the Army Reserve, and their military missions outweighs the benefit of the proposed critical habitat designation. The commenters believed a critical habitat designation would cause adverse economic impacts, disrupt the military's ability to perform their mission, and require additional consultation and technical support for new consultations. One of the commenters believed the critical habitat designation at Fort Hunter Liggett would require rescheduling of military training until consultations are completed, thus increasing the costs for modifying or moving the existing infrastructure to support relocated training activities, and diverting resources from conservation management to administrative efforts for the Army and the Service.

Our Response: We recognize the direct costs identified by the military are significant, and indirect costs and impacts on military training and readiness are even greater.

The proposed critical habitat area on Camp Roberts military installation is essential to the conservation of *Chlorogalum purpureum* var. *purpureum.* However, designation of critical habitat is not necessary due to the long-term conservation measures that the CANG has agreed to implement as part of their INRMP. This is further discussed in the section entitled ''Relationship of Critical Habitat to Military Lands.''

The lands proposed to be designated on Fort Hunter Liggett are essential for the conservation of *Chlorogalum purpureum* var. *purpureum.* These lands currently provide habitat for the species, and have done so since military training commenced there in the 1940s. The conservation needs on these lands will likely also be adequately addressed under the management plan currently being developed by Ft. Hunter Liggett and the Service. This is further discussed in the section entitled ''Relationship of Critical Habitat to Military Lands.'' Fort Hunter Liggett has already reinitiated consultation on their programmatic biological opinion, including a conference opinion on the proposed critical habitat for *C. p.* var. *purpureum.* This reinitiation was necessitated by new information on federally listed species in addition to the listing of *C. purpureum,* not by the proposal of critical habitat for *C. purpureum.* Therefore, rescheduling of military training would not be necessary regarding ongoing military activities

that have been addressed as part of the programmatic consultation.

Comment 8: Fort Hunter Liggett stated they believe the draft economic analysis is based on considerations and factors that the Service is no longer considering. The commenter also stated the Service recommended curtailing military training and land use, and the new restrictions proposed by the Service are qualitatively different from those found in the draft economic analysis or the proposed critical habitat designation.

Our Response: The Service met with Fort Hunter Liggett on multiple occasions to discuss the status of *Chlorogalum purpureum* var. *purpureum*, the Service's concerns, the Service's recommended strategy for the long-term conservation of the taxon on the installations, and the adequacy of their draft INRMP. The Service identified a number of military activities that may influence critical growth stages of *C. p.* var. *purpureum* and recommended that Fort Hunter Liggett minimize the adverse effects and severity of those effects. The Service proposes to continue to work with the military to ensure that implementation of such recommended minimization measures would not curtail training.

Comment 9: Fort Hunter Liggett stated the increased monitoring recommended by the Service would require the new employment of two GS–11 equivalent biologists for 10 years, costing Fort Hunter Liggett approximately $2,100,000.

Our Response: As discussed in Comment 8, the Service provided long-term conservation recommendations to Fort Hunter Liggett for *Chlorogalum purpureum* var. *purpureum.* Regarding monitoring, the Service recommended that Fort Hunter Liggett develop management strategies to minimize threats to *C. p.* var. *purpureum* based on research, life history monitoring, and the species' responses to vegetation management. We recognize this is a real cost to the Army.

Comment 10: Fort Hunter Liggett stated the cordon required to permanently restrict the proposed critical habitat areas recommended by the Service would cost the Army Reserve approximately $250,000 plus additional maintenance costs over 10 years.

Our Response: As discussed in Comments 8 and 9, the Service provided long-term conservation recommendations in a consultation with Fort Hunter Liggett for *Chlorogalum purpureum* var. *purpureum* that should be considered regardless of a critical habitat designation and as part of their long-term management plans in their INRMP. Regarding protection of *C. p.* var. *purpureum,* the Service recommended that patches of plants be protected from those types of activities that are known to damage vegetation (*e.g.*, crushing seeds with the wheels or tracks of vehicles, bivouacking activities, soil surface scraping, introducing or spreading nonnative plant species, etc.).

Comment 11: Fort Hunter Liggett stated that increased restrictions on training would make many Army Reserve, National Guard, and other military units incapable of training at Fort Hunter Liggett. They stated that units would be forced to travel to another state to meet their training requirements and the cost for units to travel extensive distances to train would be significant. Fort Hunter Liggett stated the direct economic costs to the installation would be $2,350,000 if the Service's recommendations were implemented, and the costs to military readiness would be much higher. Types of training that the Army believes would no longer be viable at Ft. Hunter Liggett with the proposed designation of critical habitat include: training in the establishment of emergency airfields; training in the defense of emergency and established airfields; use of the machine gun and grenade ranges; use of the long-established tank trail between Camp Roberts and the Fort; and staging for a variety of other types of training, including live-fire exercises.

Our Response: We will continue to work with Fort Hunter Liggett to identify conservation measures and adaptive management considerations for *Chlorogalum purpureum* var. *purpureum.* The conservation recommendations provided to Fort Hunter Liggett during our consultation on their draft INRMP were designed to be implemented without necessitating the relocation of military training units to another state. However, we are not military experts, and defer to their judgement regarding the actual, as opposed to intended, impacts of the recommendations.

We recognize and have considered fully the concerns of Fort Hunter Liggett that critical habitat on their installation would impact the training mission and cause adverse economic impacts and adverse impacts to military readiness.

Issue 3: Site-Specific Areas and Other Comments

Comment 12: One commenter urged the Service to support Fort Hunter Liggett's effort to control *Centuarea solstitialis* (yellow star-thistle) and to consider this in the implementation of the critical habitat designation, suggesting that the Service should not restrict the installation's efforts to control such an invasive species.

Our Response: The Service has participated in meetings and discussions with Fort Hunter Liggett and supports the control efforts that the installation has made for *Centuarea solstitialis*. The Service has also expressed concerns to Fort Hunter Liggett regarding the use of herbicides on the installation due to potential adverse effects to federally-listed species, including *Chlorogalum purpureum* var. *purpureum*, vernal pool fairy shrimp (*Branchinecta lynchi*), and arroyo toad (*Bufo californicus*).

Comment 13: Due to the absence of historical occurrences, one commenter questioned the Service's suggestion that *Chlorogalum purpureum* var. *purpureum* could re-colonize both occupied and adjacent unoccupied habitat at Camp Roberts.

Our Response: Because historical records are not available for the *Chlorogalum purpureum* var. *purpureum* population at Camp Roberts, there is no data available to estimate if *C. p.* var. *purpureum* could re-colonize areas of the installation. However, future annual monitoring may show that the population could increase by natural means into adjacent unoccupied habitat.

Comment 14: One commenter stated that the Service did not take into account efforts being made by the Army at Fort Hunter Liggett to protect *Chlorogalum purpureum* var. *purpureum* through distribution surveys, life history research, military land stewardship, and carnivore management (*e.g.*, wild pig control) that protects against excessive herbivory.

Our Response: We disagree. Fort Hunter Liggett biologists provided us with what they indicated were the most current data on *Chlorogalum purpureum* var. *purpureum* occurrences at Fort Hunter Liggett during the time the proposed rule was being prepared. We also used biological assessments, environmental assessments, and annual reports submitted to us by the Directorate of Public Works at Fort Hunter Liggett when reviewing areas we believed were essential for the proposed critical habitat designation. We also reviewed additional surveys conducted by the Santa Barbara Botanic Garden (Wilken 2000) and data from the life history study conducted by the Fort Hunter Liggett Environmental Office. However, based on our review of the management actions and conservation measures described in Fort Hunter Liggett's recent programmatic biological assessment (Army Reserve 2002) and

draft INRMP, we conclude that areas on the installation would still benefit from special management as described in the Act and to that end we continue to work with the military to develop an INRMP. This is further discussed in the section entitled ''Relationship of Critical Habitat to Military Lands.''

Comment 15: One commenter stated that data and indicator species show the compatibility of military training and sensitive species. They suggested that the presence of sensitive species and cryptogamic crusts amidst low levels of disturbance at established monitoring plots at Fort Hunter Liggett are evidence of their compatibility. The commenter stated that the presence of many sensitive species on Fort Hunter Liggett is an indicator that the installation's stewardship maintains ecosystem functions and processes, compared to the agricultural practices on surrounding lands that have reduced habitat for many of these listed species. In addition, the commenter stated that military training results in a patchy distribution of temporary soil surface disturbance that typically recovers within a growing season for annual vascular plants and within three to five years for fully formed cryptogamic crusts. They stated that scientific data are also lacking to support the Service's conclusions that soil surface disturbance from military training will likely result in death of seeds, seedlings, and adult plants through burial or grinding, and that tracked vehicles will turn over soils, thus killing any adults or seedlings that are in their first year of growth and burying any crustal organisms that were present. The commenter stated that *C. p.* var. *purpureum* thrives in heavily-used training areas and protected sites on Fort Hunter Liggett. The commenter was concerned about the inclusion of lands containing the taxon that were recently and formerly heavily used for military training.

Our Response: The Service commends the Army Reserve for efforts they have made to date to reduce further losses of sensitive species and other species native to the San Antonio Valley, Nacimiento Valley, and the Santa Lucia Mountains. We agree that much of the surrounding habitat has been lost due to agricultural use, including crop farming and vineyard development, likely resulting in the loss of *Chlorogalum purpureum* var. *purpureum* plants and other sensitive species. Indicators of *C. p.* var. *purpureum* compatibility with military training include such parameters as recruitment or survivorship. Although Fort Hunter Liggett has conducted monitoring since 1998, the monitoring was not designed to assess the effects of military training activities on *C. p.* var. *purpureum,* according to Fort Hunter Liggett staff (Liz Clark, FHL, pers. comm., 2002). Moreover, changes to the monitoring program in 2000 have resulted in the availability of only two years of data to assess such factors as survivorship and recruitment. Based on the biology of this species and our preliminary analysis of data collected at monitoring plots at Fort Hunter Liggett, additional data are needed to accurately assess levels of recruitment. While it has survived through many years of military training, monitoring focused on military activities or a rigorous assessment of population trends is needed to determine the effect of military activities conducted at Fort Hunter Liggett on *C. purpureum*.

Studies conducted at other military installations have shown that military activities such as bivouacking and soil surface disturbance (*e.g.*, excavations, grading) do have adverse effects on vegetation and the soil surface (Trame and Harper 1997, Whitecotton *et al.* 1999, Wolford 2001). Activities in Training Area 25 (a heavily-used training area) at Fort Hunter Liggett have caused soil compaction and soil ruts that alter microhabitat characteristics (Painter and Neese 1998; D. Steeck, pers. obs., 1998; J. Chesnut, consulting biologist, *in litt.*, 1998), and loss of most herbaceous vegetation (D. Steeck, pers. obs., 1997, 1998, aerial photography). Vehicle tracks were also evident in 45 of 188 patches of *Chlorogalum purpureum* var. *purpureum* visited during 1999 surveys (Wilken 2000). Tracks or roads were adjacent to another 35 patches (Wilken 2000). Tracks in populations of *C. p.* var *purpureum* have also been reported by others familiar with Fort Hunter Liggett (Painter and Neese 1998; J. Chesnut, *in litt.*, 1998). These types of activities damage seedlings and adult plants, especially if they occur during the growing season. However, we are unable to confirm the commenter's statement that cryptogamic crusts are fully formed within three to five years. According to the reports and data available to us at this time, we are unaware of any data collected on cryptogamic crusts or the extent of cryptogamic crusts on Fort Hunter Liggett. Species experts have identified a possible relationship between *Chlorogalum purpureum* and the presence of cryptogamic crusts. Thus, we recommend studies and surveys to provide a better understanding of cryptogamic crusts at Fort Hunter Liggett. The first biological soil crusts to develop following a disturbance are cyanobacteria, appearing in colonies that are black to blue-green and are visible primarily when the surface is moist (Belnap *et al.* 2001). The development of these crusts is followed by growth of algae, bryophytes (mosses, liverworts), and lichens. Timing, the type of soil surface disturbance, and its intensity can influence the composition of these cyptogamic crusts. Repeated disturbances to cryptogamic soils will generally keep the crusts at an early-successional stage (*i.e.*, cyanobacteria-dominated) by preventing lichen or moss colonization (Belnap *et al.* 2001). Recovery rates to fully formed crusts (mosses, liverworts, and lichens) are dependent on many factors. Visual assessments can be used to assess moss and lichen cover, but cannot be used to measure the degree of recovery of cyanobacterial biomass and soil stability (Belnap *et al.* 2001). Studies have found various linear recovery rates which differ from region to region. These studies have determined that shady sites with less sandy soils are quicker to recover than exposed sites with sandier soils (Belnap *et al.* 2001). Unfortunately, we are currently unaware of available data that identifies the recovery rates of cryptogamic crusts in the California coastal areas.

Comment 16: One commenter stated that scientific data is lacking to support the Service's conclusion that Fort Hunter Liggett could support a larger population of purple amole. They believed that special management considerations should focus on agricultural and urban development.

Our Response: Unoccupied areas (located adjacent to or between occupied habitat) that are not fully protected or currently known to support the taxon likely contain favorable habitat conditions for plants to occur. These areas also support the surrounding habitat by helping maintain ecosystem processes and functions, such as connectivity between patches of plants, pollinator activity between existing colonies, and seed dispersal mechanisms between existing colonies and other potentially suitable sites. Thus, the area may support additional *Chlorogalum purpureum* var. *purpureum* occurrences provided proper management occurs. We agree that management for *C. purpureum* should include consideration of the needs of the species in management of cultivation and control of nonnative vegetation. However, when considering the long-term conservation and recovery of this species we must consider all threats to the species, which also

include potential threats from military training activities.

Comment 17: Two commenters believed that a critical habitat designation for *Chlorogalum purpureum* var. *purpureum* would not provide any net benefit to the species because ''assured management'' is already in place at Fort Hunter Liggett and Camp Roberts. One commenter stated that Camp Roberts has completed an INRMP and Endangered Species Management Plan (ESMP), that Fort Hunter Liggett is coordinating with the Service on development of their INRMP and associated ESMP, and that the plans from both installations are certain to be implemented, as they are requirements that are given ''resourcing priority.'' The second commenter stated that existing management actions at Fort Hunter Liggett are currently protecting purple amole, the ecosystem, and the functions listed by the Service. Additionally, they suggested that Fort Hunter Liggett's INRMP and ESMP, although currently in draft form, provide an adequate method for Fort Hunter Liggett and the Service to actively promote the protection and recovery of *C. p.* var. *purpureum*.

