

January 24, 2004

Appeal Deciding Officer
U.S.D.A. Forest Service
1323 Club Drive
Vallejo, CA 94592

Re: The Decisions and Findings of No Significant Impact for the Gorda, Alder Creek, Salmon Creek, San Carpofo, Kozy Kove, Sur Sur, and Sea Vista grazing allotments.

NOTICE OF APPEAL,
STATEMENT OF REASONS & REQUEST FOR RELIEF

Dear Appeal Deciding Officer,

On December 6, 2004, Los Padres National Forest Supervisor Gloria Brown issued a set of Decision Notices and associated Environmental Assessment (EA) and Findings of No Significant Impact (FONSI) to authorize continued livestock grazing on the Gorda, Alder Creek, Salmon Creek, and San Carpofo grazing allotments; to authorize grazing on the Kozy Kove, Sur Sur, and Sea Vista Ranches; and not to authorize livestock grazing on the Twitchell, Torre Canyon, and Buckeye grazing allotments.

NOTICE OF APPEAL

Pursuant to 36 C.F.R. § 215.14, Ventana Wilderness Alliance, Center for Biological Diversity, Los Padres Forest Watch, and the Ventana Chapter of the Sierra Club appeal to the Regional Forester, Pacific Southwest Region, USDA Forest Service to overturn the Decisions and FONSI for the Gorda, Alder Creek, Salmon Creek, San Carpofo, Sur Sur, and Sea Vista allotments. Appellants have no protest with the Decisions for the Twitchell, Torre Canyon, and Buckeye grazing allotments; we support the agency's decision to close these allotments to livestock grazing via a Forest Plan Amendment.

This appeal is filed in a timely manner. Legal notice was published on December 10, 2004. This appeal, including all attachments, was filed on January 24, 2005.

Appellants and standing

Lead Appellant Ventana Wilderness Alliance (VWA) is a non-profit conservation group composed of more than 200 dues-paying members, a board of advisors and several corporate supporters. Many VMA members regularly use these allotments for volunteer work, recreation, wildlife observation, scientific research, and other forest and grassland related activities. The VWA mission is to protect, preserve, enhance and restore the wilderness qualities and biodiversity of the public lands within the northern Santa Lucia Mountains. VWA claims standing pursuant to 36 C.F.R. § 215.13(a) because it submitted timely scoping comments to the eight Big Sur coastal grazing proposals on August 23, 1999; submitted timely substantive comments on the eight EAs for these allotments on April 12, 2001 with an addendum sent on April 16, 2001; was a co-appellant in the appeal of the decision for these 8 EAs on December 21, 2001, and submitted timely substantive comments on April 27, 2004.

The Center for Biological Diversity (“the Center”) is a non-profit conservation advocacy group with 12,000 members throughout the United States. Many of the Center's members and staff regularly use these public lands for work, recreation, wildlife observation, scientific research, and other forest and grassland related activities. The Center claims standing pursuant to 36 C.F.R. § 215.13(a) because it submitted timely substantive comments on the EAs for these allotments in April 2001, and was lead appellant in the appeal of the decision for these allotments on December 21, 2001. The Center submitted timely substantive comments on April 27, 2004.

Appellant Los Padres Forest Watch (LPFW) is a non-profit conservation organization working to protect and restore the Los Padres National Forest and surrounding public lands using law, science, education, and community involvement. LPFW asserts its standing for participation in the Forest Service decision making process based on its ongoing involvement with Los Padres National Forest management, and based on its involvement as an "interested public" in the National Environmental Policy Act (NEPA) process on these allotments. Many LPFW members regularly use these allotments for volunteer work, recreation, wildlife observation, scientific research, and other forest and grassland related activities.

Appellant Ventana Chapter of the Sierra Club (VCSC) is the oldest non-profit environmental organization in the nation. Its mission is to protect the wild places of the earth and to practice and promote the responsible use of the earth's ecosystems and resources. The Ventana Chapter claims standing to participate in the Forest Service decision-making process based on its ongoing involvement with Los Padres forest management, and based on its involvement as an "interested public" in the NEPA process on these allotments. The Ventana Chapter submitted substantive comments on the EAs for these grazing allotments on April 16, 2001, and claims standing to participate under 36 C.F.R. § 215.13(a). Many of the Ventana Chapter's members regularly use these allotments for work, recreation, wildlife observation, scientific research, and other forest and grassland related activities.



Figure 1. View of the coast on the Sur Sur allotment, which is proposed to be included in the San Carpoforo allotment on Los Padres National Forest.

INTRODUCTION

The public lands that are the subject of this appeal are on the Monterey Ranger District of Los Padres National Forest, in Monterey County, California. The seven allotments are all located on the Pacific coast, in the well known area of Big Sur. This area has almost nationwide recognition for its outstanding scenic beauty and has been the muse of many an artist and photographer.

The unique features of the area include remarkable recreational values, from providing whale-watching vistas for whale migrations between December and April to monarch butterfly migration viewing, which also occurs during the winter months. The Cooper's hawk, the golden eagle, prairie falcon, and California condor—a famous symbol of Endangered Species Act success—roost and hunt in the area and may be seen soaring overhead. Smith's blue butterfly, a listed Endangered species, uses the seacliff

buckwheat found on these allotments as its host plant. Three species of fairy shrimp and the vernal pool tadpole shrimp may also occur on these allotments, all of which are federally listed species.

In addition to the fabulous wildlife opportunities, this area hosts an extremely rich and varied flora. Special plants on the allotments include the Santa Lucia fir, the world's southernmost stands of redwood trees, Hickman's onion, San Simeon baccharis, dwarf goldenstar, late-flowering mariposa lily, and additional showy wildflower species that make this area a hotspot for professional and amateur botanists alike.

The Decisions for these allotments will most certainly affect all of these biological resources to some extent. Already, grazing developments on these allotments have been acknowledged to detract from the wilderness experience. Reauthorizing and initiating grazing on these allotments will certainly affect the scenic and wild beauty that this area is known for.



Figure 2. The Pacific Valley unit of the Gorda allotment.

The Decisions were also based on an EA that failed to consider a wide range of alternatives, as required by the National Environmental Policy Act. No alternatives were considered that would rest

allotments, and comments that suggested this were dismissed as not meeting the purpose and need for the action. The explanation was that the proposed action would change the duration of use and this would effectively negate the need for rest; but in fact the changes in season of use do not shorten the grazing season in any of the allotments and in some cases, the duration of grazing is extended. An additional oversight of the EA is that no forage is specifically allocated for wildlife uses, nor do utilization standards account for this.

Table 1. The suitable acres and comparison of present and proposed use of each allotment.

Allotment	Suitable Acres	Present Use	Proposed Use	Changes
Alder Creek	553	AUMs 72 Yearlong	AUMs = 115 Yearlong	Increased AUMs
Gorda- Mill Creek	1265	AUMs 181 1 Apr- 15 Aug	AUMs = 230 1 Feb – 30 Jun	Increased AUMs
Gorda-Pacific Valley	254	AUMs 429 1 Apr – 15 Oct	AUMs = 343 1 Mar – 15 Sep	Season of use one month earlier, decreased AUMs
Gorda-Plaskett	2173	AUMs 157.4 1 Apr- 15 Oct	AUMs = 316 1 Feb – 1 Aug	Increased AUMs, Season of use two months earlier
Gorda-Prewitt	2904	AUMs 171.6 1 Apr- 15 Oct	AUMs = 450 1 Feb – 15 Aug	Increased AUMs, Season of use two months earlier
Kozy Kove	284	Vacant	AUMs = 160 15 Dec – 15 May	Increased AUMs, new season on use
Salmon Creek	143	AUMs 65 Yearlong	AUMs = 115 Yearlong	Increased AUMS
San Carpoforo	1891	AUMs 708 1 Nov- 30 Apr	AUMs = 950 1 Nov – 15 May	add Sur Sur and Sea Vista to MA42, remove Dutra Camp enclosure
Sur Sur	1295	Vacant	<i>Added to the San Carpoforo allotment</i>	Increased AUMs, new season of use
Sea Vista	146	Vacant	<i>Added to the San Carpoforo allotment</i>	Increased AUMs, new season of use

Alder Creek

The Decision and Finding of No Significant Impact for Authorization of Livestock Grazing on the Alder Creek allotment (signed by Forest Supervisor Gloria Brown and dated December 6, 2004) authorizes continued livestock grazing yearlong by horses and/or mature and immature cattle, not to exceed 115 AUMs.

The Decision authorizes a 60 percent increase in animal unit months on this allotment above current use, or a total of eight horses yearlong. However, the EA does not disclose trend or condition of this allotment, and there is no justification for the increased use of this allotment. In addition, the Range Allotment Analysis and Soil Input prepared for this allotment states that the majority of soils of this allotment have very high or high erosion hazard ratings, and erosion can be accelerated by active livestock use. This is expected to be mitigated on this allotment by the high amount of vegetation cover, but no soil or vegetation monitoring plans are included in the proposed action.

Gorda

The Decision and Finding of No Significant Impact for Authorization of Livestock Grazing on the Gorda allotment (signed by Forest Supervisor Gloria Brown and dated December 6, 2004) authorizes continued livestock grazing on four units for various durations from February through spring and summer of each year.

The Gorda allotment is divided into three units, the Mill Creek unit, the Plaskett unit, the Pacific Valley unit, and the Prewitt unit. Under the proposed action, the Mill Creek unit is subjected to the higher levels of AUMs, even though this allotment already suffers from the invasion of French broom, a noxious weed. In the EA, the analysis of cumulative effects of the proposed action fails to acknowledge that livestock are indeed a vector of noxious weed spread, and instead lists bare ground, recreational use, road networks, wildlife, and natural disturbance. A principal cause of weed invasions is livestock grazing. Abundant scientific evidence shows that livestock grazing is a principal cause of weed invasions through creation of bare ground and weakening of native vegetative communities, and that weed problems can be greatly reduced by the cessation of livestock grazing (Belsky and Gelbard, 2000).

The Decision for the Plaskett unit authorizes grazing at a level of 316 AUMs, which is a 23 percent stocking rate increase from the historical AUMs of 257.4 at the time of wilderness designation for the portion of this unit that was included in the Silver Peak Wilderness area in December 2002. This is a violation of the Wilderness Act.

The Decision for the Pacific Valley unit has lowered AUMs, but this area is has extremely sensitive south-central steelhead habitat on Prewitt Creek as well as high-risk heritage resources.

The Decision for the Prewitt unit will permit 160 percent more AUMs that were previously permitted, and wildlife using this allotment will have to contend with new internal fencing.

Kozy Kove

The Decision and Finding of No Significant Impact for Authorization of Livestock Grazing on the Kozy Kove allotment (signed by Forest Supervisor Gloria Brown and dated December 6, 2004) authorizes livestock grazing on this allotment, even though no such use by the Forest Service previously existed. This action requires an amendment to the Los Padres National Forest Land and Resource Management Plan (LRMP) and the permitted grazing would take place between December and May of each year, not to exceed 160 animal unit months. This allotment is also known as the Cozy Cove allotment, and is so referred to in previous appeals and Forest Service documents.

The Decision for this allotment does not contain clear and explicit information about the affected area. The size of the Kozy Kove allotment is unclear. In the EA dated January 2001, the stated size of this parcel is 256 acres. In the 2004 rangelands analysis, the size of the same property is listed as 398 acres, a 55 percent increase. A comparison of maps from both years shows no change in boundaries, and the

boundaries of the allotment are fixed by the adjacent lands and roadways, it can only be assumed that there is a mistake somewhere in the planning process. However, regardless of the size of the allotment, it is certain that it shares a boundary with the Silver Peak Wilderness Area.