Our Response: We agree that the military is currently implementing special management on the lands. INRMPs can provide special management for lands such that they no longer meet the definition of critical habitat when the following criteria are met: (1) A current INRMP must be complete and provide a conservation benefit to the species, (2) the plan must provide assurances that the conservation management strategies will be implemented, and (3) the plan must provide assurances that the conservation strategies will be effective (*i.e.*, provide for periodic monitoring, adaptive management, and revisions as necessary). If all of these criteria are met, then the lands covered under the plan would likely no longer meet the definition of critical habitat and designation would not be necessary.

To date, Camp Roberts has amended their final INRMP to provide for sufficient conservation management and protection for *Chlorogalum purpureum* var. *purpureum.* An ESMP has not been prepared for *C. p.* var. *purpureum* at Camp Roberts. As a result of the Camp Roberts INRMP, we are not designating critical habitat on Camp Roberts.

Adequate management for the conservation of *Chlorogalum purpureum* var. *purpureum* is currently under development at Fort Hunter Liggett though an INRMP. The installation has prepared a draft INRMP that is being revised. Fort Hunter Liggett's ESMP expired in September 2001 and is not scheduled to be updated until 2003. Nevertheless, Fort Hunter Liggett does continue to implement conservation measures and management actions. We believe that the additional protection and management are necessary, as well as a structured monitoring program that provides information on recruitment, survival, and effects of military actions on the species and its habitat and will be addressed in the INRMP.

Comment 18: If critical habitat is designated at Camp Roberts, the commenter requested that the proposed acreage be reduced to minimize adverse effects on military training activities. Part of this request was based on the absence of purple amole on 90 percent of the proposed critical habitat.

Our Response: We have removed Camp Roberts from the final designation of critical habitat. See the section entitled ''Relationship of Critical Habitat to Military Lands'' for further information.

Comment 19: One commenter questioned the use of the word ''recovery'' regarding *Chlorogalum purpureum* var. *purpureum* at Camp Roberts military installation because it implies a historical presence, even though there is no historical record of the taxon at the installation.

Our Response: As mentioned in Comment 13 above, we acknowledge that historical records are not available for the *Chlorogalum purpureum* var. *purpureum* population at Camp Roberts. For conservation of the species to occur, all methods and procedures should be utilized to bring *C. p. purpureum* to the point at which the measures provided by the Act are no longer necessary. These measures include, but are not limited to, all activities associated with scientific resources management such as research, census, law enforcement, habitat acquisition and maintenance, propagation, and transplantation. Because *C. p.* var. *purpureum* is only known to occur at Camp Roberts and Fort Hunter Liggett at this time, the CANG and Army Reserve are in the best and primary position to influence the long-term conservation of this species. In addition, according to section 2(c) of the Act, Federal agencies shall seek to conserve endangered and threatened species and shall utilize their authorities in furtherance of the purposes of the Act.

Comment 20: One commenter recommended that the Service request access from private landowners for annual surveys.

Our Response: The Act requires that the best available data be used to make decisions on critical habitat designations. Conducting new surveys falls outside of this requirement. Further, the Service must have specific permission of private landowners to conduct surveys on private property. Funding and timing limitations also preclude the collection of new information at this time. However, as part of the recovery process for this species, additional survey needs may be identified and implemented.

Issue 4: Legal and Procedural Comments

Comment 21: Camp Roberts stated that they should be excluded from the critical habitat designation because the benefit of excluding military lands from critical habitat designation outweighs the benefits of including military lands in the designation. Fort Hunter Liggett requested to be excluded from the final critical habitat designation because they believe the proposed critical habitat will preclude military training on 11,840 acres of land at Fort Hunter Liggett, resulting in a severe impact to Fort Hunter Liggett's military mission, operations, and protection of cultural and natural resources. Fort Hunter Liggett stated they believe the continued use of military training sites and the operations and maintenance activities of existing facilities are at risk, including established conservation measures. They also stated that future training missions are at risk, and compounding mitigation and conservation measures are eroding training capabilities.

Our Response: We address the issue of military lands and the role of INRMPs in detail in the section entitled ''Relationship of Critical Habitat to Military Lands.'' As discussed in that section, subsection 4(b)(2) of the Act allows us to exclude areas where the benefits of exclusion outweigh the benefits of inclusion. In addition, under subsection 3(5)(A) of the Act, areas where an INRMP provides a conservation benefit to the species, such that additional special management is unnecessary, may not meet the definition of critical habitat.

Our analysis of the costs and benefits leads us to conclude that the benefits of including lands on Fort Hunter Leggett do not outweigh the costs. Camp Roberts' lands have been removed based on their INRMP. Our analysis is discussed in comment 18 above, the section entitled ''Relationship of Critical Habitat to Military Lands.'' And the section entitled, ''Summary of Changes from the Proposed Rule''.

Fort Hunter Liggett has recently initiated formal consultation with us on both *Chlorogalum purpureum* var. *purpureum* and its proposed critical

habitat. Once consultation is complete, Fort Hunter Liggett will not need to reinitiate it unless their proposed actions have changed or new information becomes available on the species that would warrant a re-evaluation. The population of *Chlorogalum pupureum* var. *purpureum* found in Fort Hunt Liggett has survived in the midst of military training. There is little basis for expecting this circumstance will change in the absence of a critical habitat designation, particularly in light of the fact that the military and the Service are developing an INRMP to ensure special management. Conversely, the cost of disruption of military training is large in terms of both additional expenditures and adverse impacts to military readiness.

Comment 22: Eleven commenters recommended that the Service initiate section 7 consultation with the Army as soon as possible, and on an ongoing basis.

Our Response Section 7(a)(2) of the Act requires Federal agencies to consult with the Service to insure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of habitat determined to be critical to a species. Therefore, it is the responsibility of the Army Reserve, the CANG, and LPNF to initiate consultation with the Service for those actions that may jeopardize the continued existence of *Chlorogalum purpureum*.

Comment 23: Based on survey results, eleven commenters suggested that changes in the critical habitat designation should be considered on an ongoing basis.

Our Response We have taken into account additional information, including additional survey results, that were provided to us during the comment period on the proposed rule. We will continue to monitor and collect new information and may revise the critical habitat designation in the future if new information supports a change.

Comment 24: One commenter suggested that it is possible that the proposed designation has minimized the review of scientific data available at the installations in an attempt to comply with court-ordered schedules.

Our Response We disagree with this comment. We agree that we are required under a court approved settlement agreement to finalize this critical habitat designation by October 11, 2002. When developing any listing proposal or proposed critical habitat designation we use the best information available at the time, and solicit information from a variety of sources. We use information from Federal and State agencies, consultants, and researchers during the development of the proposal. When available, we incorporate information from recovery plans as well. These plans often have information that was not available at the time a species was listed. Comments received on the proposed designation, the draft economic analysis, and additional information received during the comment periods have been taken into account in the development of this final determination.

Peer Review

In accordance with our policy published on July 1, 1994 (59 FR 34270), we solicited independent opinions from six experts who have knowledge of the species, the geographic region where the species occurs, and/or familiarity with the principles of conservation biology. Five of the peer reviewers responded and supported the proposal, providing us with comments which were summarized in the previous section and incorporated into the final rule. One reviewer did not respond.

Summary of Changes From the Proposed Rule

Based on a review of public comments and the draft economic analysis, we reevaluated our proposed critical habitat designation and made changes as necessary. These include the following:

(1) We modified the description of the primary constituent elements. These modifications include a more defined soil surface definition, and removal of the wording ''frequently cryptogamic soils'' and the proposed primary constituent element No. 3, which are addressed in further detail in the ''Special Management Considerations or Protections'' section below.

(2) We added a section describing the special management considerations or protections that *Chlorogalum purpureum* may require. We believe that this new section will help to identify activities that address section 3(5)(A)(i)(II) of the Act, and also assist land managers in developing management strategies for *C. purpureum*.

(3) We removed the Camp Roberts Unit from the final designation. Camp Roberts' INRMP includes long-term conservation measures and adaptive management for *Chlorogalum purpureum* var. *purpureum* on Camp Roberts property and because information received since proposing critical habitat for this species indicates that the private lands proposed within this unit are not essential to the conservation of the species.

A survey was conducted in 2002 by the Santa Barbara Botanic Garden within suitable habitat on adjacent private land (*i.e.*, Palm property) north of the known Camp Roberts population. This survey confirmed the absence of the taxon on the property during the peak flowering season and the lower likelihood of the plants to occur on the property due to less suitable habitat (*e.g.*, different soil type, high density of cobbles and rocks) interspersed throughout most of the suitable areas (D. Wilken, *in litt.*, 2002). Review of recent aerial photographs unavailable at the time of the critical habitat proposal revealed a significant amount of ground disturbance (*i.e.*, grading, excavation) on other private land areas proposed as critical habitat north of Camp Roberts (H. Crowell, pers. obs., 2002). Therefore, we have determined that the private lands proposed within this unit do not currently provide the primary constituent elements that are essential to the conservation of the species.

Camp Roberts' INRMP includes an assessment of the species' ecological needs on the installation, a statement of goals and priorities, a detailed description of management actions to be implemented to provide for the ecological needs of the taxon, and a monitoring and adaptive management plan that will be peer-reviewed and approved by the Service. Since Camp Roberts' INRMP addresses the needs of the species, we have concluded that no additional special management or protection of the habitat is necessary, and that the Camp Roberts portion of this unit does not meet the definition of critical habitat.

(4) Military lands at Fort Hunter Liggett were removed because the costs associated with loss of training areas and traveling to alternate training sites outweighs the benefit of inclusion as critical habitat. In addition, we note that the military is developing an INRMP and undertaking other measures designed to provide special management for the species. This INRMP and the other measures would most likely justify exclusion of this area under section 3(5)(A) in the near future, but the actual decision was based on our decision that the benefits of exclusion exceed the benefits of designation. For clarity we have renamed the proposed Fort Hunter Liggett Unit to Jolon Unit to reflect these changes.

(5) The boundary for the Camatta Canyon critical habitat unit was reduced

in size from 1,933 ha (4,770 ac) to 1,772 ha (4,378 ac). The 159 ha (392 ac) reduction is a result of more defined and detailed mapping using aerial photographs to exclude those areas where unsuitable habitat types (*e.g.*, dense woodland or scrub vegetation) exist.

Critical Habitat

Critical habitat is defined in section 3 of the Act as—(i) the specific areas within the geographic area occupied by a species, at the time it is listed in accordance with the Act, on which are found those physical or biological features (I) essential to the conservation of the species and (II) that may require special management considerations or protection; and, (ii) specific areas outside the geographic area occupied by a species at the time it is listed, upon a determination that such areas are essential for the conservation of the species. ''Conservation'' means the use of all methods and procedures that are necessary to bring an endangered or threatened species to the point at which listing under the Act is no longer necessary.

Section 7(a)(2) of the Act requires Federal agencies to consult with the Service to ensure that any action it authorizes, funds, or carries out is not likely to result in the destruction or adverse modification of habitat determined to be critical to a species. Section 7 of the Act also requires conferences on Federal actions that are likely to result in the destruction or adverse modification of proposed critical habitat. In our regulations at 50 CFR 402.02, we define destruction or adverse modification as ''a direct or indirect alteration that appreciably diminishes the value of critical habitat for both the survival and recovery of a listed species. Such alterations include, but are not limited to, alterations adversely modifying any of those physical or biological features that were the basis for determining the habitat to be critical.'' Aside from the added protection that may be provided under section 7, the Act does not provide other forms of protection to lands designated as critical habitat. Because consultation under section 7 of the Act does not apply to activities on private or other non-Federal lands that do not involve a Federal nexus, critical habitat designation would not afford any additional protections under the Act against such activities.

To be included in a critical habitat designation, the habitat must first be ''essential to the conservation of the species.'' Critical habitat designations identify (to the extent known using the best scientific and commercial data available) habitat areas that provide essential life cycle needs of the species (*i.e.*, areas on which are found the primary constituent elements, as defined at 50 CFR 424.12(b)).

Section 4 requires that we designate critical habitat for a species, to the extent such habitat is determinable, at the time of listing. When we designate critical habitat at the time of listing or under short court-ordered deadlines, we will not often have sufficient information to identify all areas essential for the conservation of the species. Nevertheless, we are required to designate those areas we know to be critical habitat, using the best information available.

Within the geographic area occupied by the species, we will designate only areas currently known to be essential to the conservation of the species. We will not speculate about what areas might be found to be essential if better information becomes available, or what areas may become essential over time. If the information available at the time of designation does not show that an area provides essential life-cycle needs of the species, then the area will not be included in the critical habitat designation. Within the geographic area occupied by the species, we will not designate areas that do not now have the primary constituent elements, as defined at 50 CFR 424.12(b), which provide essential life cycle needs of the species. However, we may be restricted by minimum mapping unit or map scale.

Our regulations state that, ''The Secretary shall designate as critical habitat areas outside the geographic area presently occupied by the species only when a designation limited to its present range would be inadequate to ensure the conservation of the species'' (50 CFR 424.12(e)). Accordingly, we will not designate critical habitat in areas outside the geographic area occupied by the species when the best available scientific and commercial data do not demonstrate that the conservation needs of the species require designation of those areas.

Our Policy on Information Standards Under the Endangered Species Act, published in the **Federal Register** on July 1, 1994 (59 FR 34271), provides criteria, establishes procedures, and provides guidance to ensure that our decisions represent the best scientific and commercial data available. It requires our biologists, to the extent consistent with the Act and with the use of the best scientific and commercial data available, to use primary and original sources of information as the basis for recommendations to designate critical habitat. When determining which areas are critical habitat, a primary source of information should, at a minimum, be the listing rule for the species. Additional information may be obtained from a recovery plan, articles in peer-reviewed journals, conservation plans developed by States and counties, scientific status surveys and studies, biological assessments, unpublished materials, and expert opinions.

Habitat is often dynamic, and populations may move from one area to another over time. Furthermore, we recognize that designation of critical habitat may not include all of the habitat areas that may eventually be determined to be necessary for the recovery of the species. For these reasons, it should be understood that critical habitat designations do not suggest that habitat outside the designation is unimportant or may not be required for recovery. Areas outside the critical habitat designation will continue to be subject to conservation actions that may be implemented under section 7(a)(1) and to the regulatory protections afforded by the section 7(a)(2) jeopardy standard and the prohibitions of section 9, as determined on the basis of the best available information at the time of the action. We specifically anticipate that federally funded or assisted projects affecting listed species outside their designated critical habitat areas may still result in jeopardy findings in some cases. Similarly, critical habitat designations made on the basis of the best available information at the time of designation will not control the direction and substance of future recovery plans, habitat conservation plans, or other species conservation planning efforts if new information to these planning efforts calls for a different outcome.