The Decision does not adequately protect adjacent lands that are within a Wilderness Area. There is no fence along this boundary, and nothing in place to protect the Wilderness Area from livestock grazing. In the implementation monitoring section of Chapter 3, it is stated that monitoring will occur to protect from livestock drift, and if this is a problem, drift fencing will be constructed. The Forest Service should be acting preemptively to prevent drift, and a fence should have been included in the proposed action for this allotment.

The Decision neglects the fact that the Kozy Kove allotment has not previously been used by the agency as a grazing allotment, and is therefore a violation of the Wilderness Act, which does not permit any grazing unless a permit was issued before the Act passed.

Salmon Creek

The Decision and Finding of No Significant Impact for Authorization of Livestock Grazing on the Salmon Creek allotment (signed by Forest Supervisor Gloria Brown and dated December 6, 2004) authorizes yearlong grazing of horses and/or mature and immature cattle, not to exceed 65 animal unit months. This is a 71 percent increase in the amount of permitted AUMs.

The Decision fails to require a complete and accurate analysis of the cumulative effects of the proposed action to the soils of this allotment (See Range Allotment Analysis- Soil Input report, pp 29). The analysis provided in that report relies upon a proposed action which continues the existing permit. However, with the permit numbers increased at such a large percentage, the agency should re-evaluate these effects.

San Carpofo

The Decision and Finding of No Significant Impact for Authorization of Livestock Grazing on the San Carpofo allotment (signed by Forest Supervisor Gloria Brown and dated December 6, 2004) modifies the boundaries of the allotment to include the Sur Sur and Sea Vista allotments and authorizes up to 975 AUMs between November and May of each year.

This Decision neglects to analyze the five vernal pools known to occur on the San Carpofo allotment and the proposed Sur Sur allotment thereto. These pools are potential habitat for federally listed aquatic invertebrates, and must be protected from livestock use and contamination. Red-legged frogs are also likely to occur on Elk Camp Creek and "the frog ponds" on this allotment, and yet no surveying was done, nor did the EA provide any analysis about effects of the proposed action on this species.

The Decision does not adequately assess the recreational value of this allotment. The recreational use of this allotment is described in the DECISION as most occurring during the spring and summer

months, and therefore the prescribed season on use is during the winter wet season. However, no data exists to prove this assertion. (See the Recreation and Wilderness report: “data on use levels for trails and campsites is not available.”) Without supporting empirical evidence, the agency asserts that the recreational value of this action is not affected. We challenge this assertion, and believe that this important resource value deserves further analysis.

STATEMENT OF REASONS

1. The Decisions violate the National Environmental Policy Act (NEPA), which requires the preparation of an Environmental Impact Statement (EIS) when an action may have a significant impact, when such an action would normally require an EIS, when an action is a major federal action, and when such action is highly controversial.

The Forest Service must prepare an Environmental Impact Statement (EIS) for all “major Federal actions significantly affecting the quality of the human environment.” 42 U.S.C. § 4332(C). A major federal action “includes actions with effects that may be major and which are potentially subject to Federal control and responsibility.” 40 C.F.R. § 1508.18(a) (emphasis added)

NEPA requires that determinations of significance include cumulative impacts. “Whether the action is related to other actions with individually insignificant but cumulatively significant impacts, significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment.” 40 C.F.R. § 1508.27(b)(7). NEPA also requires a Decision to evaluate “The degree to which the action may . . . cause loss or destruction of significant scientific, cultural, or historical resources.” 40 C.F.R. § 1508.27(b)(8).

NEPA requires a more careful analysis of effects in an EIS for actions that “significantly” effect the environment. An EIS is typically required for actions that affect “Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.” 40 C.F.R. § 1508.27(b)(3).

An EIS would also be required analyze “the degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.” 40 C.F.R. § 1508.27(b)(9).

NEPA requires an EIS for actions in which, “The degree to which the effects on the quality of the human environment are likely to be highly controversial.” 40 C.F.R. § 1508.27(b)(4); and “The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.” 40 C.F.R. § 1508.27(b)(6).

These requirements of NEPA are interpreted to mean that significant federal actions, individually or cumulatively, must be interpreted with a full EIS. However, in this case, each Decision and Finding of No Significant Impact (FONSI) concludes that “the action described herein is not a

major federal action, individually or cumulatively.” The collective Decision will result in numerous significant effects on the environment, including impacts to: (1) endangered and other sensitive species and habitats, (2) water quality, (3) soils, and (4) recreation. Despite this evidence of significant effects, the FONSI states that the impacts “are not considered to be significant upon the human environment.” Not only is this statement erroneous, but even if true, it would not comply with NEPA, which requires that the FONSI must “succinctly state the reasons for deciding that the action will have no significant environmental effects.” (See CEQ, *NEPA’s Forty Most Asked Questions*, § 37.)

The geographic area contains numerous unique characteristics that, individually and cumulatively, require the preparation of an EIS. For example, the Monterey Bay National Marine Sanctuary (the largest marine sanctuary in the U.S.) is adjacent to the Decision area. The Pacific Coast Highway, an All-American Highway, bisects the project area. The project area contains habitat for numerous endangered and other sensitive species, including the Smith’s Blue Butterfly (Federally Endangered), the South-Central Coast Steelhead (Federally Endangered), and the California Red-Legged Frog (Federally Endangered). The project area contains several rare vernal pools. The Congressionally-designated Silver Peak Wilderness Area is located adjacent to, and partially within, the project area. The project area is bordered by the recently-designated California Coastal National Monument. Moreover, the Southern California Mountains and Foothills Assessment declared San Carpoforo Creek an “area of particularly high ecological significance.” SCMFA, p. 352. This creek bisects the San Carpoforo allotment. After combining all these characteristics of the action area, it is difficult to fathom an area with more uniqueness than the Big Sur Coastline.

In addressing these significance criteria, the FONSI uses the wrong standard. As is set forth in the NEPA regulations, the measure of significance is not whether there will be “irreversible resource commitments” or “irretrievable loss” but rather whether the impacts are significant. In other words, there can still be significant impacts even though there are no irreversible resource commitments or any irretrievable loss. As a result, the FONSI fails to adequately discuss these criteria for significance.

Additionally, as stated above, NEPA requires the Decision to evaluate the loss or destruction of significant scientific, cultural, or historical resources. The EA admits on page 35 that the Gorda allotment “contains resource sites where livestock use may contribute to cumulative damage or be in conflict with cultural values.” Because this Decision may result in significant effects to cultural resources, as stated in the EA, an EIS must be prepared.

In the case of these Decisions, an EIS is necessary to evaluate the effects on Endangered species. Though the FONSI determined that the management requirements of the Biological Opinions and Biological Assessments prepared for this project will eliminate or minimize impacts to the Smiths blue butterfly and south-central steelhead trout, the EA admits on page 2 that “[c]attle may cause injury or mortality to south-central steelhead trout or the Smith’s blue butterfly. Treading through anadromous streams can trample both steelhead eggs and fry. Where cattle graze in or near Smith’s blue butterfly habitat, trampling can result in loss of host plant parts and mortality to pupae, larvae or eggs.” The presence of these potentially significant impacts *alone* requires the preparation of an EIS.

In this case, the significance of the cumulative effects discussed in the EA was insufficient. The brief discussion of cumulative impacts only looks at the cumulative impacts of grazing on *all*

allotments that are part of the Decision. The discussion fails to account for “other past, present, and reasonably foreseeable future actions,” grazing or otherwise, by the Forest Service and other agencies or individuals as required under NEPA. (*See* 40 C.F.R. § 1508.7.) Such related actions include other grazing on the Monterey Ranger District, as well as grazing on surrounding state and private lands. Notably, the EA is silent on the cumulative impacts associated with the nearly 5,000 head of cattle that graze the Hearst Ranch, located adjacent to the San Carpoforo allotment. Under NEPA’s definition of “cumulative impacts,” these non-federal activities must also be considered in the environmental document. If the combination of these cumulative effects would result in significant impacts to the human environment, the Forest Service must prepare a full EIS. Inland Empire Public Lands Council v. Schultz, 992 F.2d 977, 981 (9th Cir. 1993).

The Decisions are highly controversial. Overwhelming scientific evidence and numerous public comments have been submitted to the agency to suggest that the environmental analysis of ecological effects of the action is insufficient and inaccurate. No recent project on the Monterey Ranger District has been as highly controversial as the Decisions. In fact, the Forest Service proposed almost the exact same action in 1999, but withdrew the FONSI and DECISION after VWA and CBD filed an appeal. This alone should be convincing evidence that the effects of the Decisions are highly controversial, but as it turns out, even the Forest Service openly acknowledges the project is controversial. In an email of Friday, Jan 21 to the Pelican Network, District Ranger John Bradford stated “This does not mean [the project] was not controversial - we understand that it is.” The Forest Service is well aware of the degree of controversy surrounding this action to put livestock in a new wilderness on, of all places, the Big Sur, but wishes to couch the analysis in a format that is more suited to routine actions.

Finally, the extent of public comments on this Decision evidence a high level of controversy. Both VWA and Western Watersheds Project (Elizabeth Painter) submitted lengthy, detailed substantive comments on this Decision. In addition, the Forest Service received at least 65 other comments opposing the Decision from members of the public.

In this case, the Decisions establish a strong precedent for future actions on these allotments, and these actions will have significant, on-the-ground impacts to the environment. The EA admits as much on page 1, stating that implementation of the proposed action “will occur through incorporation of the selected alternative into an allotment management plan (AMP) specific to each allotment, providing management direction for the next ten years.” Moreover, the Decisions are “decisions in principle” to authorize future livestock grazing on these allotments. Finally, because these decisions involve amendments to the Los Padres National Forest Land and Resource Management Plan, such an amendment establishes a precedent with respect to lands that, as admitted by the EA, currently contain “no management direction.” The decision to place these lands, by executive fiat, into classifications that all but require livestock grazing with next to no analysis on a landscape as precious to the American people as the Big Sur is arbitrary and capricious and a violation of the NEPA.

Actions which normally require an EIS are required to also prepare an EIS. Actions similar to these Decisions include the Decisions for the Salt Pass Grazing Allotments, Bridger-Teton National Forest (NF), Wyoming (NOI 11/30/04, 69 Fed. Reg. 69582); Re-issuance of 10-Year Term Grazing Permits and Authorization to Graze Cattle in the Tushar Mountain Range, Fishlake NF (NOI 3/11/04, 69 Fed. Reg. 11589); Authorization of Livestock Grazing Activities on the Sacramento Grazing

Allotment, Lincoln NF, New Mexico (NOI 3/17/04, 69 Fed. Reg. 12637); Ashley-Dry Fork Grazing Allotments, Ashley NF, Utah (NOI 2/3/04, 69 Fed. Reg. 5122); North Fork Eel Grazing Allotments, Six Rivers NF, California (NOI 8/11/03, 68 Fed. Reg. 46162); Upper Green River Area Rangeland Project, Bridger-Teton NF, Wyoming (NOI 7/23/03, 68 Fed. Reg. 43487); West Fork Blacks Fork Allotment Management Plan, Wasatch-Cache NF, Utah (NOI 3/26/03, 68 Fed. Reg. 14575); and Livestock Grazing Permit Re-issuance on the Horse Butte Allotment, Gallatin NF, Montana (NOI 12/12/01, 66 Fed. Reg. 64211).

In this case, the environmental assessment was an insufficient analysis of the action, given the evidence that this assessment took 5 years and was highly controversial throughout the planning process. The first scoping letter for this action was issued in 1999 and the Decision was issued in December 2004. During this time, the Forest Service reviewed and prepared voluminous supporting documents. Normally, the preparation of an EA “should take no more than 3 months, and in many cases substantially less.” CEQ, *NEPA’s Forty Most Asked Questions*, § 35. The complexity of the supporting documents and the length of time required to prepare this EA should have been a clear indication that an EIS was necessary under NEPA. And, while the Forest Service chose to excise from its public documents the portion of the history of this analysis that included a previous appeal and remand, the history remains. The public is owed by the Forest Service an acknowledgment of the fact that this is not the first time around for this project – it is the second, and the fact this dispute has been going on for so long is information the public needs to be told.

Because the authorization of grazing on such a large scale normally requires the preparation of an EIS, because the action was highly controversial, because historical and biological resources are affected and because the cumulative effects are significant, and because the analysis was highly complex and the preparation process lengthy, and EIS should have been prepared. The failure to prepare an EIS violates NEPA.

2. The range of alternatives is too narrow, a violation of the National Environmental Policy Act and the instructions of the Forest Service Handbook.

NEPA requires that the agency consider a reasonable array of alternatives “to the fullest extent possible.” 40 C.F.R. § 1500.2(e); see also NEPA § 102(E), 42 U.S.C. § 4332(E). The agency shall “[r]igorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated.” 40 C.F.R. § 1502.14(a).

A consideration of alternatives which lead to similar results is not sufficient to meet the intent of NEPA. *Citizens for Environmental Quality v. United States*, 731 F. Supp. 970, 989 (D.Colo. 1989); *State of California v. Block*, 690 F.2d 753 (9th Cir. 1982).

The Forest Service Handbook, chapter 20, section 23.2 states that the purpose and intent of alternatives "ensure that the range of alternatives does not foreclose prematurely any option that might protect, restore and enhance the environment."

The Forest Service Handbook, chapter 20, section 23.2 states that the purpose and intent of alternatives are to "ensure that the, range of alternatives does not foreclose prematurely any option that might protect, restore and enhance the environment."

Rigorous exploration is an investigation into various means of achieving desired results. It is needed in order to ensure that all possible scenarios for public land management are considered, and all reasonable management options are evaluated. Alternatives which lead to similar results do not therefore qualify as rigorous exploration of all reasonable alternatives.

Despite these clear requirements, the EA fails to consider a reasonable range of alternatives. The EA considers only two alternatives to the proposed action – a “No Change” alternative wherein grazing would continue under current management levels, and a “No Grazing” alternative wherein the Forest Service would not authorize any livestock grazing. These two alternatives do not represent a “reasonable” range of alternatives because they are both grazing-based. The agency failed to consider other non-grazing alternatives that would also achieve all of the Desired Conditions, such as prescribed fire and other restoration projects that would protect and encourage recovery of the Desired Conditions.

Moreover, the agency arbitrarily eliminated from detailed study a reasonable alternative proposed by VWA during scoping that would have allowed for continued grazing in three out of every four years. In rejecting this alternative, the EA states on page 10 that this alternative “does not accomplish our purpose and need to provide available forage or affect our ability to meet desired conditions.” The agency’s reasons for eliminating this alternative are that “the proposed action will correspond with the maximum available water and green forage allowing for proper distribution and utilization throughout the unit” and “the proposed action implements specific seasons of use to reduce the time period desirable plants are exposed to grazing.” These reasons have no bearing on whether the VWA alternative is “reasonable” under NEPA; rather, these reasons only address the merits of the *proposed action*. Clearly the agency failed to rigorously explore and objectively evaluate the VWA alternative, and the agency’s arbitrary elimination of this alternative from detailed study violates NEPA.

Finally, because the newly-acquired Kozy Kove, Sea Vista, and Sur Sur ranches lack management direction under the current Forest Plan, one of the stated purposes on page 4 of the Decisions is to provide “management direction on the recently acquired ranches.” However, the Forest Service devised only one alternative that would meet this purpose – the preferred alternative. Because no other alternatives included management direction, this arrangement automatically precluded the Forest Service from selecting any other alternative. This certainly did not allow for a rigorous exploration and an objective evaluation of alternatives, in violation of NEPA.

Finally, this area is unique, pressures for other uses on the Big Sur are as extreme as one can find on National Forest land, and the management options for these allotments are extremely varied. There is

absolutely no justification for the Forest Service, in an area that includes new wilderness along the Big Sur coastline, to limit itself to an evaluation of two paltry alternatives. More is needed here.

3. The EA fails to adequately analyze and disclose all effects of the action including potential conflicts with recreational uses, and it does not evaluate cumulative impacts of adjacent and nearby land management, as required by NEPA.

NEPA requires that the environmental assessment include an analysis of all effects of the proposed action, including cumulative impacts from other related activities. (40 C.F.R. § 1508.8) The entire analysis does not have to be included, but incorporation by reference is required by CEQ regulations standards to be accomplished “without impeding agency and public review of the action,” and the supporting material “shall be cited in the statement and its content briefly described.” 40 C.F.R. § 1502.21.

NEPA defines a “cumulative impact” as the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, *regardless of what agency (Federal or non-Federal) or person* undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. 40 C.F.R. § 1508.7 (emphasis added).

These mandates of NEPA require that the agency analyze all of the effects of the proposed action and compare this with the alternatives. The definition of “effects” includes ecological, aesthetic, historical, cultural, economic, and social or public health impacts, whether direct, indirect, or cumulative.

These regulations also mean that the agency cannot assess the impact of authorizing grazing on these allotments in isolation. Instead, it must examine the effects of past and reasonably foreseeable future recreation, resource development, water diversions, fuels management, and other federal and private activities. Most importantly, it must analyze the cumulative effects of prior livestock grazing on these allotments. See Inland Empire, 992 F.2d at 981.

The Decision is based upon an EA that does not meet these requirements. The EA only analyzes environmental effects in the following areas: Rangeland Health, Heritage Resources, Wilderness Values, and Biological Resources. The EA fails to include any analyses of impacts to water quality, soils, recreation, invasive species, or scenic resources. Instead, the EA merely states that the resource-specific analyses of environmental effects are contained in the project file and will be considered in the effects of the decision. The EA itself contains no other reference to or evaluation of impacts in these areas. The Forest Service did not “briefly describe” the nature of the documents cited with respect to soils, hydrology, rangeland vegetation, recreation, and invasive species. This violates the core principal of NEPA to insure that all effects are given appropriate consideration in decision making, and also fails to meet CEQ standards relevant to incorporation by reference.

Indeed, for resources like water and soil productivity, the agency’s vision of its responsibility under NEPA seems to be merely to incant that it has done the analysis. Water quality in an area to be

newly grazed that has an endangered species, highly regulated by the agency through PACFISH, requires a good deal more than an incantation in the NEPA document that the analysis lies in the files of a Ranger District somewhere. The analysis must be available in the public document, particularly for a species as important as steelhead and one that is the subject of such detailed regulation in PACFISH.

This failure of the agency undoubtedly impedes public review of the action by requiring the public to first review the EA, then request the cited documents, await their delivery, and often repeat the process. Thus, the use of incorporation by reference techniques in this fashion was clearly not envisioned by NEPA, and is arbitrary and capricious.

In particular, the Decision fails to analyze as significant the potential conflicts between the proposed action and recreation on the allotment that were identified during scoping by the VWA. These significant and previously identified conflicts include the recreational use of the Dutra Flats, San Carpofo Camp, Turkey Springs Camp, and Elk Camp areas, all the trails connecting them, and all other roads and off-trail hiking opportunities on the allotment and proposed additions thereto and the historic "Upper Coast Trail" as depicted on the USGS Cape San Martin 15' quadrangle, which runs across both the Sea Vista and Sur Sur ranches. Portions of this culturally important historic route are still evident.

This Decision neglects to consider that both the Sur Sur and Sea Vista ranches were acquired with public money via the Monterey Coast Recreation Composite Purchase Unit, and thus, grazing in these areas may be incompatible with the recreational purposes for which these lands were purchased.

Indeed, the only recreation issue addressed in the EA and the Recreation and Wilderness Specialist Report was that of the 40' x 40' enclosure fence at Dutra Flat Camp "adversely affecting the 'wilderness experience.'" Out of a 3,570 acre allotment (5,651 acres including Sur Sur and Sea Vista) contain 4 system trail camps, 8 miles of system trails, 11 miles of system roads, and dozens of miles of non-system trails and numerous informal campsites, these documents only pertain to 1 site of approximately 1,600 square feet, or 0.0001% of the area in question.

The Decisions are based on an EA that lacks a sufficient discussion of cumulative impacts. The brief discussion of cumulative impacts in the EA only looks at the collective impacts of all allotments that comprise the Decision. The discussion fails to account for "other past, present, and reasonably foreseeable future actions," grazing or otherwise, by the Forest Service and other agencies or individuals as required under NEPA.

The Decisions, both individually and combined, must be considered to have cumulative effects with all other actions on all other allotments on the Monterey Ranger District. These allotments include: Upper Milipitas, Anastasia, Lower Vaquero, Sweetwater, Upper Reliz, Upper Vaquero, Lower Reliz, Arroyo Seco, Miller Canyon, Monroe, Piney Creek, Mott, and Hopkins Ridge.

In addition, the FONSI failed to consider grazing impacts on nearby private and state-owned lands which are likely to contain potential or occupied habitat for endangered species as well as cultural and other resources protected by federal and state law, but are subject to livestock use. For

example, about 5,000 cattle graze the Hearst Ranch, located directly adjacent to the San Carpoforo allotment. These grazing activities have not been adequately disclosed or analyzed in the project record, nor have they been considered in the cumulative effects analyses of some of the BA/Es and BOs for listed species. Grazing on private or other lands by the same permittees is an interrelated and interdependent effect of the Decision, and under NEPA, this requires a disclosure of the environmental and endangered species impacts of the connected non-federal actions. The project record contains no such disclosures or considerations contrary to the intent of NEPA, which mandates that non-federal impacts be considered as part of the cumulative impacts assessment.

Additionally, in September 2000, LPNF acquired a 784 acre cattle ranch immediately adjacent to the Sur Sur ranch which is proposed for addition to the San Carpoforo allotment. This property, known as the "Williams Ranch," is all set up for cattle grazing but as yet has not been authorized. They also did not consider the eventuality of grazing the Williams Ranch in the cumulative impacts, even though it is a "reasonably foreseeable future action."

The failure of the agency to thoroughly analyze significant and previously identified issues, the failure of the agency to consider and analyze the cumulative effects of adjacent and nearby land management issues, and the obvious inadequacy of the agency to adhere to "incorporation by reference" standards is grounds for the Decision to be withdrawn.

4. The Forest Service Failed to Use High-Quality Information and Accurate Technical Analyses as required by NEPA, nor does it adhere to the information contained in the documents upon which it relied.

NEPA requires that all agencies utilize a "systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and in decision making." NEPA § 102(A), 42 U.S.C. § 4332(A).

The Forest Service is required to use "high quality" scientific information and "accurate scientific analysis." 40 C.F.R. § 1500.1(b).