Methods

As required by the Act and regulations (section 4(b)(2) and 50 CFR 424.12) we used the best scientific information available to determine areas that contain the physical and biological features essential for the conservation of *Chlorogalum purpureum*. This included information from the California Natural Diversity Data Base (CNDDB 2000), soil survey maps (Soil Conservation Service 1978, 1980), recent biological surveys and reports, additional information provided by interested parties, and discussions with botanical experts.

We believe that future conservation and recovery of this species depends not only on protection of areas it currently occupies, but also the opportunity to increase its current distribution. This is

supported by the historic loss of the habitats that likely harbored additional populations of *Chlorogalum purpureum*.

The private property adjacent to the Camatta Canyon critical habitat unit is occupied by above-ground plants and most likely a seed bank. In addition, each of the units includes areas that are considered unoccupied by the species. ''Occupied'' is defined here as any area with above-ground *Chlorogalum purpureum* plants or a seed or bulb bank of indefinite boundary. All occupied sites contain the primary constituent elements and are essential to the conservation of the species, as described below. ''Unoccupied'' is defined here as an area that contains no above-ground *Chlorogalum purpureum* plants and for which it is unknown if dormant plants exist or a seed or bulb bank is present. Both occupied and unoccupied areas that are designated as critical habitat are essential to the conservation of the species.

Determining the specific areas that this species occupies is difficult for two reasons: (1) The way the current distribution of *Chlorogalum purpureum* is mapped can be variable, depending on the scale at which patches of individuals are recorded (*e.g.*, many small patches versus one large patch); and (2) depending on the climate and other annual variations in habitat conditions, the extent of the distributions may either appear to shrink or temporarily disappear due to the dormancy characteristics of the species, or, if there is a residual seed bank present, enlarge and cover a more extensive area. Because it is logistically difficult to determine how extensive the seed bank is at any particular site and because above-ground plants may or may not be present in all patches within a site each year, we cannot quantify in a meaningful way what proportion of each critical habitat unit may actually be occupied by *C. purpureum.* Therefore, patches of unoccupied habitat are interspersed among patches of occupied habitat; the inclusion of unoccupied habitat in our critical habitat units reflects the dynamic nature of the life history characteristics of this species. Unoccupied areas provide habitat into which populations might expand, provide connectivity or linkage between colonies within a unit, and may support populations of pollinators and seed dispersal organisms.

Primary Constituent Elements

In accordance with section 3(5)(A)(i) of the Act and regulations at 50 CFR 424.12, when determining which areas to propose as critical habitat, we consider those physical and biological features (primary constituent elements) that are essential to the conservation of the species and may require special management considerations or protection. These include, but are not limited to—space for individual and population growth, and for normal behavior; food, water, air, light, minerals or other nutritional or physiological requirements; cover or shelter; sites for breeding, reproduction, or rearing of offspring, germination, or seed dispersal; and habitats that are protected from disturbance or are representative of the known historic geographical and ecological distributions of a species.

Changes in habitat for both varieties of *Chlorogalum purpureum* have occurred due to alteration of lands, direct loss of plants due to construction, widening of roads, displacement by nonnative annual grasses, inappropriate livestock grazing, and potentially by alteration of fire cycles. Livestock grazing may be detrimental to this taxon depending on the intensity of livestock use and the extent to which livestock congregate in the area. Special management for critical habitat may also be needed for conditions where indirect, negative impacts from recreation, military activities, and competition or predation from nonnative species (*i.e.*, pigs, nonnative annual grasses, etc.) occur. Most if not all of these activities may destroy any cryptogamic crusts that are present, and could potentially affect vascular plant germination and decrease the amount of nutrients available for proper plant development (Belnap *et al.* 2001). However, as noted earlier, additional research is necessary to confirm this. In addition to indirect impacts, direct loss of individual plants can occur from military training activities at Fort Hunter Liggett and Camp Roberts, and off-road vehicle use at LPNF. Ideally, the habitat that supports both varieties of C. purpureum should have little to no soil surface disturbance. Death of seeds, plants and any cryptogamic crust organisms can occur depending on the severity, size, frequency, and timing of soil disturbance. Soil surface disturbance can result in the death of seeds, seedlings and adult plants through burial or grinding.

Based on our knowledge to date, the primary constituent elements of critical habitat for *Chlorogalum purpureum* var. *purpureum* consist of, but are not limited to:

(1) Soils that are sandy clay to loamy clay, well drained on the surface, and are often overlain with fine gravel; and,

(2) plant communities in functioning ecosystems that support associated plant and animal species (*e.g.*, pollinators, predator-prey species, etc.), including valley and foothill grassland (most similar to the needlegrass series and California annual grassland series *in* Sawyer and Keeler-Wolf (1995)), blue oak woodland or oak savannahs (Holland 1986), and open areas within shrubland communities (most similar to the Chamise series *in* Sawyer and Keeler-Wolf (1995), although percent cover of chamise at known *Chlorogalum purpureum* var. *purpureum* areas is unknown). Within these vegetation community types, *C. p.* var. *purpureum* typically appears where there is little cover from other species which compete for resources available for growth and reproduction.

Based on our knowledge to date, the primary constituent elements of critical habitat for *Chlorogalum purpureum* var. *reductum* consist of, but are not limited to:

(1) Well-drained, red clay soils with a large component of gravel and pebbles on the upper soil surface; and,

(2) Plant communities in functioning ecosystems that support associated plant and animal species (*e.g.*, pollinators, predator-prey species, etc.), including grassland (most similar to the California annual grassland series *in* Sawyer and Keeler-Wolf (1995) or the pine bluegrass grassland, non-native grassland and wildflower field descriptions in Holland (1986)), blue oak woodland or oak savannahs (Holland 1986), oak woodland, and open areas within shrubland communities (most similar to the Chamise series *in* Sawyer and Keeler-Wolf (1995), although percent cover of chamise at known *Chlorogalum purpureum* var. *reductum* areas is unknown). Within these vegetation communities *C. p.* var. *reductum* appears where there is little cover of other species which compete for resources available for growth and reproduction.

At least one of the primary constituent elements must be present in order for an area to be considered critical habitat. Because *Chlorogalum purpureum* is documented to occur within trails (*i.e.*, passageways that are established, not graded, and do not support a paved surface) that support the appropriate soils and vegetation, as described in the primary constituent elements, these areas may constitute critical habitat. Surveys and information provided to us by land owners or species experts have contributed to our understanding that *C. purpureum* readily grows on well-drained surfaces that are underlain by clay soils that are

embedded with a fine gravel, and are found in areas where competition with other plant species is minimal (Wilken 2000; E. L. Painter, pers. comm., 2001). In most areas where *C. purpureum* occurs, it occupies microhabitat sites where there is little cover from other herbaceous species. Where *C. purpureum* occurs within grassland communities, the likelihood of plants occurring may decrease with an increase in the density of other nonnative herbaceous species, such as, but not limited to *Avena* ssp., *Bromus* ssp., and *Centuarea solstitialis.*

Site Selection

We selected critical habitat areas to provide for the conservation of *Chlorogalum purpureum* at one site where it is known to occur. Two other locations (Camp Roberts and Fort Hunter Liggett) are also essential to the conservation of the species and were identified in the proposed critical habitat designation. However, we have removed these areas from the final designation as described in the ''Summary of Changes From the Proposed Rule'' and ''Relationship of Critical Habitat to Military Lands'' sections of this critical habitat rule because special management is already being provided at Camp Roberts and costs outweigh the benefits of designation at Fort Hunt Liggett. Additionally, special management provisions are being developed for lands at Fort Hunter Liggett.

The long-term conservation of *Chlorogalum purpureum* var. *purpureum* and *C. p.* var. *reductum* is dependent upon the protection of existing populations, and the maintenance of ecological functions within these sites, including connectivity between sites within close geographic proximity. This connectivity facilitates pollinator activity, seed dispersal mechanisms, and the ability to maintain occasional fire that promotes the openness of vegetative cover which is advantageous to the species.

Threats to the habitat of *Chlorogalum purpureum* include: alteration of lands, direct loss of plants due to construction, widening of roads, displacement by nonnative annual grasses, inappropriate livestock grazing, and potential alteration of fire cycles (65 FR 14878; March 20, 2000). Direct loss of individual plants can also occur due to military training activities at Fort Hunter Liggett and Camp Roberts, and off-road vehicle (ORV) use at LPNF. (65 FR 14878; March 20, 2000). The areas we are designating as critical habitat provide the habitat components essential for the conservation of *Chlorogalum purpureum.* Given the species' need for an open plant community structure, the risk from nonnative species competition, predation (*e.g.*, herbivory), or soil surface disturbance, we believe that these areas may require special management considerations or protection.

Special Management Considerations or Protections

Special management considerations or protections may be needed to maintain the primary constituent elements for *Chlorogalum purpureum* within the units being proposed as critical habitat. In some cases, protection of existing habitat and current ecological processes may be sufficient to ensure that populations of *C. purpureum* are maintained at those sites, and have the ability to reproduce and disperse into surrounding habitat. In other cases, however, active management may be needed to maintain the primary constituent elements for *C. purpureum.* We have outlined below the most likely kinds of special management and protection that *C. purpureum* critical habitat may require.

(1) The soils on which *Chlorogalum purpureum* is found should be maintained. Physical properties of the soil, such as its chemical composition, structure, and drainage capabilities, would best be maintained by limiting or restricting the use of herbicides, fertilizers, or other soil amendments; and by minimizing or avoiding activities that result in soil compaction (*e.g.*, off-road wheeled and tracked vehicle use, trampling by people and livestock) and those that would alter the hydrology of areas immediately adjacent to or upslope of the species and its critical habitat.

(2) The soil surface should be maintained to enhance cryptogamic crust formation by minimizing the intensity, frequency, duration, and acreage of soil surface disturbance. The soil surface should be protected at relict sites (*i.e.*, sites with well-developed crusts) to provide reference areas and baseline comparisons for research. Because cryptogamic crusts are highly susceptible to hot fires (Belnap *et al.* 2001) and the presence of nonnative annual grasses in *Chlorogalum purpureum* habitat may promote fires. Annual, intense fires should be avoided. The effects of activities that can damage biotic soil crusts (*e.g.*, excavations, off-road vehicle use, trampling) should be reduced by moving them to areas where crusts are less vulnerable, limiting the area affected, and conducting such activities in dryer seasons.

(3) The associated plant and animal communities should be maintained to ensure the habitat needs of pollinators and seed dispersal agents are maintained, and predator-prey relationships are functioning. The use of pesticides should be restricted so that viable populations of pollinators are present to facilitate reproduction of *Chlorogalum purpureum.* Fragmentation of habitat through road construction, development, and certain types of fencing should be limited. Additionally, predator-prey relationships should be managed and protected. For example, installation of fencing could exclude predator species (*e.g.*, coyotes, bobcats, San Joaquin kit fox), thus causing an increase in prey species (*e.g.*, ground squirrels, gophers, rabbits) abundance. A change such as this could result in increased herbivory, bulb predation, or burrowing that could affect *C. purpureum* growth and survival.

(4) In all plant communities where *Chlorogalum purpureum* occurs, invasive, nonnative species such as *Centuarea solstitialis* (yellow star-thistle), *Avena* spp. (wild oats), *Bromus* spp. (*B. hordeaceus*, *B. diandrus*, *B. madritensis*, *B. rubens* (brome)), *Erodium* spp. (storksbill or fillaree), and other species need to be actively managed and controlled to maintain the open habitat that *Chlorogalum purpureum* needs. Nonnative annual grasses may promote fires by providing recurring annual fuel sources. Thus, proactive management should be implemented to prevent annual fires, unless future research demonstrates that a series of annual fires can benefit *Chlorogalum purpureum* by reducing competition from nonnative species.

(5) Certain critical habitat areas (*i.e.*, suitable, unoccupied habitat between or adjacent to known patches of *Chlorogalum purpureum*) may need to be temporarily fenced or demarcated to identify exclusion areas for protection from accidental or intentional trampling by humans, livestock, or off-road vehicle use. Heavy disturbance to these critical areas may be detrimental to this species' persistence. Seasonal exclusions may work in certain areas to protect the critical habitat and *C. purpureum* plants during the critical season of growth and reproduction.

(6) In areas where *Chlorogalum purpureum* and its habitat occur in conjunction with off-road vehicle traffic (*e.g.*, military wheeled and tracked vehicles, OHVs), we recommend managing to minimize the severity of those effects. Management should include: limiting or avoiding new structures and permanent roads and

trails; managing excavations, scrapings, or other ground surface disturbance; managing tracked and wheeled vehicle use during *C. purpureum* growing and dormant seasons; and managing foot traffic, bivouacking, and congregations of high numbers of people during *C. purpureum* growing and dormant seasons. These types of activities should be managed to limit loss of adults, bulbs, and seeds, loss of habitat, increased soil compaction, and increased nonnative species encroachment.

(7) Monitoring programs should be developed or enhanced so that areas occupied by purple amole are studied, allowing for a full range of life-history data and a thorough analysis of the compatibility and impacts of those activities that may adversely affect the species. Representative areas should be chosen throughout the distribution of the species, including large, high-density populations that have a higher potential for persistence. Monitoring studies should be designed to aid in the determination of population stability as well as provide basic life-history information and data on the ecological needs of the species (*e.g.*, identification and status of pollinator species, disturbance factors, etc.).

Criteria Used To Identify Critical Habitat

Chlorogalum purpureum was likely more widespread in the past, and the current population size is small. Therefore, the likelihood that chance or unforeseen disturbance will reduce the population size is high, and we believe it is important to preserve all areas that currently support populations of *Chlorogalum purpureum.* We included some areas that may not currently contain *C. purpureum* (due to former cultivation, threats from nonnative species, or other factors) but harbor the necessary primary constituent elements. These areas were included to maintain connectivity between sites. We also included habitat for *C. purpureum* adjacent to, and contiguous with, areas of known occurrences to maintain landscape-scale processes. Each mapping unit contains habitat that is occupied by *C. purpureum.*

As described in the ''Background,'' ''Primary Constituent Elements,'' and ''Special Management Considerations or Protections'' sections, the species depends upon habitat components beyond the immediate, occupied areas. These components include specific soil types, supporting vegetation communities with which the species is associated, and sufficient habitat areas to support the ecological processes on which the species depends (*e.g.*, hydrologic regimes, a diverse ecosystem that supports the appropriate pollinators and seed dispersal mechanisms, sufficient areas of appropriate habitat so the plant can expand and re-colonize areas, natural predator-prey relationships that promote species survival, and minimal competition from non-native species).