These directions instruct the agency to use the best available science when making decisions, as well as rely upon accurate information, even when that information is contrary to the agency's own opinion. Furthermore, the agency should follow the recommendations outlined in its "scientific" references, or provide some explanation where there are differences.

The EA and associated biological evaluations (BE) fail to achieve NEPA standards. The references listed in Appendix A of the EA are not an overwhelming representation of the science that could have been used to support the EA. Out of 40 references in the EA, only 8 are from peer-reviewed scientific journals, 4 are from popular periodical publications, 25 are government documents (14 of which are the agency's own unpublished reports), and 2 are gray literature other than government documents.

Appellants contend that the references cited in the BEs are equally insufficient. Out of 35 references cited, *none* are from peer-reviewed journals, 1 is from popular periodical publications, 22 are government documents (9 of which are the agency's own unpublished reports), 8 are non-governmental gray literature, 1 is from a database, 2 are web applications, and 1 is a personal communication. Worse, there are at least 23 citations in the text of the BEs that were not included in the list of references for the BEs.

Moreover, the EA only cites to sources that support the Decision and completely ignores those sources that present conflicting evidence. The bias in the document that emerges from the near total failure to evaluate potential impacts in concert with a similarly near total failure to acknowledge opposing views is breathtaking. At the conclusion of this appeal is a list of scientifically relevant resources that the Forest Service failed to include in its list of references, but which are considered highly appropriate for use in such analysis. Additionally, attached as Appendix B is a thorough and highly relevant analysis of the proposed actions as prepared by Elizabeth Painter, with its own list of references.

The Decision fails to address discrepancies in the referenced science and the EA. For example, the EA lacks any analysis of impacts to soils and merely cites a supporting document. But in this supporting document, the proposed action is described as to "graze 25 cattle . . . from January 1 to April 30 annually for approximately 100 Animal Unit Months" on the Kozy Kove allotment (Roath 2003). However, the Decision for this allotment states that AUMs "will not exceed 160," a 60% increase over the number of AUMs that formed the basis of the soils analysis.

The Decision also fails to address the true and important scientific evidence regarding invasive species on the allotments. The supporting document by Kwasny 2003 titled "Weed Risk Assessment" addresses only four species of noxious weeds within the coastal rangelands – French broom, Italian thistle, eupatory, and kikuyu grass. However, in the rare plant survey of the Kozy Kove dated July 28, 1999, the following additional invasive plant species were found: pampas grass, yellow star-thistle, and tocalote (Norman, 1999). Mr. Hughey of appellant VWA confirmed the presence of these species in December 2001. The Center made clear in the initial appeal the role of livestock grazing in promoting weed infestations, citing a crucial literature review on the subject (Belsky & Gelbard, 2000). Thus, the evidence before the agency was that invasive and noxious pampas grass and yellow star-thistle are present on the allotment, are aggravated by livestock and are threatening the host plant of Smith's blue butterfly. These facts were ignored in the EA, the DECISION, and the Weed Risk Assessment, constituting a violation of NEPA.

Other non-native plants on the allotments were not considered at all in the Weed Risk Assessment prepared by Mr. Kwanzy. Attached to this appeal as Appendix A is a list of non-native plants that fit the biological definition of 'weeds' (Holland and Keil 1995), and which occur on the allotments.

Finally, the documents use unconventional values to calculate Animal Unit Months (AUMs), leading to an inaccurate count of livestock allowed on these allotments and an inaccurate assessment of environmental effects. This inaccuracy causes confusion to the public and the appellants, which use the more widely known and more recent sources such as the Forest Service Range Management Annual

Reports Handbook (9/3/91); Range Management (Holechek et al.1995); Grazing Management (Vellentine,1990); Rangeland Ecology and Management (Heady & Child,1994); and National Range and Pasture Handbook (NRCS, 2003).

5. The Forest Service failed to provide for adequate public participation, by not making the FONSI and other requested documents available in a timely fashion to members of the public who requested them, by failing to consider substantive comments, and by failing to discuss opposing viewpoints, which violates NEPA, the Administrative Procedures Act and the Forest Service Handbook.

The Forest Service, under certain circumstances, is required to make the FONSI available for public review for 30 days *before* the agency makes its final determination whether to prepare an EIS and before the action may begin. 40 C.F.R. § 1501.4(e)(2); see also FSH 1909.15 § 43.1 One such circumstance is when “[t]he proposed action is, or is closely similar to, one which normally requires the preparation of an environmental impact statement.” 40 C.F.R. § 1501.4(e)(2)(i); see also FSH 1909.15 § 44

The FONSI should be available for public review for 30 days before the agency’s final determination when there is a reasonable argument for preparation of an EIS, when it is an unusual case, a new kind of action, or a precedent setting case, when there is either scientific or public controversy over the proposal, or when it involves a proposal which is or is closely similar to one which normally requires preparation of an EIS. (Sections 1501.4(e)(2), 1508.27). Agencies also must allow a period of public review of the FONSI if the proposed action would be located in a floodplain or wetland. E.O. 11988, Sec. 2(a)(4); E.O. 11990, Sec. 2(b).

NEPA states that “[i]n all cases the agency shall mail notice to those who have requested it on an individual action.” 40 C.F.R. § 1506.6(b)(1). The Forest Service’s own policy echoes this requirement. *See* FSH 1909.15 § 44 which states that the “responsible official shall *promptly* mail the FONSI and decision notice to those who, in writing, have requested it and to those who are known to have participated in the decision making process” and “[d]istribute environmental assessments (EAs), decision notices, and findings of no significant impacts (FONSI) to agencies, organizations, and persons interested in or affected by the proposed action.”

NEPA requires the Forest Service to make available “any underlying documents” to the EA and to notify the public of the procedures to access these documents. *See* 40 C.F.R. § 1506.6.

Forest Service regulations require the Responsible Official to “consider all substantive written and oral comments submitted” during the comment period. 36 C.F.R. § 215.6(b). The term “substantive” is defined as “[c]omments that are within the scope of the proposed action, are specific to the proposed action, have a direct relationship to the proposed action and include supporting reasons for the Responsible Official to consider.” 36 C.F.R. § 215.2.

The Forest Service Handbook requires Decisions to include “[p]ersons or groups raising issues or asserting opposing viewpoints may be identified and their views discussed in light of the decision.” FSH 1909.15 § 43.21(4).

Appellants contend, for the reasons stated above in Statement 1, that a “reasonable argument” could be made for the preparation of an EIS, that there is both scientific and public controversy over the proposal, and that this proposal is similar to ones which normally require preparation of an EIS. For these reasons, *at a minimum* the Forest Service should have made the FONSI available for public review and comment for 30 days before issuing the Decisions. This was not adhered to, however, and the FONSI was issued at the same time as the Decisions.

A violation of the mandate to provide the public with requested documents in a timely manner occurred on December 16, 2004, when VWA requested various supporting documents, including the “List of ‘non-significant issues and reasons regarding their categorizations as non-significant’ from Project Record” as cited on page 6 of the EA. On December 21, 2004, Mr. Kwasny delivered some but not all of these requested documents to Mr. Hughey. After reviewing these documents, Mr. Hughey discovered that two documents that would have fallen under his original request – the “response to comments” and a list of comments received during the 2004 scoping period – were missing from the documents provided by Mr. Kwasny. In response, Mr. Hughey sent an e-mail to Mr. Kwasny on December 22, 2004 and again on December 29, 2004 requesting these documents a second time. Mr. Kwasny did not respond to this e-mail until January 3, 2005, nearly two weeks after Mr. Hughey first requested the documents. Mr. Kwasny stated in his response that he would be unable to fulfill Mr. Hughey’s request because Highway 1 was closed due to a landslide. Mr. Kwasny did not offer to access these documents via a feasible alternate route. After bringing this to the attention of the Forest Supervisor, Mr. Kwasny finally made some of these documents available to Mr. Hughey on January 10, 2005, nearly *one month after they were originally requested*, and near the end of the appeal period.

Furthermore, interested and affected members of the public were not provided with requested documents. In November of 2004, LPFW expressed interest in the Decision and requested placement on the agency’s mailing list to receive legal notice of the decision and the supporting environmental documents. However, LPFW did not receive the EA, or the Decisions/FONSI, until placing yet another request with the agency on December 14, 2004 with District Ranger John Bradford. It took the Forest Service two more days to actually place the requested documents in the mail, and they were not received by LPFW until December 20, 2004, nearly two weeks after the legal notice was published.

Not only are such delays unprofessional, but they interfered with appellant’s ability to review the agency’s response to public comments and determine how these comments shaped the final decision. These delays hindered the abilities of interested parties to adequately review the documents. Such delays violate NEPA’s emphasis on maximizing public participation in agency decision making.

The Decisions fail to consider or address substantive comments, as required by NEPA. In fact, the Decisions consider only “issues brought forward in Chapter 2 of the EA,” and mentions nothing about opposing viewpoints in Section IV titled “Public Involvement” on pages 4 and 9 in the Gorda Decision/FONSI. The agency’s failure to discuss or even mention opposing viewpoints in the

Decisions is a clear violation of agency policies and procedures, is arbitrary and capricious, and violates NEPA.

Furthermore, appellants object to the dismissal of our submitted and highly relevant comments as non-substantive. In a spreadsheet titled “COASTAL RANGELANDS – LEGAL NOTICE COMMENTS,” the Forest Service responds to VWA’s 2004 comments by classifying only 2 of over 70 distinct comments as “substantive.” These comments were within the scope of the proposed action, were specific to the proposed action, and have a direct relationship to the proposed action, and yet the Responsible Official failed to consider them. For example, the Forest Service declared the following substantive comments as “non-substantive” because the comments “lack necessary specific information to support a change in the document, or to permit a meaningful response.” Dismissed comments include:

- The comment submitted by VMA that described the locations of and livestock grazing impacts to the five vernal pools on the San Carpoforo allotment and the request that the Forest Service must consider how the proposal would affect sensitive organisms that inhabit these pools;
- The comment that requested the agency survey for red-legged frogs on Elk Camp Creek, at an area known as “the frog ponds” above and east of San Carpoforo Camp, or in the perennial creeks that drain the Sur Sur or Sea Vista Ranches, as well as consider how the Decision would impact these populations;
- The comment submitted by VWA requesting that the agency discuss all grazing-related impacts on water quality, including sediment, increased nutrient loads, fecal contamination, the introduction of pathogenic (cryptosporidium, giardia, salmonella, shigella, and enteric viruses) and non-pathogenic (fecal coliform and enterococci) organisms that can contaminate drinking water and harm aquatic ecosystems.
- The request that the NEPA analysis include consultation with the Monterey Bay National Marine Sanctuary, as well as a synopsis of the consultation in the NEPA document, including recommended mitigation measures.
- The request that the NEPA document discuss any established hiking trails or areas within the allotment known for their camping, fishing, hunting, wildlife viewing, or other forms of recreation, and discuss how these recreational opportunities will be impacted. This comment also requested a discussion of the potential for conflict between cattle grazing on the San Carpoforo allotment and recreational use of the Dutra Flats, San Carpoforo Camp and Turkey Springs Camp areas.

All of the above comments were submitted during scoping in an effort to help the agency identify relevant issues for its analysis. The assertion that the comments “lack necessary specific information to support a change in the document” implies that the EA was already substantially completed prior to scoping, thereby minimizing public input. Furthermore, the information included in these comments is specific to the proposed action and important for resource protection, meriting at least a meaningful response.

The Forest Service declared some of the appellants’ comments as “non-substantive” because the comments were “outside scope of analysis.” Dismissed comments pertained to gates on enclosure fencing and mitigation remedies to prevent livestock from accessing the riparian area, requests for an

analysis of impacts to the historic “Upper Coast Trail,” and a request for an analysis of the likelihood that monitoring, mitigation, and enforcement commitments on these allotments will be met. Contrary to the Forest Service’s assertion that these comments are “outside scope of analysis,” appellant VWA asserts that potential damage to federally threatened steelhead and its habitat, potential damage to important cultural resources previously unknown, unmitigated conflict with important recreational resources, and staffing levels necessary to address and assure protection of resources within the area of the proposed action is well within the scope of the analysis.

Apparently, the Forest Service believes that it can avoid its duty to consider comments by simply deeming these and other comments as non-substantive. Such an approach is clearly arbitrary and capricious, and unquestionably violates NEPA’s strong emphasis on public involvement.

In addition, the Forest Service failed to adequately consider comments from the 2001 scoping. Instead, the agency prepared a spreadsheet that summarized and categorized comments received. The vast majority of VWA’s comments are categorized as “C,” and according to the top of the spreadsheet, “C = Comment (see response to comments).” However, when VWA requested a copy of the referenced “response to comments,” the Forest Service failed to provide such a document. Thus, we must assume that none exists, and the absence of such a document clearly evidences the failure of the agency to adequately “consider” VWA’s comments from the first round of scoping as well. These 2001 comments were incorporated by reference into VWA’s 2004 scoping letter.

One of the most important policies set forth under NEPA is that all agencies “shall to the fullest extent possible . . . [e]ncourage and facilitate public involvement in decisions which affect the quality of the human environment.” 1500.2(d). Rather than encouraging and facilitating public involvement, the Forest Service has attempted to suppress public involvement by failing to consider substantive comments, by failing to provide requested documents in a timely manner, and by failing to deliver documents upon request.

6. The Forest Service is relying on unenforceable and insufficient mitigation measures that fail to reduce effects to less than significant levels, in violation of NEPA and the Forest Service Handbook.

NEPA requires a discussion of *all* relevant mitigation measures in the environmental document. Specifically, “to ensure that environmental effects of a proposed action are fairly assessed, the probability of the mitigation measures being implemented must also be discussed” and the environmental document “should indicate the likelihood that such measures will be adopted or enforced by the responsible agencies.” CEQ, *NEPA’s Forty Most Asked Questions*, § 19b, citing 40 C.F.R. §§ 1502.16(h), 1505.2.

The Forest Service Handbook requires Decisions to include “[r]elevant mitigation measures, management requirements, and monitoring provisions should be discussed with specific citations to pages of the environmental assessment.” FSH 1909.15 § 43.21(3).

Appellants assert that the EA fails to discuss all mitigation measures, and does not analyze the likelihood of adoption or enforcement of mitigation that is discussed in the document. For example, the Forest Service fails to explain monitoring methods which will ensure removal of livestock when applicable limits have been met as specified by the EA and the BA, nor does it provide the proper citations for its mitigation measures. The only specific monitoring mentioned in the EA is to check utilization within two weeks before or after the end of the prescribed use period, which is too little, too late. In order for these monitoring-dependent mitigation measures to comply with NEPA, monitoring would need to be done continuously through the use period. In addition, some of the allotments are to be grazed year-long, making such post-grazing monitoring impossible, and the recommended late summer monitoring on such allotments is not justified or explained.

It appears that the Forest Service is relying on mitigation measures to avoid the preparation of an EIS. Such avoidance techniques are prohibited under NEPA.

7. The Forest Service failed to use the best available science, to use authorities to assist in the recovery of species, and to properly consult with the U.S. Fish and Wildlife Service, direct violations of the Endangered Species Act.

The ESA requires consultation with NOAA and the USFWS for the recovery of species listed as threatened or endangered, and prevents “take” of any threatened or endangered species. Federal projects that may affect these species require consultation that is conducted with the best available science and a finding of “no jeopardy” by the consulted agencies.

1. Smith’s Blue Butterfly (SBB) consultation based on misrepresentations.

The proposed action as defined in the Biological Opinion (BO) of the U.S. Fish & Wildlife Service for the Smith’s blue butterfly differs markedly from the action approved in the Decisions for the Alder, San Carpoforo, and Sea Vista/Sur Sur allotments.

Specifically, the BO limits authorized livestock on the Alder allotment to “mature or yearling horses or mules,” while the Decision for the Alder allotment states “Authorized livestock may include mature or yearling horses or mules; cow/calf pairs; other mature cattle including bulls; yearling cattle.”

On the San Carpoforo/Sea Vista/Sur Sur allotment, the Decision authorizes more cattle than the numbers that were provided during U.S. Fish and Wildlife Service (USFWS) consultation. The BO for these combined allotments states that AUMs will not exceed 1,280. However, the San Carpoforo Decision allows 975 AUMs while the separate Sea Vista/Sur Sur Decision allows 400 AUMs, totaling 1,375 – an unconsulted overload of 95 AUMs in occupied Smith’s blue butterfly habitat.

The 2003 BA on these allotments for Smith’s blue butterfly states that ten year grazing permits issued for these allotments will contain management and mitigation measures which include the

removal of cattle from pastures during the flowering period of seacliff buckwheat whenever possible. The 2004 BO exempts the Alder Creek allotment and the Mill Creek unit of the Gorda allotment from this requirement, but mandates that distribution of cattle be managed so as to minimize impacts. However, the Decisions approve a proposed action which overlaps with this June to September flowering period time frame on all but the San Carpoforo and Kozy Kove allotments, which have minimal buckwheat acreage anyway, and fails to describe management plans to remove or redistribute livestock during this period. The BO describes the action on Salmon Creek to authorize not more than 65 AUMs, but the Decision authorizes up to 115 AUMs.

The Decisions approve actions which differ significantly from actions consulted. Thus, the agency must withdraw the Alder, San Carpoforo, Gorda, Salmon Creek, and Sea Vista/Sur Sur Decisions and reinitiate consultation with FWS, or stand in violation of the Endangered Species Act.

2. Failure to survey for, and consult on, all vernal pools and associated sensitive organisms.

In a letter of concurrence from the FWS dated October 5, 2001, it is noted that only one potential habitat pond for vernal pool crustaceans occurs within the coastal allotments. However, during the 2001 scoping, the VWA submitted a substantive comment (dismissed by the Forest Service as non-substantive) that at least 5 vernal pools exist on the San Carpoforo allotment. Mr. Hughey of VWA revisited the sites of these pools on December 19, 2004 and confirmed their continued presence.

However, the Forest Service did not initiate consultation for, conduct surveys to confirm the presence of, nor analyze effects of the Decision on these pools. The 2001 concurrence letter requires the Forest Service to determine if the authorization of grazing is likely to affect any newly-discovered vernal pools and if consultation is necessary. Moreover, the 2004 BO requires the Forest Service to conduct surveys on any vernal pool habitats located within the action area, and to notify FWS of the results of such surveys. The fact that these potential habitat sites for vernal pool crustaceans were brought to the attention of the agency during scoping but either ignored or dismissed as “non-substantive” is a violation of the ESA.

The lack of attention to this issue also flies in the face of FWS direction contained in the letter dated October 5, 2001 to Jane Derby, Forest Supervisor, the subject of which was “Proposed grazing on six coastal allotments within the LPNF, Monterey County, California.” In this letter, FWS field supervisor Diane Noda states that very little information on vernal pool habitat is available, that there is a need to identify potential habitat for vernal pool dependent species, and that the consultation terms and conditions places high priority on the identification and mapping of vernal pools on LPNF lands. This letter also states that if additional vernal pools are identified within the Monterey coastal grazing allotments, authorization of livestock grazing requires a determination and possibly consultation. The Forest Service failed to follow this arrangement with the FWS, and instead neglected the information provided during the scoping period.

3. Failure to survey for or consult on California red-legged frog habitat.

On April 27, 2004, VWA submitted a substantive scoping comment regarding the presence of California red-legged frog (RLF) on Elk Camp Creek, at an area known as “the frog ponds” near San

Carpoforo Camp, and in the perennial creeks that drain the Sur Sur or Sea Vista ranches. However, a Forest Service memo dated September 19, 2000 and titled "Surveys on Monterey Coastal Allotments," it is revealed that only San Carpoforo Creek was surveyed for RLF. Moreover, the supporting document to the EA titled "Affects of Alternatives on Federally Listed Threatened, Endangered, and Sensitive Wildlife Species" states that "stock ponds provide the only known, occupied habitat in project area." The Forest Service failed to survey for or consult on the likely presence of RLF in these areas identified by VWA.

8. The Decisions authorize activities concerning sensitive plant species which were not given a reasonable review as mandated by Forest Service policy.

Forest Service policy (FSM 2670.32) mandates a review of all activities via a Biological Evaluation (BE).

BEs were completed for all of the allotments, and the summary provided in the EA states that "the proposed action is not likely to cause a trend towards federal listing and is maintaining viable populations well distributed across the coastal rangelands."

However, the BEs reference areas where livestock grazing has persisted for many decades that currently support uncommon plants. The fundamental assumption that is made repeatedly is that because uncommon plants persist in grazed areas, grazing does not impact population viability. This is an unscientific and flawed assumption; there is no referenced assessment that states that grazing does not impact the vigor or viability of uncommon plant populations. Without evidence of comparative trends, this assumption of the BEs is faulty, the EAs are inaccurate, and the Decisions are incorrect.

For example, the Santa Lucia fir, which is a sensitive and rare species, was only evaluated on the San Carpoforo allotment. The agency claims that the proposed action will have no adverse effects to this species. However, the agency also admits that "the number of trees present in [the three known] stands and their location on the landscape are unknown." We question the agency's determination of effects when the plants themselves have not been located. Additionally, because Santa Lucia fir is known to occur in a variety of habitats (including areas outside of the range stated in the BE), unless all of the coastal allotments were completely surveyed for presence or absence, then potential direct and indirect livestock grazing impacts exist. Therefore, Appellants contend that all Decisions neglect the true and potential impacts to this species, are based on insufficient analysis, and should be withdrawn.

The analysis of Hickman's onion on these allotments is insufficient. Again, the assumption that concurrence of the species with livestock grazing indicates no impacts is a faulty one. The species account notes that the species is documented from two locations- the Salmon Creek and Gorda allotments- but only the Gorda population is analyzed in the cumulative effects section of the EA.

Furthermore, the objective outlined for validation monitoring on page 14 of the EA lacks specificity. The schedule is "within two seasons" but no survey methods, duration of monitoring, or staff designations are assigned to the important objectives of assessing species impacts. The validation of these assumptions should have been completed *before* management decisions were made based on

them, and Appellants object that the Decision is based on assumptions and not scientific evidence that the proposed action will not harm native plant populations.

There are also a number of sensitive plant taxa that LPNF has ignored completely in this EA. Rare plants known primarily or entirely from the adjacent Hearst Ranch and Arroyo de la Cruz area were not included in the BE analysis of grazing impacts to plant species. Some of these rare species were included, and their habitats overlap with non-included species, so the agency's selection remains mysterious. The BE lists are also confusing, since not all of the Forest Service's "sensitive" and "watch" taxa appear of the LPNF "sensitive" and "watch" list in the BEs. Several plant taxa included in the draft Southern California Forests Management Plan and/or the species accounts prepared for them that occur on or near the allotments were not considered (*Cyperus sargentii*, *Pinus attenuata*, *Quercus lobata*). At least one USFS Species of Concern known to occur in Monterey Ranger District was omitted (*Arabis blepharophylla*), and in addition, USFS "Species of Concern" found nearby and that could possibly occur on the allotments (*Arctostaphylos hookeri* subsp. *hearstiorum*, *Calochortus clavatus* var. *recurvifolius*) were unmentioned.