A seed or bulb bank likely exists within habitat that occurs adjacent to the current known distribution of *Chlorogalum purpureum.* The extent of this seed or bulb bank is unknown. However, other studies have determined that ecosystems with annual weed species have large seed banks, especially where the land has been grazed (Baskin and Baskin 1998). The critical habitat units for both varieties of *Chlorogalum* contain habitat with annual native and weed species and have experienced livestock grazing either currently (LPNF) or historically (Fort Hunter Liggett). Because it is logistically difficult to determine how extensive a seed or bulb bank is at any particular site, and because above-ground plants may or may not be present in all patches within a site each year, we cannot quantify what proportion of critical habitat units may actually be occupied by a seed or bulb bank. However, any seed or bulb bank present is critical for the species' survival. If, for example, a fire destroys adult plants prior to seed dispersal, no seeds will be set for next year's growth. Therefore, a seed or bulb bank that occurs in the surrounding habitat could aid in reducing population declines and extirpation. The inclusion of unoccupied habitat in the critical habitat unit reflects the dynamic nature of the life history characteristics (*e.g.*, seasonal dormancy, timing of flowering, etc.) of this species.

Species necessary for pollination and seed dispersal of *Chlorogalum purpureum* extend beyond the boundary of the known distribution of *C. purpureum.* It is necessary to protect sufficient areas surrounding the known occurrences of *C. purpureum* because occupied habitat that is limited in size can maintain few pollinators. Additionally, pollinators of *C. purpureum* are likely to be generalist species that also pollinate other plants in the habitats where *C. purpureum* occurs. A reduction in pollinator visitation to the species could reduce seed output, resulting in decreases in flowering plant density, inflorescence density, or population size.

Plants with life-history characteristics such as *Chlorogalum purpureum* have distributions that are known to fluctuate (expand or decrease) over long time periods in response to both natural and human-induced events (*e.g.*, rainfall, fire, recreation activities, herbicide use, change in private land use practice, etc.). These factors may cause the habitat suitability of given areas to vary over time, and thus affect the distribution of *C. purpureum.* Those areas with appropriate soil conditions outside of the known occurrences of both varieties of *C. purpureum* and adjacent to the plateau areas where *C. p.* var. *reductum* occurs are favorable for population expansion and reintroductions.

The ability of an organism to survive and reproduce depends upon available resources. For *Chlorogalum purpureum*, those resources occur within and beyond the boundaries of the known distribution of the species. Without including the surrounding area, the fitness (*i.e.*, the extent to which the species' genes are passed on and represented in subsequent generations) of *C. purpureum* may be reduced. For many wildlife and plant species, the entire landscape (rather than site-specific characteristics) may be influential. The exact amount of area needed for *C. purpureum* cannot be determined without obtaining detailed information on measurable variables that reflect the plant's health, reproduction, and survival. These data are currently not available. Unless further studies are conducted that suggest otherwise, we believe the habitat encompassed within the critical habitat boundaries is necessary for *C. purpureum* expansion, reproduction, and survival. It incorporates those characteristics needed by the taxon, in addition to supporting those ecological functions necessary for *C. purpureum* persistence.

When selecting areas of critical habitat for *Chlorogalum purpureum*y, we made an effort to avoid developed areas that are unlikely to contribute to the conservation of the species. However, we did not map critical habitat in sufficient detail to exclude all developed areas, or other lands unlikely to contain the primary constituent elements essential for the conservation of *C. purpureum.* Areas within the boundaries of the mapped units, such as buildings, hard-packed roads (*e.g.*, asphalt, paved, etc.), parking lots, railroads, airport runways and other paved areas, lawns, and other urban landscaped areas will not contain any of the primary constituent elements. Federal actions limited to these areas would therefore not trigger a section 7 consultation, unless they may affect the

species and/or primary constituent elements in adjacent critical habitat.

Critical habitat for *Chlorogalum purpureum* var. *reductum* includes one unit, the Camatta Canyon unit, which currently supports one population of this taxon with two known occurrences. Limited data on soils and habitats were available for delineating the critical habitat boundaries for *C. p.* var. *reductum.* No GIS data layers were available to create a combined soil, slope, and vegetation model such as that created for *C. p.* var. *purpureum.* Therefore, the critical habitat designation is based on the existing known populations, and observations of soil characteristics and vegetation community types made by various researchers and agencies. This unit was developed by encompassing the extent of appropriate topography and vegetation community types surrounding the known populations. Because the ecological processes, soil types, and vegetation community upon which *C. p.* var. *reductum* depends extend beyond the boundary of its known distribution, we included the plateau areas, the known distribution, and a portion of the adjacent vegetation community in the critical habitat boundary. Encroaching activities not conducive to *C. p.* var. *reductum* persistence, that may adversely affect or destroy the plant and habitat that is critical for its expansion and survival, should be limited by the current boundaries. These activities include, but are not limited to, off-road vehicle use, livestock grazing, herbivory, expansion of nonnative species (that out-compete smaller, herbaceous species), and ground disturbance by gophers.

Thorough surveys of the distribution of *Chlorogalum purpureum* var. *reductum* have not been conducted in San Luis Obispo County. Additionally, life-history characteristics (*e.g.*, seasonal dormancy) of the species make it difficult to quantify the taxon's exact distribution. Therefore, the plants are likely more widespread than observed. Multi-year surveys are needed to determine the presence or absence of the species. Monitoring *C. p.* var. *purpureum* at Fort Hunter Liggett has revealed that individual mature plants can be dormant for at least three years (Liz Clark, Fort Hunter Liggett, pers. comm., 2002). During dormancy, *C. purpureum* is not detectable on the surface. Additionally, new *C. p.* var. *purpureum* sites are being found within the range of the taxon at Fort Hunter Liggett. We expect ''new patches'' of *C. p.* var. *reductum* also to be revealed in the Camatta Canyon Unit if surveys are conducted within the critical habitat boundary in those areas where the primary constituent elements occur. Data collected on *C. p.* var. *purpureum* indicate that the species commonly grows on slopes less than 20 percent. However, plants have also been documented on steeper slopes up to 50 percent. Therefore, steeper areas are incorporated into the critical habitat boundary.

An extension of the plateau where *Chlorogalum purpureum* var. *reductum* is currently known to occur exists between the northern and southern site. These plateau extensions may potentially support *C. p.* var. *reductum* (D. Chipping, California Polytechnic State University, *in litt.,* 1997). Additional *C. p.* var. *reductum* plants likely occur on private property which falls between the two known sites and within the critical habitat boundary (A. Koch, pers. comm., 2001). This area harbors the soils and vegetation appropriate for *C. p.* var. *reductum* growth and expansion. We believe protecting the habitat between the two sites provides connectivity and therefore provides for gene flow and an increase in population size in the long term.

Critical Habitat Designation

The critical habitat areas described below constitute our best assessment of the areas needed for the conservation of *Chlorogalum purpureum* at this time. Critical habitat for *C. purpureum* includes (1) private property adjacent to Fort Hunter Liggett property, Monterey County; and (2) on LPNF property, a small strip of state lands adjacent to Highway 58, and adjacent private property in San Luis Obispo County. We have excluded approximately 4,282 ha (10,586 ac) of land as critical habitat for *C. p.* var. *purpureum.* We have designated approximately 1,772 ha (4,378 ac) of land as critical habitat for *C. p.* var. *reductum.* Approximately 25 percent of this total area consists of Federal lands, private lands comprise approximately 75 percent, and State lands comprise less than 0.1 percent.

As discussed throughout this rule, the long-term conservation of *Chlorogalum purpureum* var. *purpureum* and *C. p.* var. *reductum* is dependent upon the protection of existing populations, and the maintenance of ecological functions within these sites, including connectivity between sites within close geographic proximity. *Chlorogalum purpureum* was likely more widespread in the past, and the current population size is small and faces threats to its habitat as described in the final listing rule and this critical habitat designation. Therefore, the likelihood that chance or unforseen disturbance will reduce the population size is high, and we believe it is important to preserve all areas that currently support populations of *Chlorogalum purpureum.*

In addition, the designated areas surrounding the known distribution of both varieties of *Chlorogalum purpureum* are essential because:

(1) Thorough surveys of the distribution of *Chlorogalum purpureum* have not been conducted. Additionally, life-history characteristics (*e.g.*, seasonal dormancy) of *C. purpureum* make it difficult to quantify the species' exact distribution. Therefore, the plants are likely more widespread than observed. Surveys conducted for several years are needed to determine the presence or absence of the species.

(2) A seed or bulb bank likely exists within habitat that occurs adjacent to the current known distribution of *Chlorogalum purpureum* var. *purpureum* and *C. p.* var. *reductum.* The extent of this seed or bulb bank is unknown. However, other studies have determined that ecosystems with annual species have large seed banks, especially where the land has been grazed (Baskin and Baskin 1998). Because it is logistically difficult to determine how extensive the seed or bulb bank is at any particular site, and because above-ground plants may or may not be present in all patches within a site each year, we cannot quantify what proportion of the critical habitat unit may actually be occupied by *C. purpureum.* However, any seed or bulb bank present is critical for the species' survival. If, for example, a fire destroys adult plants prior to seed dispersal, no seeds will be set for the following years' growth. A seed or bulb bank that occurs in the surrounding habitat could help limit population declines and extirpation. The inclusion of unoccupied habitat in the critical habitat unit reflects the dynamic nature of the life history characteristics (*e.g.*, seasonal dormancy, timing of flowering, etc.) of this species.

(3) Species necessary for pollination and seed dispersal of *Chlorogalum purpureum* extend beyond the boundary of the known distribution of *C. purpureum.* It is necessary to protect sufficient areas surrounding the known occurrences of *C. purpureum* because occupied habitat that is limited in size can maintain few pollinators. Additionally, the pollinators of *C. purpureum* are likely to be generalists that also pollinate other plants in the grassland, oak savannah, and chaparral habitat where the plant occurs. A reduction in pollinator visitation to *C. purpureum* could reduce seed output,

resulting in decreases in flowering plant density, inflorescence density, or population size.

(4) Plants with life-history characteristics such as *Chlorogalum purpureum* have distributions that are known to fluctuate (expand or decrease) over long time periods in response to natural and unpredictable events (*e.g.*, rainfall, fire, recreation activities, herbicide use, change in private land use practice). These factors may cause the habitat suitability of given areas to vary over time, and thus affect the distribution of *C. purpureum.* Areas beyond the known occurrences of *C. purpureum* that have appropriate soil conditions are favorable for population expansion and reintroductions (if necessary in the future).

The ability of an organism to survive and reproduce depends upon available resources. For *Chlorogalum purpureum,* those resources occur beyond the boundaries of the known distribution of the species. Without including the surrounding area, the fitness (*i.e.*, the extent to which the species genes are passed on and represented in subsequent generations) of *Chlorogalum purpureum* may be reduced. For many wildlife and plant species, the entire landscape (rather than site-specific characteristics) may be influential. The exact amount of area needed for *Chlorogalum purpureum* cannot be determined without studying measurable variables which reflect the plant's health, reproduction, and survival. Very little of this information is available for *C. p.* var. *purpureum* or *C. p.* var. *reductum.* Therefore, unless the results of future studies suggest otherwise, we believe the habitat encompassed within the critical habitat boundaries is necessary for *C. purpureum* expansion, reproduction, and survival because the area has those characteristics needed by the species, in addition to supporting those ecological functions necessary for *C. purpureum* persistence.

A brief description of the critical habitat units are given below:

Jolon Unit

This unit consists of 620 ha (1,532 ac) of private property near Jolon Road. This population is probably a remnant of a much larger population that historically extended beyond the immediate Fort Hunter Liggett area. The land within this unit provides those characteristics essential for the species discussed above.

Camatta Canyon Unit

This unit consists of one area that encompasses the similar topographic features and vegetative communities that surround the only two known occurrences of this species. The Camatta Canyon Unit (1,772 ha (4,378 ac)) encompasses the plateau on both the north and south sides of Highway 58 near Camatta Canyon, extending south approximately 5 km (3 mi) to include two private inholding areas within the LPNF boundaries.

The land within this unit provides those characteristics essential for the species discussed above. More specifically, the area surrounding the known distribution of *Chlorogalum purpureum* var. *reductum* and the plateau adjacent to the known distribution (*i.e.*, finger-like extensions in northern portion of the unit) are essential because:

(1) *Chlorogalum purpureum* var. *reductum* is found at only two sites in the La Panza Range in central San Luis Obispo County. The two sites likely make up one ''population'' of plants due to the close proximity of the sites and the characteristic ''patchiness'' of plants that has been observed with both varieties of *C. purpureum.* The limited geographic distribution of *C. p.* var. *reductum* increases the likelihood of its extinction. The risk of extinction elevates the need for protecting all existing plants, habitat, and soil conditions for the taxon's expansion. Additionally, ecological attributes upon which the species relies (*e.g.*, pollinators, seed dispersal agents) should be protected. Activities that may adversely affect or destroy the plant and the habitat that is critical for its survival and expansion should be limited. These activities include, but are not limited to, off-road vehicle use, livestock grazing, herbivory, and ground disturbance by gophers.

(2) Thorough surveys of the distribution of *Chlorogalum purpureum* var. *reductum* have not been conducted in the area. Surveys are needed across multiple years to determine the presence or absence of the species. Monitoring of *C. p.* var. *purpureum* at Fort Hunter Liggett has found known individual mature plants to be dormant for at least three years. During dormancy, both varieties of *Chlorogalum* are not detectable on the surface. Because discoveries of new *C. p.* var. *purpureum* sites are being found within the range of the taxon at Fort Hunter Liggett, one may expect ''new patches'' of *C. p.* var. *reductum* to occur in the Camatta Canyon Unit if surveys were conducted within the critical habitat boundary in those areas where the primary constituent elements occur.

(3) An extension of the plateau/flat-top area where *Chlorogalum purpureum* var. *reductum* is currently known to occur exists between the northern site and the southern site. This area harbors the soils and vegetation appropriate for *C. p.* var. *reductum* growth and expansion. We believe it is important to provide connectivity between the two sites. Additionally, the area encompasses what appear to be flat-top/mesa-like extensions (which likely contain suitable habitat) that occur between the two known distributions (D. Chipping, California Polytechnic State University, *in litt.,* 1997). A. Koch (CDFG, pers. comm., 2001) also notes that *C. p.* var. *reductum* occurs on private property which falls between the two known sites and within the critical habitat boundary line.