Species accounts within the BEs contain numerous factual errors relevant to population localities, specific associations, and habitat preferences. The failure to use sufficient, appropriate scientific literature as a basis for both the evaluation of possible impacts on natural resources and for the livestock management protocol creates a serious possibility that the livestock grazing has had and could continue to have significant negative impacts that would be in violation of the aforementioned regulations.

While herbivory probably is a natural part of all terrestrial ecosystems, livestock herbivory is not a natural part of California natural ecosystems (Painter 1995). Livestock behavior does not mimic that of either Pleistocene or modern native herbivores (Baker 1992). It must therefore be treated as a human-imposed, ecologically significant disturbance. The ecological costs of livestock grazing in western North America have been well documented (reviewed in Fleischner 1994, Painter 1995).

In order protect the natural resources in the allotments, it is the obligation of those preparing documents to demonstrate that low-impact management is possible and that negative impacts are anticipated and minimized. Direct and indirect negative impacts of livestock that need to be considered include (but are not limited to) defoliation, trampling, soil compaction, cryptobiotic crust destruction, damage to mycorrhizae, chronic nutrient export, alien-plant seed dispersal. This must be based on careful use of the best available science (not just the currently most popular nor limited by discipline, e.g., range science).

Given the overwhelming evidence that the ecology of sensitive plants on these allotments was underestimated at best and incorrect at worst, the EA did not properly evaluate impacts to these species and the Decisions should be withdrawn until a proper and scientifically accurate analysis is prepared.

9. The Decisions fail to analyze compliance with the Los Padres National Forest Plan, in violation of Forest Service Handbook regulations and in violation of the National Forest Management Act.

The Forest Service Handbook requires the Decisions to “[d]escribe how the decision is consistent with applicable laws and regulations,” 1909.15 § 43.21(6). Findings regarding consistency with the forest plan (allocation, and standards and guidelines) and vegetation management criteria are required by the National Forest Management Act and 36 CFR 219.

In this case, the Decisions do not provide any consistency analysis; rather, with respect to the Forest Plan, the Decisions merely refer to Appendix C of the EA. This appendix then simply lists some – but not all – relevant Forest Plan standards and completely lacks any discussion on whether or how the Decision is consistent with the Forest Plan of 1988, which is clearly not in compliance with the guidelines from the agency handbook. The seventeen year old Forest Plan also ought to be evaluated for contemporary relevance.

Appellants assert that the Decision is incompatible with the direction of the 1988 Forest Plan because the entire San Carpoforo allotment lies within Management Area 64, where the management emphasis is “Wilderness Preservation and Management.” The proposed addition to the allotment of the Sur Sur and Sea Vista ranches would include those lands under Management Area 42, the emphasis of which is “Visual and Recreational Resources.” Grazing in these areas has not been determined to be compatible with wilderness preservation, recreational values, or aesthetics, and thus the Decisions violate NFMA.

Additionally, some of the decisions require “minor amendments” to the Forest Plan. These Decisions entail the authorization of livestock grazing on previously ungrazed portions of the project area, including areas within the boundaries of recently declared Wilderness. This amendment is likely not a minor amendment, and major amendments would also require a complete EIS. In any event, the Forest Plan amendments require a separate analysis that was not completed. It is impermissible for the Forest Service to conflate the Plan amendment analysis completely into the action analysis. A separate discussion is required under the NFMA and NEPA.

10. The Decisions violate the Coastal Zone Management Act because the Forest Service has failed to determine consistency with California’s Coastal Management program, and the Decisions are inconsistent with the California Coastal Management Act.

The Coastal Zone Management Act (“CZMA”) was passed by Congress in 1972 “to preserve, protect, develop, and where possible, to restore or enhance, the resources of the Nation’s coastal zone for this and succeeding generations.” CZMA § 303(1), 16 U.S.C. § 1452(1). The CZMA directs federal agencies to ensure that activities affecting states’ coastal areas conform to approved state management programs adopted pursuant to the CZMA.

The CZMA provides that “[e]ach Federal agency activity within or outside the coastal zone that affects any land or water use or natural resources of the coastal zone shall be carried out in a manner which is consistent to the maximum extent practicable with the enforceable policies of approved State management programs. CZMA § 307(c)(1), 16 U.S.C. § 1456(c)(1)(A). These effect need not be significant, and “includes direct effects which are caused by the activity and occur at the same time and place, and indirect effects which may be caused by the activity and are later in time or farther removed

in distance, but are still reasonably foreseeable.” H.R. Conf. Rep. No. 964, 101st Cong., 2d Sess. 970-71. The term "consistent to the maximum extent practicable" does not impart any measure of discretion to a federal agency; rather, it requires that federal activities "be fully consistent with [state] programs unless compliance is prohibited based upon the requirements of existing law applicable to the Federal agency's operations.” 15 C.F.R. § 930.32(a).

Under the CZMA, "Federal agencies shall provide State agencies with consistency determinations for all Federal agency activities affecting any coastal use or resource.” 15 C.F.R. § 930.34(a)(1). This consistency determination must be provided "at the earliest possible time in the planning or reassessment of the activity. A consistency determination should be prepared . . . before the Federal agency reaches a significant point of decision-making in its review process, i.e., while the Federal agency has the ability to modify the activity. The consistency determination shall be provided to State agencies at least 90 days before final approval of the Federal agency activity.” 15 C.F.R. § 930.36(b)(1); see also 65 Fed. Reg. 77139 (December 8, 2002).

In this Decision, the Forest Service has provided no such consistency determination to the Coastal Commission, nor did the agency contact the Coastal Commission about the Decision. In fact, the Coastal Commission is missing from the list of contacted parties as provided in the EA. This is an important oversight, since the action set forth in the Decisions are in violation of several provisions of the California Coastal Act.

The Decision is inconsistent with several provisions of the California Coastal Act, the state's approved management program under CZMA, including:

- § 30211 - Development not to interfere with access;
- § 30221 - Oceanfront land; protection for recreational use and development
- § 30223 - Upland areas
- § 30230 - Marine resources; maintenance
- § 30231 - Biological productivity; water quality
- § 30233 - Diking, filling or dredging; continued movement of sediment and nutrients
- § 30236 - Water supply and flood control
- § 30240 - Environmentally sensitive habitat areas
- § 30251 - Scenic and visual qualities
- § 30252 - Maintenance and enhancement of public access
- § 30253 - Minimization of adverse impacts

Because of these inconsistencies with the California Coastal Act, the Forest Service should withdraw its Decisions, prepare an adequate consistency determination to comply with the CZMA, submit the determination to the Coastal Commission for certification, and make any appropriate changes to the Decision. Otherwise and as it now stands, the agency is in nonconformance with these laws.

The discussions of water quality do not address bacterial contamination. Cattle are known to distribute a number of water-borne bacterial pathogens (e.g., fecal coliform, especially *E. coli*, and fecal streptococcus) (Bauer and Burton 1993). These could be a threat to the health of recreational visitors.

Bacterial contamination might place LPNF out of compliance with state and federal clean water regulations. For example, livestock grazing on Santa Rosa Island (Channel Islands National Park) were found to be the primary cause of "unlawful concentrations" of bacteria and sediments in stream water and were served with a State of California Central Coast Water Quality Control Board Cleanup or Abatement Order (Rosenlieb et al. 1995), which may result in substantial fines. The fecal coliform body-contact recreation standard in most states is established as to not exceed a log mean of 200 fecal coliforms/100 ml sample (based of 5 samples collected in a 30-day period); log-mean concentrations on Santa Rosa Island were as high as 1501 fecal coliforms/100 ml (Rosenlieb et al. 1995).

Recreation activities may bring visitors into body contact with water. Therefore, to ensure personnel safety, a rigorous water quality regime should be included in management of livestock grazing. The monitoring protocols for grazing management developed by the US Environmental Protection Agency (Bauer and Burton 1993) and the US Forest Service (Platt et al. 1987) should be used for all water quality monitoring related to livestock management on LPNF. Unfortunately, the Forest Service chose to keep its entire water quality section buried in the project file in a Ranger District, and included in the NEPA document only a paragraph asserting that the appropriate analysis regarding water quality and hydrology had been completed and had detected no impacts. That's all the document has to say to the public and decision-maker about water quality.

One final note about this: the Decision Notices actually disclose more information about water quality and other resources than the EA does. Clearly the DN's were written using information that was not provided in the underlying NEPA document, and they draw conclusions and present analysis not present in the EAs. A Decision Notice is supposed to disclose the reason for the decision, not present to the public for the first time analysis of the impacts. The DN is no place to conduct analysis – that is the role of the EA, and for a DN to include analysis unavailable in the EA is a violation of NEPA.

11. Water quality issues were not adequately analyzed in the EA, and no analysis of compliance with the Best Management Practices or the Clean Water Act was presented.

Appendix B of the EA addresses the Best Management Practices necessary to protect water quality on the allotment. However, these parameters for monitoring do not specifically address potential bacterial contamination caused by livestock. Cattle are known to distribute a number of water-borne bacterial pathogens (e.g., fecal coliform, especially *E. coli*, and fecal streptococcus) (Bauer and Burton 1993). This could threaten the health of recreational visitors to the Forest.. Recreation activities may bring visitors into body contact with water. Therefore, to ensure personnel safety, a rigorous water quality regime should be included in management of livestock grazing. The monitoring protocols for grazing management developed by the US Environmental Protection Agency (Bauer and Burton 1993) and the US Forest Service (Platt et al. 1987) should be used for all water quality monitoring related to livestock management on LPNF.

12. The Decisions for the Kozy Kove, San Carpoforo, and Gorda allotments violate the Wilderness Act, because the proposed actions increase the amount of livestock grazing on these allotments in direct opposition to the regulations and intentions of the Act and the Land and

Resource Management Plan for the Los Padres National Forest.

In defining the intention of the Wilderness Act, Congress declared, “To clarify any lingering doubts, the committee wishes to stress that this language means that there shall be no curtailment of grazing permits or privileges in an areas simply because it is designated as wilderness... It is anticipated that the numbers of livestock permitted to graze in wilderness would remain at the approximate levels existing at the time an area enters the wilderness system.” H. Rept. 96-617 on H.R. 5487, 96th Cong. 1st Sess., November 14, 1979.

The Los Padres National Forest Land and Resource Management Plan of 1988 declares that “Grazing, by law, may continue in designated Wilderness at current levels as identified in current range management allotment plans.” Chapter 2, Issue 8-6.

In this Decision, the proposed action for Kozy Kove is to “authorize continued livestock grazing.” However, no permits or authorization for livestock grazing have ever been issued for the lands that comprise the proposed Kozy Kove allotment. According to the Los Padres National Forest, Monterey Ranger District map dated 1995, all but 40 acres of the proposed Kozy Kove allotment were already under Forest Service ownership at that time, with the final 40 being acquired in 1997. Historical livestock grazing under private ownership 8-10 years or more ago in no way constitutes “continued livestock grazing” or a “valid existing use” today as asserted in the Decision. The current level of grazing on the Kozy Kove is zero and has been at that level as long as the Forest Service has owned this parcel, and there have never been range management allotment plans, term grazing permits or annual operating plans for this area. The lands comprising the Kozy Kove allotment were added to the Silver Peak Wilderness Area in December 2002. At that time, grazing (permitted or otherwise) did not occur there, nor had it occurred there for at least five years prior. Grazing has never been a “valid existing use” on the Kozy Kove ranch under Forest Service ownership. Grazing may not be authorized on the Kozy Kove ranch under the Wilderness Act.