(4) The vegetation community that *Chlorogalum purpureum* var. *reductum* depends on extends beyond the boundary of the known distribution. By encompassing plateau areas, the known distribution, and a portion of the adjacent vegetation community that the species depends on, ecological functions (*e.g.*, cryptogamic crust formation, predator-prey relationships, pollinator activity) within the habitat are maintained such that ''edge effects'' from encroaching activities not conducive to *C. p.* var. *reductum* persistence (*e.g.*, off-road vehicle use, livestock grazing, etc.) do not inhibit the taxon's expansion or survival. Additionally, adjacent grassland and oak woodland habitat that is adversely affected could result in greater rates of herbivory or regeneration/expansion of nonnative plants that can outcompete smaller, herbaceous species such as *C. p.* var. *reductum.*

Lands proposed are under private, State, and Federal jurisdiction. State lands are managed by CalTrans, and Federal lands are managed by the the Forest Service (*i.e.*, LPNF). The approximate areas of proposed critical habitat by land ownership are shown in Table 1.

TABLE 1.—APPROXIMATE AREAS, GIVEN IN HECTARES (HA) AND ACRES (AC) [1] OF PROPOSED CRITICAL HABITAT FOR *Chlorogalum purpureum* BY LAND OWNERSHIP

Unit name	Private	State	Federal	Total
Jolon	620 ha (1,532 ac)			620 ha (1,532 ac)

TABLE 1.—APPROXIMATE AREAS, GIVEN IN HECTARES (HA) AND ACRES (AC) [1] OF PROPOSED CRITICAL HABITAT FOR *Chlorogalum purpureum* BY LAND OWNERSHIP—Continued

Unit name	Private	State	Federal	Total
Camatta Canyon	1,324 ha (3,271 ac)	7 ha (18 ac)	441 ha (1,089 ac)	1,772 ha (4,378 ac)
Total	1,944 ha (4,803 ac)	7 ha (18 ac)	441 ha (1,089 ac)	2,443 ha (5,910 ac)

[1] Approximate acres have been converted to hectares (2.47 ac = 1 ha). Based on the level of precision of mapping of each unit, hectares and acres have been rounded to the nearest whole number. Totals are sums of units.

Effects of Critical Habitat Designation

Section 7 Consultation

Section 7(a)(2) of the Act requires Federal agencies, including the Service, to ensure that actions they fund, authorize, or carry out do not destroy or adversely modify a species' critical habitat to the extent that the action appreciably diminishes the value of the critical habitat for the conservation of the species. Individuals, organizations, States, local governments, and other non-Federal entities are affected by the designation of critical habitat only if their actions occur on Federal lands, require a Federal permit, license, or other authorization, or involve Federal funding.

Section 7(a)(2) of the Act requires Federal agencies to evaluate their actions with respect to any species that is proposed or listed as endangered or threatened and with respect to its critical habitat, if any is designated or proposed. Regulations implementing this interagency cooperation provision of the Act are codified at 50 CFR part 402. Section 7(a)(4) of the Act requires Federal agencies to confer with us on any action that is likely to jeopardize the continued existence of a proposed species or result in destruction or adverse modification of proposed critical habitat. Conference reports provide conservation recommendations to assist the action agency in eliminating conflicts that may be caused by the proposed action. The conservation recommendations in a conference report are advisory. We may issue a formal conference report, if requested by the Federal action agency. Formal conference reports include an opinion that is prepared according to 50 CFR 402.14, as if the species was listed or critical habitat designated. We may adopt the formal conference report as the biological opinion when the species is listed or critical habitat designated, if no substantial new information or changes in the action alter the content of the opinion (see 50 CFR 402.10(d)). If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency (action agency) must enter into consultation with us. Through this consultation, we would ensure that the permitted actions do not destroy or adversely modify critical habitat.

When we issue a biological opinion concluding that a project is likely to result in the destruction or adverse modification of critical habitat, we also provide ''reasonable and prudent alternatives'' to the project, if any are identifiable. Reasonable and prudent alternatives are defined at 50 CFR 402.02 as alternative actions identified during consultation that can be implemented in a manner consistent with the intended purpose of the action, that are consistent with the scope of the Federal agency's legal authority and jurisdiction, that are economically and technologically feasible, and that the Director believes would avoid the destruction or adverse modification of critical habitat. Reasonable and prudent alternatives can vary from slight project modifications to extensive redesign or relocation of the project. Costs associated with implementing a reasonable and prudent alternative are similarly variable.

Regulations at 50 CFR 402.16 require Federal agencies to reinitiate consultation on previously reviewed actions in instances where critical habitat is subsequently designated and the Federal agency has retained discretionary involvement or control over the action or such discretionary involvement or control is authorized by law. Consequently, some Federal agencies may request reinitiation of consultation or conference with us on actions for which formal consultation has been completed if those actions may affect designated critical habitat or adversely modify or destroy proposed critical habitat.

Activities on Federal lands that may affect *Chlorogalum purpureum* or its critical habitat will require section 7 consultation. Activities on private or State lands requiring a permit from a Federal agency, such as a permit from the U.S. Army Corps of Engineers (Corps) under section 404 of the Clean Water Act or any other activity requiring Federal action (*i.e.*, funding, authorization) will also continue to be subject to the section 7 consultation process. Federal actions not affecting listed species or critical habitat, as well as actions on non-Federal lands that are not federally funded, authorized, or permitted, will not require section 7 consultation.

Section 4(b)(8) of the Act requires us to briefly describe and evaluate in any proposed or final regulation that designates critical habitat those activities involving a Federal action that may adversely modify such habitat or that may be affected by such designation. Activities that may destroy or adversely modify critical habitat would be those that alter the primary constituent elements to the extent that the value of critical habitat for the conservation of *Chlorogalum purpureum* is appreciably reduced. We note that such activities may also jeopardize the continued existence of the species. Activities that, when carried out, funded, or authorized by a Federal agency, may directly or indirectly destroy or adversely modify critical habitat include, but are not limited to:

(1) Destruction of grassland, oak woodland, and oak savannah communities, and open areas found within shrubland communities, including but not limited to, introduction of nonnative species, heavy recreational use, maintenance of an unnatural fire regime, development, road maintenance, agricultural activities, discing, mowing, or chaining;

(2) Unmanaged soil compaction or disturbance of upper soil surfaces. These activities include, but are not limited to, grazing, fire management, or mechanical disturbance such as by vehicles with tracks or heavy wheels, and trampling by livestock and people; and,

(3) Unmanaged application or runoff of pesticides, herbicides, fertilizers, or other chemical or biological agents.

To properly portray the effects of critical habitat designation, we must first compare the section 7 requirements for actions that may affect critical habitat with the requirements for actions that may affect a listed species. Section 7 ensures that actions funded, authorized, or carried out by Federal agencies are not likely to jeopardize the continued existence of a listed species or destroy or adversely modify the listed

species' critical habitat. Actions likely to jeopardize the continued existence of a species are those that would appreciably reduce the likelihood of the species' survival and recovery, and actions likely to destroy or adversely modify critical habitat are those that would appreciably reduce the value of critical habitat for the survival and recovery of the listed species.

Common to both definitions is an appreciable detrimental effect on both survival and recovery of a listed species. Given the similarity of these definitions, actions likely to destroy or adversely modify critical habitat would almost always result in jeopardy to the species concerned, particularly when the area of the proposed action is occupied by the species concerned. The units we are designating are occupied by either above-ground plants or a *Chlorogalum purpureum* seed bank. Federal agencies already consult with us on activities in areas where the species may be present to ensure that their actions do not jeopardize the continued existence of the species. The units also contain some areas which are considered unoccupied. However, we believe for those areas we have ultimately identified as critical habitat, that the designation of critical habitat is not likely to result in a significant regulatory burden above that already in place due to the presence of the listed species. Few additional consultations are likely to be conducted due to the designation of critical habitat. Actions on which Federal agencies consult with us include, but are not limited to:

(1) Development on private lands requiring permits from Federal agencies, such as authorization from the Corps, pursuant to section 404 of the Clean Water Act, or a section 10(a)(1)(B) permit from the Service, or some other Federal action that includes Federal funding that will subject the action to the section 7 consultation process (*e.g.*, from the Federal Highway Administration, Federal Emergency Management Agency, or the Department of Housing and Urban Development);

(2) Military activities of the U.S. Department of Defense (Army Reserve) on their lands or lands under their jurisdiction;

(3) Activities of the Forest Service on their lands or lands under their jurisdiction;

(4) The release or authorization of release of biological control agents by the U.S. Department of Agriculture;

(5) Regulation of activities affecting point source pollution discharges into waters of the United States by the Environmental Protection Agency under section 402 of the Clean Water Act; and

(6) Construction of communication sites licensed by the Federal Communications Commission, and authorization of Federal grants or loans.

Where federally-listed wildlife species occur on private lands proposed for development, any Habitat Conservation Plans (HCPs) submitted by the applicant to secure a permit to take, according to section 10(a)(1)(B) of the Act, would be subject to the section 7 consultation process. Several other species that are listed under the Act have been documented to occur in the same general areas as the current distribution of *Chlorogalum purpureum*. Listed wildlife species identified either on Fort Hunter Liggett or in close proximity to this area include San Joaquin kit fox (*Vulpes macrotis mutica*), vernal pool fairy shrimp (*Branchinecta lynchi*), California red-legged frog (*Rana aurora draytonii*), arroyo toad (*Bufo californicus*), bald eagle (*Haliaeetus leucocephalus*), California condor (*Gymnogyps californianus*), and least Bell's vireo (*Vireo bellii* pusillus). The California tiger salamander (*Ambystoma tigrinum californiense*), a candidate wildlife species (taxon for which the Service has sufficient biological information to support a proposal to list as endangered or threatened), has also been documented at Fort Hunter Liggett. Species that are listed under the Act that may occur in the same general area as *C. p.* var. *reductum* include vernal pool fairy shrimp, longhorn fairy shrimp (*Branchinecta longientenna*), California red-legged frog, and California condor.

If you have questions regarding whether specific activities will likely constitute adverse modification of critical habitat, contact the Field Supervisor, Ventura Fish and Wildlife Office (see **ADDRESSES** section). Requests for copies of the regulations on listed wildlife and inquiries about prohibitions and permits may be addressed to the U.S. Fish and Wildlife Service, Portland Regional Office, 911 NE 11th Avenue, Portland, OR 97232–4181 (503/231–6131, FAX 503/231–6243).

Relationship of Critical Habitat to Military Lands

Section 3(5)(A) and Exclusions Under Section 4(b)(2)

Critical habitat is defined in section 3 of the Act as—(i) the specific areas within the geographic area occupied by a species, at the time it is listed in accordance with the Act, on which are found those physical or biological features (I) essential to the conservation of the species and (II) that may require special management considerations or protection; and, (ii) specific areas outside the geographic area occupied by a species at the time it is listed, upon a determination that such areas are essential for the conservation of the species. Special management and protection are not required if adequate management and protection are already in place. Adequate special management or protection is provided by a legally operative plan/agreement that addresses the maintenance and improvement of the primary constituent elements important to the species and that manages for the long-term conservation of the species. If any areas containing the primary constituent elements are currently being managed to address the conservation needs of *Chlorogalum purpureum* management or protection, these areas would not meet the definition of critical habitat in section 3(5)(A)(i) of the Act and would not be included in this final rule.

To determine if a plan provides adequate management or protection we consider—(1) Whether there is a current plan specifying the management actions and whether such actions provide sufficient conservation benefit to the species; (2) whether the plan provides assurances that the conservation management strategies will be implemented; and (3) whether the plan provides assurances that the conservation management strategies will be effective. In determining if management strategies are likely to be implemented, we consider whether—(a) A management plan or agreement exists that specifies the management actions being implemented or to be implemented; (b) there is a timely schedule for implementation; (c) there is a high probability that the funding source(s) or other resources necessary to implement the actions will be available; and (d) the party(ies) have the authority and long-term commitment to implement the management actions, as demonstrated, for example, by a legal instrument providing enduring protection and management of the lands. In determining whether an action is likely to be effective, we consider whether—(a) The plan specifically addresses the management needs, including reduction of threats to the species; (b) such actions have been successful in the past; (c) there are provisions for monitoring and assessment of the effectiveness of the management actions; and (d) adaptive management principles have been incorporated into the plan.

The Sikes Act Improvement Act of 1997 (Sikes Act) requires each military installation that encompasses land and

water suitable for the conservation and management of natural resources to have completed, by November 17, 2001, an INRMP. An INRMP integrates implementation of the military mission of the installation with stewardship of the natural resources found on the installation. Each INRMP includes an assessment of the ecological needs of the installation, including needs to provide for the conservation of listed species; a statement of goals and priorities; a detailed description of management actions to be implemented to provide for these ecological needs; and a monitoring and adaptive management plan. Under section 7 of the Act, we consult with the military on the development and implementation of INRMPs for installations with listed species. Military installations with approved INRMPs which address the needs of species generally do not meet the definition of critical habitat discussed above, as they require no additional special management or protection. Therefore, we generally do not include these areas in critical habitat designations if they meet the following three criteria: (1) A current INRMP must be complete and provide a benefit to the species; (2) the plan must provide assurances that the conservation management strategies will be implemented; and (3) the plan must provide assurances that the conservation management strategies will be effective, by providing for periodic monitoring and revisions as necessary. If all of these criteria are met, then the lands covered under the plan likely would not meet the definition of critical habitat. The Department of Defense has prepared an INRMP for the CANG at Camp Roberts that meets these criteria, and we have determined that these lands do not meet the definition of critical habitat under section 3(5)(A). We believe the assurances provided through the INRMP are sufficient to provide for the conservation of *Chlorogalum purpureum* var. *purpureum*. Consequently, these lands have not been included in this critical habitat designation.

The Department of the Army is currently developing an INRMP for Fort Hunter Liggett that addresses long-term conservation measures and adaptive management for *Chlorogalum purpureum* var. *purpureum*. We met with Fort Hunter Liggett on March 6, June 4, and June 17, 2002, to discuss the content of the installation's draft INRMP regarding the adequacy of conservation measures for *C. p.* var. *purpureum*. We provided written comments for consideration in developing the draft INRMP on May 31, June 4, and June 17, 2002. Our written comments conveyed the current status of the plant, criteria necessary for INRMPs to successfully preclude critical habitat designation, our concerns with Fort Hunter Liggett management of *C. p.* var. *purpureum* habitat, and a recommended strategy detailing measures that would provide for the long-term conservation of the species on the installation.

Fort Hunter Liggett biologists initiated a long-term monitoring program in 1998 to investigate life-history information on *Chlorogalum purpureum* var. *purpureum* in 23 plots placed subjectively where *C. p.* var. *purpureum* was known to occur. This monitoring program was reviewed and revised by academicians in 2000 and changes were made such that only two years of data are available for analysis. Data on leaf number, leaf width, flowering, numbers of fruits, and seed production were collected during the monitoring effort. Vegetative cover and disturbance type were recorded if found. Although the monitoring program provided life-history information, it was not designed to assess either population trends or effects of military activities on *C. p.* var. *purpureum*. We have reviewed the data and determined that it cannot be used to assess the above issues since—(1) The data cannot describe levels of recruitment on the installation, as seedlings cannot be accurately identified; (2) the relative age of individuals cannot be reliably determined from leaf number or width; (3) the monitoring effort lacked adequate sample size and random placement of plots; and (4) the plant undergoes dormancy for several years at a time. However, future experiments that expose plants of known age (by using lab-grown plants) to varying levels of impacts could provide valuable information on the effects of military training. Because the species is relatively slow to mature, an assessment of changes in population size would likely require more than a decade. Discussion regarding the INRMP will include a review of the monitoring program.

Section 4(b)(2) of the Act requires us to designate critical habitat on the basis of the best scientific and commercial information available and to consider the economic and other relevant impacts of designating a particular area as critical habitat. We may exclude areas from critical habitat upon a determination that the benefits of such exclusions outweigh the benefits of specifying such areas as critical habitat. We cannot exclude such areas from critical habitat when such exclusion will result in the extinction of the species concerned.

Fort Hunter Liggett has commented that critical habitat on their installation would impact the training mission and cause adverse economic impacts. The military has provided information detailing annual direct costs of $2.3 million. These costs do not include additional costs, both monetary and human, incurred by local units that travel to Fort Hunt Liggett to train and who likely would be forced to train in other states. Types of training that the Army believes would no longer be viable at Ft. Hunter Liggett with the proposed designation of critical habitat include: training in the establishment of emergency airfields; training in the defense of emergency and established airfields; use of the machine gun and grenade ranges; use of the long-established tank trail between Camp Robert and the Fort; and staging for a variety of other types of training, including live-fire exercises.

We are working with Fort Hunter Liggett to identify conservation measures and adaptive management considerations for the conservation of *Chlorogalum purpureum* var. *purpureum*. Because the habitat identified as the Fort Hunter Liggett Unit does provide one or both of the primary constituent elements and requires special management considerations or protection, it was proposed for designation as critical habitat. We note that the military is developing an INRMP and is currently undertaking other measures designed to provide special management for the species. This INRMP, when completed, and the other measures would most likely justify exclusion of this area under section 3(5)(A) at that time. However, because the benefits of exclusion of critical habitat on Fort Hunter Liggett outweigh the benefits of the designation, we are excluding Fort Hunter Liggett under section 4(b)(2).

Economic Analysis

As stated above, section 4(b)(2) of the Act requires us to designate critical habitat on the basis of the best scientific and commercial information available and to consider the economic and other relevant impacts of designating a particular area as critical habitat.

Following the publication of the proposed critical habitat designation, a draft economic analysis was prepared to estimate the potential economic effect of the designation. The draft analysis was made publicly available for review on May 7, 2002 (67 FR 30644). We accepted comments on the draft analysis through June 6, 2002.

Our draft economic analysis evaluated the potential future effects associated with the listing of *Chlorogalum purpureum* as a threatened species under the Act, as well as any potential effect of the critical habitat designation above and beyond those regulatory and economic impacts associated with listing. To quantify the proportion of total potential economic impacts attributable to the critical habitat designation, the analysis evaluated a ''without critical habitat'' baseline and compared it to a ''with critical habitat'' scenario. The ''without critical habitat'' baseline represented the current and expected economic activity under all modifications prior to the critical habitat designation, including protections afforded the species under Federal and State laws. Information received during the comment period further informed our economic review. As a result, we have identified significant but unquantified indirect costs that would be incurred by the military related to redirection of training activities and reduced military readiness.

The majority of consultations resulting from the critical habitat designation for *Chlorogalum purpureum* are likely to address ongoing activities (*e.g.*, grazing) at LPNF. Every consultation must consider how an action would affect the listed species and its habitat, whether or not critical habitat has been designated; for this reason, consultations that are reinitiated solely because of the designation of critical habitat will not result in recommendations or requirements for projects to be modified.

Our economic analysis recognizes that there may be costs from delays associated with reinitiating completed consultations after a critical habitat designation is made final.

Following the close of the comment period on the draft economic analysis, a final addendum was completed which incorporated public comments on the draft analysis.

We concluded that the designation of critical habitat as proposed would result in a significant economic impact to the military. Based on data provided by the military during the comment period, total estimated section 7 costs are likely to exceed $2.3 million in direct costs, plus the currently unquantified economic and human costs associated with changes in military training activities at Fort Hunter Liggett and a potential resulting reduction in military readiness. This data supported our decision to exclude Fort Hunter Liggett under section 4(b)(2). State agencies are not expected to be impacted by the designation of critical habitat. Costs to private landowners are expected to be approximately $28,000 for section 7 consultations, all attributable solely to the critical habitat designation. These estimates are based on the existing consultation history with agencies in the area and increased public awareness and technical assistance regarding clarification of the requirements that critical habitat might impose on private landowners. Therefore, we conclude that minimal incremental costs are anticipated as a result of this designation of critical habitat for *Chlorogalum purpureum*.

A copy of the final economic analysis and supporting documents are included in our administrative record and may be obtained by contacting our Ventura Fish and Wildlife Office (see **ADDRESSES** section).

Required Determinations

Regulatory Planning and Review

In accordance with Executive Order (EO) 12866, this is a significant rule and was reviewed by the Office of Management and Budget (OMB) in accordance with the four criteria discussed below.

(a) In the economic analysis, we determined that this rule will not have an annual economic effect of $100 million or more or adversely affect an economic sector, productivity, jobs, the environment, or other units of government. *Chlorogalum purpureum* was listed as threatened in March of 2000. Since that time we have conducted, and will continue to conduct, formal and informal section 7 consultations with other Federal agencies to ensure that their actions will not jeopardize the continued existence of *C. purpureum*.

Under the Act, Federal agencies shall consult with the Service to ensure that any action authorized, funded, or carried out by such agency is not likely to jeopardize the continued existence of an endangered or threatened species or result in the destruction or adverse modification of critical habitat. The Act does not impose any restrictions on non-Federal persons unless they are conducting activities funded or otherwise sponsored, authorized, or permitted by a Federal agency (see Table 2 below). Based upon our experience with this species and its needs, we conclude that any Federal action or authorized action that could potentially result in the destruction or adverse modification of critical habitat would also be considered as ''jeopardy'' under the Act in areas occupied by the species.

Accordingly, the designation of currently occupied areas as critical habitat is not anticipated to have any incremental impacts on what actions may or may not be conducted by Federal agencies or non-Federal persons who receive Federal authorization or funding beyond the effects resulting from the listing of this species. Non-Federal persons who do not have a Federal ''sponsorship'' in their actions are not restricted by the designation of critical habitat. The designation of areas as critical habitat where section 7 consultations would not have occurred but for the critical habitat designation may have impacts on what actions may or may not be conducted by Federal agencies or non-Federal persons who receive Federal authorization or funding that are not attributable to the species listing. These impacts were evaluated in our economic analysis (under section 4 of the Act; see Economic Analysis section of this rule).

TABLE 2.—IMPACTS OF CHLOROGALUM PURPUREUM LISTING AND CRITICAL HABITAT DESIGNATION

Categories of activities	Activities potentially affected by species listing only	Additional activities potentially affected by critical habitat designation [1]
Federal Activities Potentially Affected [2].	Activities such as field maneuvers by troops or vehicles, training, bivouacking, construction and facility development conducted by the Army Reserve at Fort Hunter Liggett. Activities authorized or conducted by the Forest Service at LPNF, such as livestock grazing, road maintenance or construction, and recreation.	Activities by these Federal agencies in designated areas where section 7 consultations would not have occurred but for the critical habitat designation.

TABLE 2.—IMPACTS OF CHLOROGALUM PURPUREUM LISTING AND CRITICAL HABITAT DESIGNATION—Continued

Categories of activities	Activities potentially affected by species listing only	Additional activities potentially affected by critical habitat designation [1]
Private or other non-Federal Activities Potentially Affected [3].	Activities that require a Federal action (permit, authorization, or funding) and may remove or destroy habitat for *Chlorogalum purpureum* by mechanical, chemical, or other means or appreciably decrease habitat value or quality through indirect effects (*e.g.*, edge effects, invasion of exotic plants or animals, fragmentation of habitat).	Funding, authorization, or permitting actions by Federal agencies in designated areas where section 7 consultations would not have occurred but for the critical habitat designation.

[1] This column represents activities potentially affected by the critical habitat designation in addition to those activities potentially affected by listing the species.
[2] Activities initiated by a Federal agency.
[3] Activities initiated by a private or other non-Federal entity that may need Federal authorization or funding.

(b) This rule will not create inconsistencies with other agencies' actions. As discussed above, Federal agencies have been required to ensure that their actions not jeopardize the continued existence of *Chlorogalum purpureum* since its listing in 2000. We evaluated the impact of designating areas where section 7 consultations would not have occurred but for the critical habitat designation in our economic analysis (see Economic Analysis section of this rule). We do not expect prohibition against adverse modification of critical habitat to impose any restrictions in addition to those that currently exist on currently occupied land and will not create inconsistencies with other agencies' actions on unoccupied lands.

(c) We do not expect this final rule to materially affect entitlements, grants, user fees, loan programs, or the rights and obligations of their recipients. Federal agencies are currently required to ensure that their activities do not jeopardize the continued existence of the species, and as discussed above, we do not anticipate that the adverse modification analysis (resulting from critical habitat designation) will have any incremental effects.

(d) OMB has determined that this rule raises novel and legal or policy issues. Therefore, this rule is significant under E.O. 12866, and, as a result, has undergone OMB review.

Regulatory Flexibility Act (5 U.S.C. 601 et seq.)

Under the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*, as amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA) of 1996), whenever an agency is required to publish a notice of rulemaking for any proposed or final rule, it must prepare and make available for public comment a regulatory flexibility analysis that describes the effect of the rule on small entities (*i.e.*, small businesses, small organizations, and small government jurisdictions). However, no regulatory flexibility analysis is required if the head of an agency certifies the rule will not have a significant economic impact on a substantial number of small entities. The SBREFA amended the Regulatory Flexibility Act to require Federal agencies to provide a statement of the factual basis for certifying that a rule will not have a significant economic impact on a substantial number of small entities. In this rule, we are certifying that the critical habitat designation for *Chlorogalum purpureum* will not have a significant effect on a substantial number of small entities. The following discussion explains our rationale.

Small entities include small organizations, such as independent non-profit organizations, small governmental jurisdictions, including school boards and city and town governments that serve fewer than 50,000 residents, as well as small businesses. Small businesses include manufacturing and mining concerns with fewer than 500 employees, wholesale trade entities with fewer than 100 employees, retail and service businesses with less than $5 million in annual sales, general and heavy construction businesses with less than $27.5 million in annual business, special trade contractors doing less than $11.5 million in annual business, and agricultural businesses with annual sales less than $750,000. To determine if potential economic impacts to these small entities are significant, we consider the types of activities that might trigger regulatory impacts under this rule as well as the types of project modifications that may result. In general, the term ''significant economic impact'' is meant to apply to a typical small business firm's business operations.

To determine if the rule would affect a substantial number of small entities, we consider the number of small entities affected within particular types of economic activities (*e.g.*, housing development, grazing, oil and gas production, timber harvesting, etc.). We apply the ''substantial number'' test individually to each industry to determine if certification is appropriate. In some circumstances, especially with critical habitat designations of limited extent, we may aggregate across all industries and consider whether the total number of small entities affected is substantial. In estimating the numbers of small entities potentially affected, we also consider whether their activities have any Federal involvement.

Designation of critical habitat only affects activities conducted, funded, or permitted by Federal agencies. Some kinds of activities are unlikely to have any Federal involvement and so will not be affected by critical habitat designation. In areas where the species may be present, Federal agencies already are required to consult with us under section 7 of the Act on activities that they fund, permit, or implement that may affect *Chlorogalum purpureum.* Federal agencies also must consult with us if their activities may affect critical habitat. Designation of critical habitat therefore, could result in an additional economic impact on small entities due to the requirement to reinitiate consultation for ongoing Federal activities. However, since *C. purpureum* was proposed for listing we have conducted only one formal consultation with Fort Hunter Liggett and one with LPNF. We are currently in the process of preparing two biological opinions for *C. p.* var. *purpureum.* None of the past or ongoing consultations involves an applicant that qualifies as a small entity.

In the draft economic analysis, we found that the proposed designation could potentially impose total economic costs for consultations and modifications to projects within proposed critical habitat for *Chlorogalum purpureum* var. *purpureum* on privately-owned land up to $12,000 over a 10-year period in the

Jolon Unit (formerly Fort Hunter Liggett Unit) and up to $2,000 over a 10-year period in the Camp Roberts Unit. We also found the proposed designation could potentially impose total economic costs for consultations and modifications to projects within proposed critical habitat for *C. p.* var. *reductum* on privately-owned land up to $14,000 over a 10-year period in the Camatta Canyon Unit.

For the final designation, the Service has concluded that the proposed lands within the boundaries of Camp Roberts, as discussed in the ''Relationship of Critical Habitat to Military Lands'' section of this rule, do not meet the definition of critical habitat under section 3(5)(A) of the Act. Therefore, any projects or activities on these lands will not be subject to consultations as a result of critical habitat designation for *Chlorogalum purpureum* var. *purpureum* and the estimated cost of up to $2,000 over a 10-year period for private lands in the Camp Roberts Unit would no longer be applicable.

While SBREFA does not explicitly define either ''substantial number'' or ''significant effect,'' the Small Business Administration, as well as other Federal agencies, have interpreted these terms to represent an impact on 20 percent or greater of the number of small entities in any industry and an effect equal to three percent or more of a business' annual sales. In determining whether this rule could ''significantly affect a substantial number of small entities,'' the economic analysis first determined whether critical habitat could potentially affect a ''substantial number'' of small entities in counties supporting critical habitat areas.