While the Wilderness Act allows for grazing to continue where it was established and permitted prior to Wilderness designation, it does not allow for substantial increases in grazing activity within designated Wilderness. However, the Decision for the San Carpoforo allotment allows for far greater numbers of cattle than when the allotment was originally designated as part of the Silver Peak Wilderness area, in violation of the Wilderness Act.

Approximately half of the 3,525-acre San Carpoforo allotment was designated as part of the Silver Peak Wilderness under the Los Padres Condor Range and River Protection Act of 1992, with the balance of the allotment being added to the Silver Peak Wilderness under the Big Sur Wilderness and Conservation Act of 2002. *See* Pub. Law No. 102-301 (1992), Pub. Law No. 107-370 (2002). At present, the entire allotment (with the exception of 80 acres) is within designated Wilderness. Permitted stocking levels on the San Carpoforo allotment at the time it was designated as wilderness and up until the present are far lower than the proposed 975 AUMs permitted with the Decision. The previous and current term grazing permits issued in 1986 and 1999 both provide for grazing 118 head of yearling cattle from November 1 through April 30, for a specified total of 496 AUMs annually.

In 1992 (when the area was first designated Wilderness), the permitted stocking rate on the San Carpofo allotment pursuant to the term grazing permit was 496 AUMs annually, likewise in 2002 (when additional areas of the allotment were designated Wilderness). The Decision's allowance of 975 AUMs is a substantial and dramatic increase of stocking rates within designated Wilderness and is a clear violation of the Wilderness Act.

A large portion of the Plaskett Unit of the Gorda allotment was designated as part of the Silver Peak Wilderness in December 2002. The Decision for this unit proposes grazing at the level of 316 AUMs annually, while the historical level of grazing there at the time of Wilderness designation was 257.4 AUMs. This represents a 23% increase in stocking levels within designated Wilderness.

Appellants therefore contend that these three Decisions are in clear violation of the Wilderness Act, and should be withdrawn until compliance with this law is assured.

13. The Decisions violate the National Forest Management Act, because they do not address, comply with, or reveal Forest Plan requirements.

Forest Plan standards are not discretionary. *Neighbors of Cuddy Mountain v. Alexander*. In this case, the Forest Service has released an EA that essentially "incorporates by reference" its entire Forest Plan consistency analysis. The Forest Service has attached for public review some of the Forest Plan standards in an appendix to the EA, but has merely stated, not shown, that it is meeting those requirements. Appellants suspect the reason for this is the fact that the Forest Service is in fact a great distance from meeting its Forest Plan standards.

For example, consider PACFISH. PACFISH requires the Forest Service to address riparian areas in great detail, consider RMOs, reveal riparian conditions, and recognize the relationship between upland and riparian health. But there is not a word in these documents that suggests the Forest Service has even begun to embark on this analysis, and indeed the analysis does not exist in the project record, either.

The same problem exists with Forest Plan standards concerning recreation, water quality, soils, MIS, wildlife, visual quality, wilderness, and fish. The EA contains no site specific information to speak of, and what it does contain does not address the Forest Service's substantive duties as laid out by the Forest Plan, the NFMA, and PACFISH. The EA does not comply with the National Forest Management Act.

REQUEST FOR RELIEF

Appellants respectfully request that the Decisions for the Gorda, Alder Creek, Salmon Creek, San Carpofo, Sur Sur, Sea Vista, and Kozy Kove allotments be withdrawn until an appropriate and legal analysis and EIS is completed. Appellants have demonstrated the agency's failure to comply with

the National Environmental Policy Act, the National Forest Management Act, the Endangered Species Act, the Administrative Procedures Act, the Wilderness Act, the Coastal Management Act, and the Coastal Zone Management Act.

As stated above, appellants have no protest with the Decisions for the Twitchell, Torre Canyon, and Buckeye grazing allotments that were included in the same EA; we support the agency's decision to close these allotments to livestock grazing.

We thank you for your consideration of this appeal and we look forward to moving towards a resolution.

Sincerely,



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APPENDIX A. List of invasive plants by allotment.

Note: California Exotic Pest Plant Council (CalEPPC) is now called California Invasive Plant Council (Cal-IPC). The list is in the process of being updated.

Alder Creek Allotment

<i>Ageratina adenophora</i>	USDA Federal Noxious Weed, CalEPPC (1999) pest plant B
<i>Anagallis arvensis</i>	CA agricultural crop pest
<i>Anthriscus caucalis</i>	under review by Cal-IPC
<i>Avena barbata</i>	CalEPPC (1999) annual grasses pest plant
<i>Brachypodium distadion</i>	CalEPPC (1999) annual grasses pest plant
<i>Briza maxima</i>	under review by Cal-IPC
<i>Bromus diandrus</i>	CalEPPC (1999) annual grasses pest plant, CA agricultural crop
pest	
<i>Bromus hordeaceus</i>	CA agricultural crop pest, under review by Cal-IPC
<i>Bromus madritensis</i> subsp. <i>madritensis</i>	
<i>Bromus madritensis</i> subsp. <i>rubens</i>	CalEPPC (1999) pest plant A-2, CA agriculture pest
<i>Carduus pycnocephalus</i>	CA DFC Noxious weed C, CalEPPC (1999) pest plant B
<i>Centaurea melitensis</i>	CalEPPC (1999) pest plant B
<i>Conium maculatum</i>	CalEPPC (1999) pest plant B
<i>Cortaderia jubata</i>	CalEPPC (1999) pest plant A-1
<i>Erodium cicutarium</i>	CA agricultural crop pest, under review by Cal-IPC
<i>Genista monspessulana</i>	CA DFC Noxious weed C, CalEPPC (1999) pest plant A-1
<i>Hirschfeldia incana</i>	CalEPPC (1999) need more information, under review by Cal-
IPC	
<i>Hypochaeris glabra</i>	under review by Cal-IPC
<i>Lolium perenne</i>	
<i>Marubium vulgare</i>	under review by Cal-IPC
<i>Plantago lanceolata</i>	CA agricultural crop pest, under review by Cal-IPC
<i>Polypogon interruptus</i>	
<i>Rumex acetosella</i>	CA agricultural crop pest, under review by Cal-IPC
<i>Sonchus asper</i>	under review by Cal-IPC
<i>Vinca major</i>	CalEPPC (1999) pest plant B
<i>Vulpia bromoides</i>	under review by Cal-IPC

Gorda Allotment

Mill Creek Unit

Genista monspessulana CA DFC Noxious weed C, CalEPPC (1999) pest plant A-1

Prewitt Unit

Avena barbata CalEPPC (1999) annual grasses pest plant

	<i>Bromus diandrus</i>	CalEPPC (1999) annual grasses pest plant, CA agricultural crop
pest	<i>Bromus hordeaceus</i>	CA agricultural crop pest, under review by Cal-IPC
	<i>Carduus pycnocephalus</i>	CA DFC Noxious weed C, CalEPPC (1999) pest plant B
	<i>Erodium cicutarium</i>	CA agricultural crop pest, under review by Cal-IPC
	<i>Genista monspessulana</i>	CA DFC Noxious weed C, CalEPPC (1999) pest plant A-1
	<i>Lolium multiflorum</i>	CalEPPC (1999) annual grasses pest plant, CA agricultural crop
pest	<i>Vulpia myuros</i>	under review by Cal-IPC
	Plaskett Unit	
	<i>Genista monspessulana</i>	CA DFC Noxious weed C, CalEPPC (1999) pest plant A-1
	Pacific Valley Unit	
	<i>Anagallis arvensis</i>	CA agricultural crop pest
	<i>Avena barbata</i>	CalEPPC (1999) annual grasses pest plant
	<i>Briza maxima</i>	under review by Cal-IPC
	<i>Briza minor</i>	
	<i>Bromus diandrus</i>	CalEPPC (1999) annual grasses pest plant, CA agricultural crop
pest	<i>Bromus hordeaceus</i>	CA agricultural crop pest, under review by Cal-IPC CalEPPC (1999) note: disturbed areas, especially overgrazed
moist pasturelands	<i>Bromus madritensis</i> subsp. <i>rubens</i>	CalEPPC (1999) pest plant A-2, CA agriculture pest
	<i>Carduus pycnocephalus</i>	CA DFC Noxious weed C, CalEPPC (1999) pest plant B
	<i>Carpobrotus chilensis</i>	under review by Cal-IPC
	<i>Cirsium vulgare</i>	CalEPPC (1999) pest plant B
	<i>Convolvulus arvensis</i>	under review by Cal-IPC
	<i>Cortaderia jubata</i>	CalEPPC (1999) pest plant A-1
	<i>Erodium cicutarium</i>	CA agricultural crop pest, under review by Cal-IPC
	<i>Festuca arundinacea</i>	CalEPPC (1999) pest plant B
	<i>Geranium dissectum</i>	under review by Cal-IPC
	<i>Geranium retrorsum</i>	under review by Cal-IPC
	<i>Hordeum murinum</i> subsp. <i>leporinum</i>	under review by Cal-IPC
	<i>Hypochaeris radiata</i>	under review by Cal-IPC
	<i>Lolium multiflorum</i>	CalEPPC (1999) annual grasses pest plant, CA agricultural crop
pest	<i>Lolium perenne</i>	
	<i>Medicago polymorpha</i>	CalEPPC (1999) note: grasslands, moist sites: mainly restricted to disturbed areas
	<i>Pennisetum clandestinum</i>	USDA Federal Noxious Weed, CA DFC Noxious weed C, CalEPPC (1999) need more information, under review by Cal-IPC
	<i>Phalaris aquatica</i>	CalEPPC (1999) pest plant B
	<i>Phalaris canariensis</i>	CA agricultural crop pest

<i>Plantago lanceolata</i>	CA agricultural crop pest, under review by Cal-IPC
<i>Raphanus raphanistrum</i>	CA agricultural crop pest
<i>Rumex acetosella</i>	CA agricultural crop pest, under review by Cal-IPC
<i>Rumex crispus</i>	under review by Cal-IPC
<i>Rumex pulcher</i>	
<i>Silybum marianum</i>	CA agricultural crop pest, under review by Cal-IPC
<i>Sonchus asper</i>	under review by Cal-IPC
<i>Vulpia myuros</i>	under review by Cal-IPC

Kozy Kove [Cozy Cove Ranch, Rocky Cove] Allotment

<i>Aira caryophylla</i>	under review by Cal-IPC
<i>Anagallis arvensis</i>	CA agricultural crop pest
<i>Avena barbata</i>	CalEPPC (1999) annual grasses pest plant
<i>Brachypodium distadion</i>	CalEPPC (1999) annual grasses pest plant
<i>Cortaderia jubata</i>	CalEPPC (1999) pest plant A-1
<i>Gastridium ventricosum</i>	
<i>Gnaphaleum luteo-album</i>	
<i>Hirschfeldia incana</i>	CalEPPC (1999) need more information, under review by Cal-IPC
IPC <i>Hordeum murinum</i> subsp. <i>leporinum</i>	under review by Cal-IPC
<i>Hypochaeris glabra</i>	under review by Cal-IPC
<i>Lamarckia aurea</i>	
pest <i>Lolium multiflorum</i>	CalEPPC (1999) annual grasses pest plant, CA agricultural crop
<i>Lythrum hissipifolia</i>	under review by Cal-IPC
<i>Melilotus indicus</i>	under review by Cal-IPC
<i>Pennisetum clandestinum</i>	USDA Federal Noxious Weed, CA DFC Noxious weed C
<i>Plantago lanceolata</i>	CA agricultural crop pest, under review by Cal-IPC
<i>Polypogon interruptus</i>	
<i>Polypogon monspeliensis</i>	under review by Cal-IPC
<i>Sonchus asper</i>	under review by Cal-IPC
<i>Vulpia myuros</i>	under review by Cal-IPC