On Federal lands included in this proposed critical habitat designation, grazing is the only activity identified as possibly having an economic effect on small entities. Currently, there is only one grazing permittee at LPNF out of all Federal lands included in this rule, and there is no indication that other entities will apply for grazing permits in the foreseeable future. This does not represent a substantial number of small grazing entities. The grazing permittee at LPNF is for the Navajo Allotment in the Santa Lucia Ranger District. Only a portion of critical habitat lies within this grazing allotment. The draft economic analysis and final addendum address the potential costs associated with activities taking place in LPNF, totaling approximately $38,000 to all parties including LPNF, the Service, and private landowners.

Most of the remainder of the proposed designation is on private land. On private lands, activities that lack Federal involvement would not be affected by the critical habitat designation. Current activities of an economic nature that occur on private lands in the area encompassed by this proposed designation are primarily agricultural, such as live-stock grazing and farming. Because these areas are zoned rural and not near cities or towns, multiple-unit residential or commercial development is unlikely. Therefore, Federal agencies such as the Economic Development Administration, which is occasionally involved in funding municipal projects elsewhere, are unlikely to be involved in projects in these areas. In rural regions of San Luis Obispo and Monterey counties, previous consultations under section 7 of the Act between us and other Federal agencies most frequently involved the Corps or the Federal Highway Administration (FHWA). In FHWA consultations, the applicant is either the California State Department of Transportation or the County, neither of which is considered a small entity as defined here. Corps consultations involve wetlands or waterways and occur due to the presence of species (or their critical habitat) that spend at least part of their life in aquatic habitats. *Chlorogalum purpureum* is an upland plant species and unlikely to be the subject of consultations with the Corps. In agricultural areas, the Natural Resources Conservation Service (NRCS) occasionally funds activities on farms or ranches that require consultation with us. These consultations are infrequent, however. In the last decade, in all of Monterey and San Luis Obispo counties combined, the NRCS has completed only four formal consultations with the Service. NRCS is currently initiating two additional formal consultations, although neither involve *C. purpureum.* San Luis Obispo and Monterey counties encompass about 4 million acres of land and support over 40 listed species. Based on the low level of past activity, we expect few, if any, consultations with the NRCS or other federal agencies on the approximately 4,821 acres of non-federal lands in this rule. For these reasons, the Service determines that the number of small entities likely to be affected by this rule will not be substantial.

In general, two different mechanisms in section 7 consultations could lead to additional regulatory requirements for any small businesses that may be required to consult with us regarding their project's impact on *Chlorogalum purpureum* and its critical habitat. First, if we conclude, in a biological opinion, that a proposed action is likely to jeopardize the continued existence of a species or adversely modify its critical habitat, we can offer ''reasonable and prudent alternatives.'' Reasonable and prudent alternatives are alternative actions that can be implemented in a manner consistent with the scope of the Federal agency's legal authority and jurisdiction, that are economically and technologically feasible, and that would avoid jeopardizing the continued existence of listed species or resulting in adverse modification of critical habitat. A Federal agency and an applicant may elect to implement a reasonable and prudent alternative associated with a biological opinion that has found jeopardy or adverse modification of critical habitat. An agency or applicant could alternatively choose to seek an exemption from the requirements of the Act or proceed without implementing the reasonable and prudent alternative. However, unless an exemption were obtained, the Federal agency or applicant would be at risk of violating section 7(a)(2) of the Act if it chose to proceed without implementing the reasonable and prudent alternatives. Second, if we find that a proposed action is not likely to jeopardize the continued existence of a listed animal species, we may identify reasonable and prudent measures designed to minimize the amount or extent of take and require the Federal agency or applicant to implement such measures through non-discretionary terms and conditions. We may also identify discretionary conservation recommendations designed to minimize or avoid the adverse effects of a proposed action on listed species or critical habitat, help implement recovery plans, or to develop information that could contribute to the recovery of the species.

Based on our experience with consultations pursuant to section 7 of the Act for all listed species, virtually all projects—including those that, in their initial proposed form, would result in jeopardy or adverse modification determinations in section 7 consultations—can be implemented successfully with, at most, the adoption of reasonable and prudent alternatives. These measures, by definition, must be economically feasible and within the scope of authority of the Federal agency involved in the consultation. As we have a very limited consultation history for *Chlorogalum purpureum,* we can only describe the general kinds of actions that may be identified in future reasonable and prudent alternatives. These are based on our understanding of the needs of the species and the threats

it faces, as described in the final listing rule and this critical habitat designation.

It is likely that an agricultural land owner or developer could modify a project or take measures to protect *Chlorogalum purpureum.* Based on the types of modifications and measures that have been implemented in the past for plant species, steps could be taken such as installing fencing or re-aligning a project to avoid sensitive areas. The cost for implementing these measures for one project is expected to be of the same order of magnitude as the total cost of the consultation process, *i.e.*, approximately $10,000. It should be noted that a developer likely would already be required to undertake such measures due to regulations in the California Environmental Quality Act (CEQA). These measures are not likely to result in a significant economic impact to project proponents.

As required under section 4(b)(2) of the Act, we conducted an analysis of the potential economic impacts of this critical habitat designation, and that analysis was made available for public review and comment before finalization of this designation. Based on estimates provided in the economic analysis, the potential economic impact of critical habitat designation for *Chlorogalum purpureum* over the next 10 years is about $96,000. Out of this about 27 percent, or $26,000, could potentially be borne by the private sector. However, due to the 2,217-acre reduction of designation of private lands in the final rule, the actual impact of critical habitat designation on private landowners will be less than that estimated in the economic analysis.

In summary, we have considered whether this rule would result in a significant economic effect on a substantial number of small entities. We have determined, for the above reasons, that it will not affect a substantial number of small entities. Furthermore, we believe that the potential compliance costs for the remaining number of small entities that may be affected by this rule will not be significant. Therefore, we are certifying that the designation of critical habitat for *Chlorogalum purpureum* will not have a significant economic impact on a substantial number of small entities. A regulatory flexibility analysis is not required.

Small Business Regulatory Enforcement Fairness Act (5 U.S.C. 804(2))

In the economic analysis, we determined whether designation of critical habitat would cause (a) any effect on the economy of $100 million or more, (b) any increases in costs or prices for consumers, individual industries, Federal, State, or local government agencies, or geographic regions, or (c) any significant adverse effects on competition, employment, investment, productivity, innovation, or the ability of U.S.-based enterprises to compete with foreign-based enterprises. Refer to the final economic analysis for a discussion of the effects of this determination.

Unfunded Mandates Reform Act (2 U.S.C. 1501 et seq.)

In accordance with the Unfunded Mandates Reform Act (2 U.S.C. 1501 *et seq.*

(a) This rule will not ''significantly or uniquely'' affect small governments. A Small Government Agency Plan is not required. Small governments will be affected only to the extent that they must ensure that any programs involving Federal funds, permits, or other authorized activities must ensure that their actions will not adversely affect the critical habitat.

(b) This rule will not produce a Federal mandate of $100 million or greater in any year, that is, it is not a ''significant regulatory action'' under the Unfunded Mandates Reform Act. The designation of critical habitat imposes no obligations on State or local governments.

Executive Order 13211

On May 18, 2001, the President issued an Executive Order 13211 on regulations that significantly affect energy supply, distribution, and use. Executive Order 13211 requires agencies to prepare Statements of Energy Effects when undertaking certain actions. Although this rule is a significant regulatory action under Executive Order 12866, it is not expected to significantly affect energy supplies, distribution, or use. Therefore, this action is not a significant energy action and no Statement of Energy Effects is required.

Takings

In accordance with Executive Order 12630 (''Government Actions and Interference with Constitutionally Protected Private Property Rights''), we have analyzed the potential takings implications of designating critical habitat for *Chlorogalum purpureum* in a takings implication assessment. The takings implications assessment concludes that this final rule does not pose significant takings implications.

Federalism

In accordance with Executive Order 13132, the rule does not have significant Federalism effects. A Federalism assessment is not required. As discussed above, the designation of critical habitat in areas currently occupied by *Chlorogalum purpureum* would have little incremental impact on State and local governments and their activities. The designations may have some benefit to these governments in that the areas essential to the conservation of these species are more clearly defined, and the primary constituent elements of the habitat necessary to the survival of the species are identified. While making this definition and identification does not alter where and what federally sponsored activities may occur, it may assist these local governments in long-range planning, rather than waiting for case-by-case section 7 consultation to occur.

Civil Justice Reform

In accordance with Executive Order 12988, the Department of the Interior's Office of the Solicitor has determined that this rule does not unduly burden the judicial system and meets the requirements of sections 3(a) and 3(b)(2) of the Order. We have designated critical habitat in accordance with the provisions of the Endangered Species Act. The rule uses standard property descriptions and identifies the primary constituent elements within the designated areas to assist the public in understanding the habitat needs of *Chlorogalum purpureum.*

Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.)

This rule does not contain any information collection requirements for which Office of Management and Budget approval under the Paperwork Reduction Act is required. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a valid OMB Control Number.

National Environmental Policy Act

We have determined that an Environmental Assessment and/or an Environmental Impact Statement as defined by the National Environmental Policy Act of 1969 need not be prepared in connection with regulations adopted pursuant to section 4(a) of the Act. A notice outlining our reason for this determination was published in the **Federal Register** on October 25, 1983 (48 FR 49244).

Government-to-Government Relationship With Tribes

In accordance with the President's memorandum of April 29, 1994, ''Government-to-Government Relations With Native American Tribal Governments'' (59 FR 22951), Executive

Order 13175, and the Department of the Interior's manual at 512 DM 2, we readily acknowledge our responsibility to communicate meaningfully with recognized Federal Tribes on a Government-to-Government basis. The designated critical habitat for *Chlorogalum purpureum* does not contain any Tribal lands or lands that we have identified as impacting Tribal trust resources.

References Cited

A complete list of all references cited herein, as well as others, is available upon request from the Ventura Fish and Wildlife Office (see **ADDRESSES** section).

List of Subjects in 50 CFR Part 17

Endangered and threatened species, Exports, Imports, Reporting and recordkeeping requirements, and Transportation.

Regulation Promulgation

Accordingly, we amend part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, as set forth below:

PART 17—[AMENDED]

1. The authority citation for part 17 continues to read as follows:

Authority: 16 U.S.C. 1361–1407; 16 U.S.C. 1531–1544; 16 U.S.C. 4201–4245; Pub. L. 99–625, 100 Stat. 3500, unless otherwise noted.

2. In § 17.12(h) revise the entry for *Chlorogalum purpureum* under ''FLOWERING PLANTS'' to read as follows:

§ 17.12 Endangered and threatened plants.

* * * * *

(h) * * *

Species		Historic range	Family	Status	When listed	Critical habitat	Special rules
Scientific name	Common name						
FLOWERING PLANTS							
*	*	*	*	*	*		*
Chlorogalum purpureum.	Purple amole (Camatta Canyon amole).	U.S.A. (CA)	Liliaceae—Lily	T	689	17.96(a)	NA
*	*	*	*	*	*		*

3. Amend § 17.96(a), by adding critical habitat for purple amole (*Chlorogalum purpureum*) in alphabetical order under Family Liliaceae to read as follows:

§ 17.96 Critical habitat—plants.

(a) * * *

Family Liliaceae: *Chlorogalum purpureum* (purple amole)

(1) Critical habitat units are depicted for Monterey and San Luis Obispo counties, California, on the maps below.

(2) The primary constituent elements of critical habitat for *Chlorogalum purpureum* var. *purpureum* consist of, but are not limited to:

(i) Soils that are sandy clay to loamy clay, well-drained on the surface, and are often overlain with fine gravel; and,

(ii) Plant communities in functioning ecosystems that support associated plant and animal species (*e.g.*, pollinators, predator-prey species, etc.), including valley and foothill grassland, blue oak woodland or oak savannahs, and open areas within shrubland communities. Within these vegetation community types, *C. p.* var. *purpureum* appears where there is little cover of other species which compete for resources available for growth and reproduction.

(3) The primary constituent elements of critical habitat for *Chlorogalum purpureum* var. *reductum* consist of, but are not limited to:

(i) Well-drained, red clay soils with a large component of gravel and pebbles on the upper soil surface; and,

(ii) Plant communities in functioning ecosystems that support associated plant and animal species (*e.g.*, pollinators, predator-prey species, etc.), including grassland, blue oak woodland (*Quercus douglasii*) or oak savannahs, and open areas within shrubland communities. Within these vegetation communities *C. p.* var. *reductum* appears where there is little cover of other species which compete for resources available for growth and reproduction.

(4) Critical habitat does not include existing features and structures, such as buildings, hard-packed roads (*e.g.*, asphalt, pavement), aqueducts, railroads, airport runways and buildings, other paved areas, lawns, and other urban landscaped areas not containing any of the primary constituent elements.

(5) *Critical Habitat Map Units*—Data layers defining map units were mapped using Universal Transverse Mercator (UTM) coordinates.

(6) Note: Map 1—Index Map follows:

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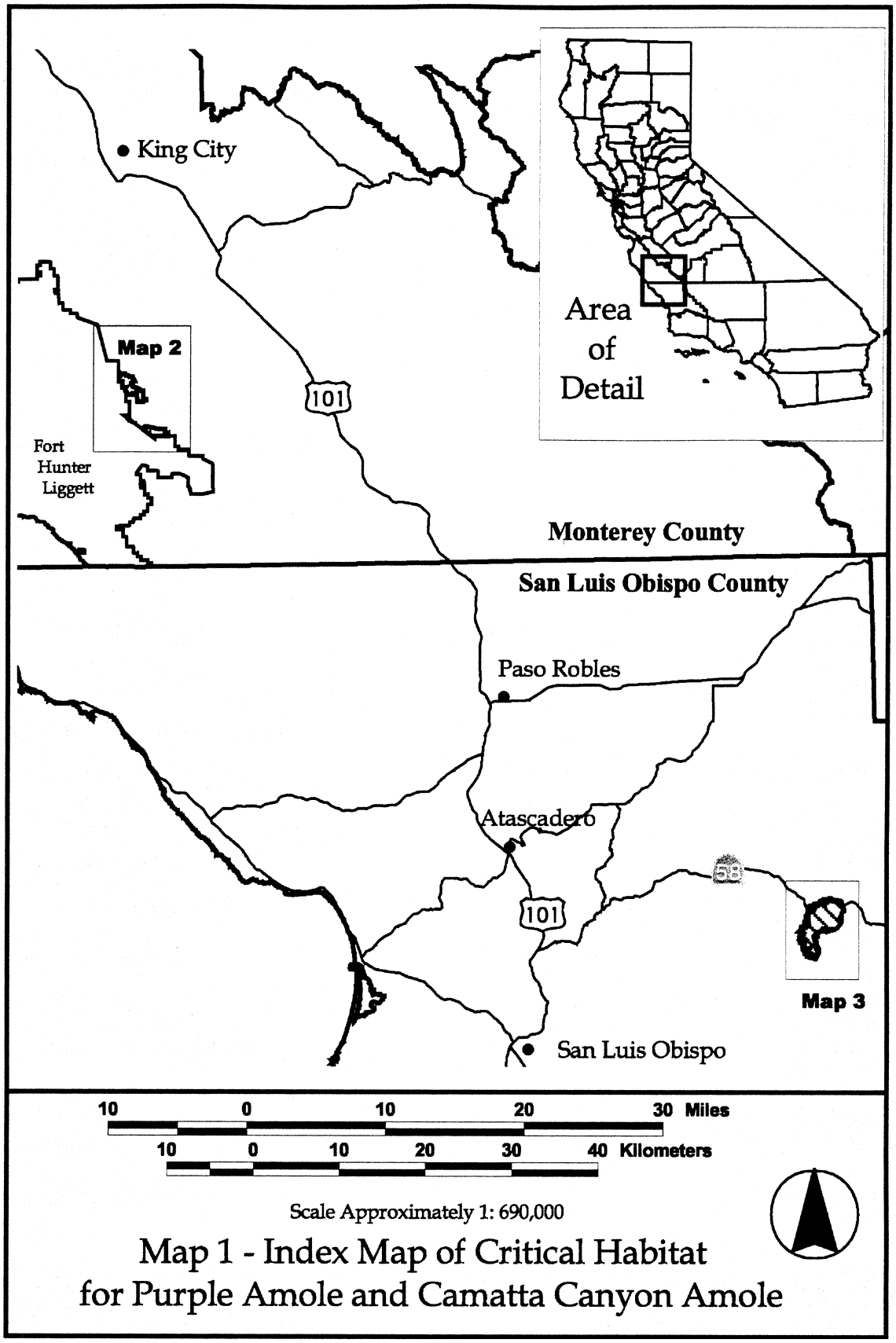
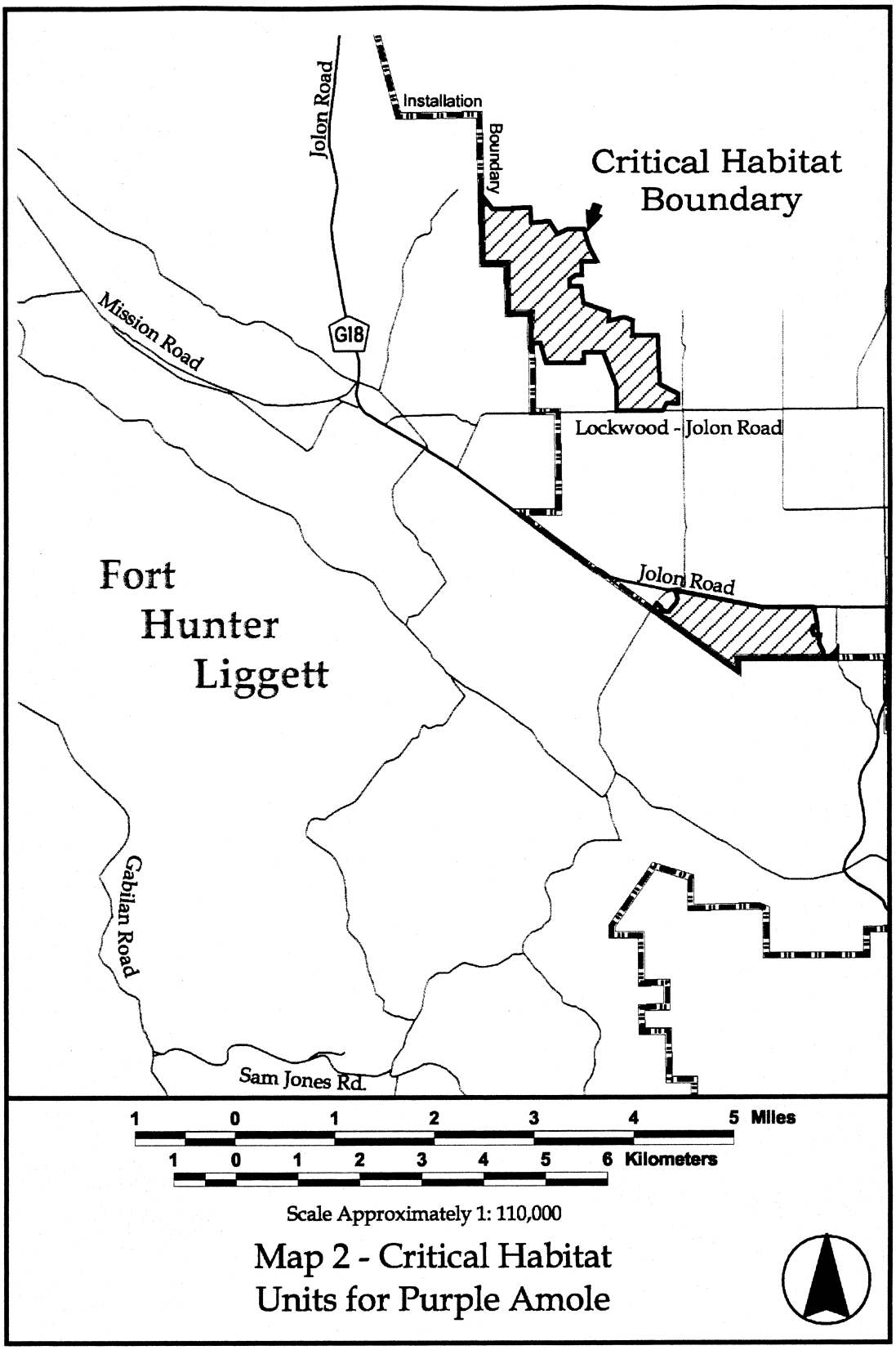


Map 1 - Index Map of Critical Habitat for Purple Amole and Camatta Canyon Amole

(7) *Jolon Unit.*

(i) *Chlorogalum purpureum* var. *purpureum.* Monterey County, California. From USGS 1:24,000 quadrangle map Jolon. Lands bounded by UTM zone 10 NAD83 coordinates (E,N): 666160, 3986620; 666160, 3986620; 666160, 3986620; 666160, 3986620; 666441, 3986630; 666441, 3986630; 666456, 3985980; 666441, 3986630; 666468, 3985460; 666471, 3985340; 666646, 3985110; 666965, 3985110; 667260, 3985130; 667281, 3984880; 667567, 3984910; 667699, 3984690; 667849, 3984770; 668125, 3984770; 668175, 3984600; 668224, 3984470; 668334, 3984260; 668086, 3984250; 668094, 3984040; 668004, 3984040; 667888, 3983960; 667891, 3983860; 668085, 3983860; 668118, 3983590; 668538, 3983430; 668526, 3983290; 668780, 3983360; 668909, 3983300; 668905, 3983060; 669317, 3983070; 669346, 3982270; 669638, 3982120; 669638, 3981950; 669463, 3981960; 669396, 3981850; 668647, 3981840; 668649, 3982250; 668435, 3982790; 668126, 3982790; 668122, 3982620; 667509, 3982620; 667426, 3982950; 667272, 3982930; 667261, 3983040; 667283, 3983420; 666998, 3983420; 666907, 3983410; 666887, 3984220; 666496, 3984220; 666468, 3985460; 667720, 3980200; 667067, 3980190; 667067, 3980190; 667720, 3980200; 667417, 3979930; 668171, 3979370; 668123, 3979400; 668061, 3979450; 668002, 3979490; 667943, 3979540; 667884, 3979580; 667829, 3979620; 667781, 3979650; 667741, 3979680; 667417, 3979930; 668283, 3979290; 668315, 3979270; 668335, 3979260; 668311, 3979270; 668283, 3979290; 669233, 3978620; 669242, 3978640; 669244, 3978640; 669255, 3978650; 669303, 3978720; 669365, 3978680; 669374, 3978620; 669441, 3978600; 669504, 3978600; 669542, 3978660; 669614, 3978730; 669639, 3978810; 669616, 3978890; 669610, 3978900; 669594, 3978940; 669654, 3978930; 670986, 3978670; 671848, 3978660; 671854, 3978560; 671879, 3978440; 671888, 3978350; 671880, 3978370; 671821, 3978350; 671804, 3978280; 671833, 3978220; 671933, 3978220; 671918, 3978130; 671922, 3978070; 671947, 3978020; 671981, 3977950; 671985, 3977900; 671964, 3977870; 671961, 3977850; 670600, 3977840; 670599, 3977640; 669239, 3978620; 669233, 3978620; 672077, 3977850; 672099, 3977870; 672171, 3977930; 672199, 3977970; 672200, 3977850; 672077, 3977850;

(ii) Note: See Map 2.



Map 2 - Critical Habitat Units for Purple Amole

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(8) *Camatta Canyon Unit.*

(i) *Chlorogalum purpureum* var. *reductum.* San Luis Obispo County, California. From USGS 1:24,000 quadrangle maps Camatta Ranch, La Panza Ranch, and Pozo Summit. Lands bounded by the following UTM zone 10 NAD83 coordinates (E, N): 747763, 3918050; 747749, 3918040; 747714, 3918020; 747690, 3918000; 747683, 3917980; 747690, 3917960; 747722, 3917940; 747754, 3917900; 747749, 3917870; 747724, 3917870; 747647, 3917860; 747633, 3917860; 747616, 3917850; 747612, 3917840; 747615, 3917830; 747641, 3917820; 747727, 3917790; 747718, 3917780; 747687, 3917760; 747655, 3917750; 747635, 3917740; 747612, 3917720; 747597, 3917690; 747590, 3917660; 747598, 3917630; 747593, 3917600; 747578, 3917580; 747544, 3917560; 747530, 3917550; 747525, 3917540; 747528, 3917510; 747527, 3917470; 747521, 3917430; 747510, 3917410; 747461, 3917370; 747434, 3917370; 747411, 3917360; 747398, 3917360; 747387, 3917350; 747385, 3917330; 747396, 3917280; 747396, 3917250; 747381, 3917220; 747368, 3917180; 747366, 3917150; 747357, 3917140; 747343, 3917130; 747319, 3917130; 747285, 3917140; 747270, 3917150; 747263, 3917160; 747261, 3917190; 747256, 3917230; 747246, 3917270; 747224, 3917340; 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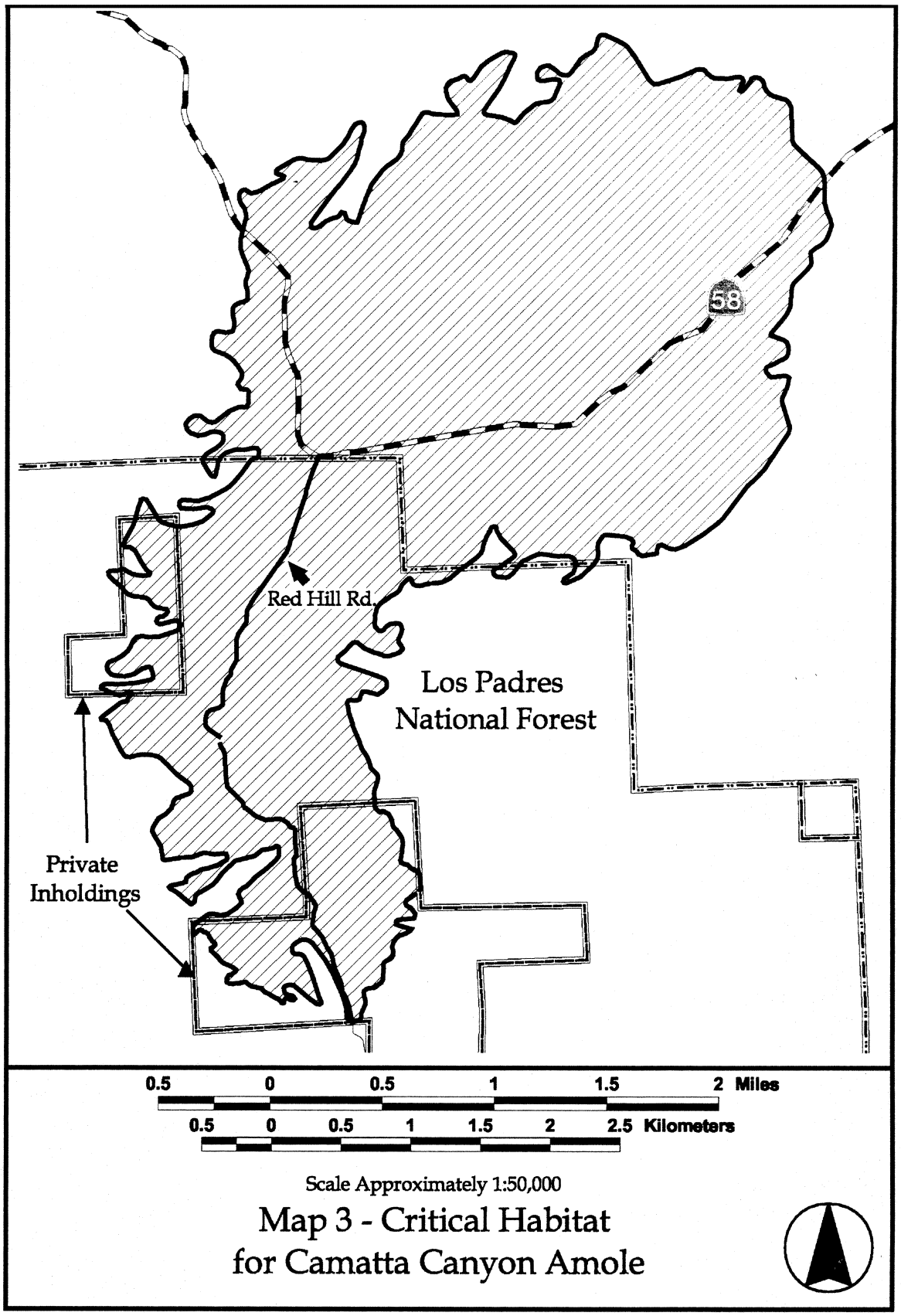
(ii) Note: Map 3 follows:

BILLING CODE 4310–55–P



Map 3 - Critical Habitat
for Camatta Canyon Amole

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Dated: October 15, 2002.

Paul Hoffman,

Acting Assistant Secretary for Fish and Wildlife and Parks.

[FR Doc. 02–26768 Filed 10–23–02; 8:45 am]

BILLING CODE 4310–55–C