Salmon Creek Allotment

None listed in any document provided

San Carpoforo Allotment

<u>San Carpoforo</u>	
<i>Aira caryophylla</i>	under review by Cal-IPC
pest <i>Avena fatua</i>	CalEPPC (1999) annual grasses pest plant, CA agricultural crop

	<i>Brachypodium distadyon</i>	CalEPPC (1999) annual grasses pest plant
pest	<i>Bromus diandrus</i>	CalEPPC (1999) annual grasses pest plant, CA agricultural crop
	<i>Bromus hordeaceus</i>	CA agricultural crop pest, under review by Cal-IPC
	<i>Centaurea melitensis</i>	CalEPPC (1999) pest plant B
pest	<i>Lolium multiflorum</i>	CalEPPC (1999) annual grasses pest plant, CA agricultural crop
	<i>Vulpia myuros</i>	under review by Cal-IPC
	Sea Vista Ranch	
	<i>Centaurea melitensis</i>	CalEPPC (1999) pest plant B
	<i>Cortaderia jubata/ Cortaderia selloana</i>	CalEPPC (1999) pest plant A-1
	<i>Delairea odorata</i>	CalEPPC (1999) pest plant A-1
	Sur Sur Ranch	
	<i>Anagallis arvensis</i>	CA agricultural crop pest
pest	<i>Avena fatua</i>	CalEPPC (1999) annual grasses pest plant, CA agricultural crop
	<i>Brachypodium distadyon</i>	CalEPPC (1999) annual grasses pest plant
pest	<i>Bromus diandrus</i>	CalEPPC (1999) annual grasses pest plant, CA agricultural crop
	<i>Bromus hordeaceus</i>	CA agricultural crop pest, under review by Cal-IPC
	<i>Bromus madritensis</i> subsp. <i>rubens</i>	CalEPPC (1999) pest plant A-2, CA agriculture pest
	<i>Centaurea melitensis</i>	CalEPPC (1999) pest plant B
	<i>Cortaderia jubata/ Cortaderia selloana</i>	CalEPPC (1999) pest plant A-1
	<i>Delairea odorata</i>	CalEPPC (1999) pest plant A-1
pest	<i>Lolium multiflorum</i>	CalEPPC (1999) annual grasses pest plant, CA agricultural crop
	<i>Medicago polymorpha</i>	CA agricultural crop pest, under review by Cal-IPC
	<i>Vulpia myuros</i>	under review by Cal-IPC

Appendix B.

IMPACTS OF LIVESTOCK and MANAGEMENT

The impact of herbivores on plants is a predator/prey interaction. Herbivory is a natural part of all terrestrial ecosystems. However, herbivore species differ greatly in behavior and impacts, and there are no simple substitutions (Painter 1995). Terrestrial herbivores can range in size from single cells to elephants (Billings 1970). Grasshoppers have different effects than aphids, sheep differ from cattle, and the impacts of deermice and deer are quite different.

Although the prey is often not killed by the first injury, all impacts are cumulative and even a single defoliation can have significant negative impacts. The impacts of livestock on plants vary, depending on animal species, numbers, and management. Individual plants can be impacted directly, by defoliation, pull-up, breakage and trampling, etc., or indirectly, by animal-induced changes in habitat (e.g., damage to soil, biological soil crusts, changes in microclimate, nutrient availability), changes in competitive relationships among plants, etc.

Because the ecological costs of livestock predation in have been clearly documented (e.g., Belsky and Blumenthal 1995, Donahue 1999, Fleischner 1994, Gillis 1991, Jones 2001, Mack and Thompson 1982, Milton et al. 1994, Painter 1995, using information garnered from reviewing published peer-reviewed research) and citations therein), advocates of public-lands livestock grazing must be able to demonstrate that low-impact management and ecosystem sustainability are possible, on the basis of careful use of the best available science. They must be able to demonstrate how ecological costs can be minimized. Alien taxa (including domestic livestock) must be treated as a significant ecological stress, and negative impacts on native plants and animals, on soils and soil organisms and on all other aspects of impacted ecosystems must be anticipated and minimized. This can only be done if management decisions are made based on knowledge of the impacted flora, fauna, and ecosystems, and a management program firmly grounded in the best available science, not unsubstantiated opinions, misunderstanding, and misinformation.

In his paper in a Forest Service symposium on using vegetation classification in resource management, Schlatterer (1989) pointed out that the same standards will probably be required for all management prescriptions as were applied by the 9th Circuit Court of Appeals to water quality: that it was not good enough that procedures complied with standards for best management practices, but rather that the Forest Service must be able to guarantee, in advance, that predicted conditions can be met. Schlatterer felt that, at some point, all Forest Service management personnel will be required to predict the consequences of all management actions, to prove that long-term productivity will not be impaired, and to provide a measure of how confident personnel are in those predictions. Using Schlatterer's standards, how willing would Los Padres National Forest personnel to 'guarantee' the predicted results?

The substantial literature discussing negative impacts of domestic livestock is greatly under-discussed in the EAs. The discussion of impacts to vegetation does not mention most of the commonly recognized negative impacts (e.g., those elucidated in such publications as Fleischner 1994, Mack and Thompson 1982, Milton et al. 1994, Painter 1995, and citations therein).

Ecological costs of livestock impacts can be high (Fleischner 1994) and the threats to the native

flora multidimensional (Painter 1995). Therefore, management plan that is conservative (errs in the direction of recommending levels of plant consumption that would constitute under-utilization of plant resources in a resource-extraction-based plan) is preferable to one that errs in the direction of excessive predation on native plant taxa (even if total forage would be under-utilized).

According to Stephenson and Calcorone (1999), the ecological changes most commonly attributed to livestock within their study area (which included Los Padres National Forest) were declines in the condition of riparian, oak woodland, grassland, and meadow habitats. Livestock have been implicated in reduced tree regeneration, substantial reductions in vegetative cover, stream bank destabilization, water quality degradation, and spread of alien weedy plants.

LIVESTOCK BEHAVIOR (particularly as related to 'resource utilization' and livestock management)

When water is available at a few scattered points, these points become the foci of animal activities and impacts (Andrew 1988), e.g., accumulation of feces, density of trails, soil compaction, damage to biological soil crust, amount of bare soil, degree of herbage defoliation, etc. Cattle will often excessively consume less preferred plant resources close to water rather than travel long distances to more preferred plant resources. Concentric rings of impact are usually found around watering points, with impact decreasing with increasing distance from water (Vallentine 1990). The 'optimum foraging area' for cattle is an approximate circle with a radius generally not more than 0.8 km (0.5 miles) from water and a maximum outer limit of 1.6 km (1 mile) (Stuth 1991). Areas more than 1.6 km from perennial water should be excluded from calculations of 'available' plant resources for livestock.

Cattle consistently seek shade when the temperature exceeds 29^o C (85^o F) and need protection during inclement weather (Vallentine 1990). In the absence of adequate tree cover, the only available cover may be from cliff-faces and stream banks. This increases livestock impact to these areas, especially in riparian areas.

In general, cattle avoid steep slopes, preferentially using more accessible areas (Ganskopp and Vavra 1987, Vallentine 1990). Recommended reductions in estimations of 'available' plant resources related to slope are (1) no reduction for 0–10% slopes, (2) 30% reduction for 11–30% slopes, (3) 50% reduction for 31–60% slopes, (4) 100% reduction > 60% (Holechek 1988). All areas in the allotments with slopes > 60% should be excluded from estimations of 'available' plant resources and grazing capacity, and appropriate reductions in 'available' plant resource estimations made for areas with slopes > 10%.

In addition to areas too far from water and cover or too steep to be primary use areas for livestock, all areas containing habitat for rare taxa or taxa of concern should be excluded from 'available' plant resource calculations.

Supplemental nutrients (molasses and salt/mineral blocks) are needed when the 'forage' base fails in quantity and/or quality to meet the animals' physiological requirements (Huston and Pinchak 1991), an indication that plant resources are not adequate to support current livestock numbers (i.e., 'overstocked').

Salt and other supplements can be used to alter livestock movement (Heady and Child 1994, Vallentine 1990). However, supplement placement alone cannot 'cure' serious distribution problems and is frequently not sufficient to override the attraction of open water, preferred foods, favorable terrain, or protective cover nor to alleviate heavy feeding and trampling at watering points (Vallentine 1990). Vallentine (1990) recommended that, in large pastures [as are most on SRI], supplements should be at least 1/3 mile from water and that locations be changed when the immediate area has been grazed.

NATURAL VEGETATION

Alien-annual-dominated grasslands are not a natural plant community, but rather represent a type conversion from native community types. Only in Hawaii have native taxa been obliterated to the extent they have in the alien-annual-dominated grasslands in California (Loope 1992). Alien-annual-dominated grasslands in California are anthropogenic in origin, the result of disturbance related to European-American settlement (Baker 1973, Biswell 1956, Holland and Keil 1995, Jackson 1985, Minnich 1980, Schoenherr 1992). It is the general opinion that the transformation of native plant communities into alien-annual-dominated grasslands is largely related to excessive livestock predation.

Alien-annual-dominated grasslands should not be considered a desirable plant community. Instead, sites now dominated by alien annual grasses should be classified by probable natural vegetation and trend analyzed against the natural community.

In California, including the Coast Ranges, most of what now primarily covered by non-native annual grasses historically was chaparral, scrubland, or oak woodland (Hamilton 1997).

Calloway and Davis (1993) looked at the dynamics of shifting mosaics in disturbed and undisturbed central California coastal landscapes. In unburned plots without livestock, transition from grassland to coastal-sage scrub was 0.69% per year, from coastal-sage scrub to oak woodland was 0.30% per year, and from oak woodland to grassland was 0.08% per year. These rates indicate that, in landscape dominated by these community types, vegetation patterns may be dynamic. In burned plots, transition of coastal-sage scrub to grassland was greater. In burned plots without livestock and unburned plots with livestock, transition rates were lower, except conversion of oak woodland to grassland.

IMPORTANCE OF HERBIVORE HISTORY

Herbivory is a natural part of most (if not all) terrestrial ecosystems. However, not all herbivory is equivalent and activities of different species of herbivores produce very different effects.

Not all grasses evolved with large ungulate grazers, and not all grasses are equally grazing tolerant (Baker 1978, Mack and Thompson 1982, Bock and Bock 1993, Painter 1995).

For thousands of years prior to the arrival of livestock, larger grazers were sparse in California (Baker 1978, McDonald 1981, Wagner 1989, Painter 1995). There have never been modern plains bison (a grazer) in what is now California. The extinct prehistoric bison were browsers or browser/grazers and probably did not congregate in large herds. Established ranges of Roosevelt elk,

tule elk, and Rocky Mountain elk did not include the central coast. Thus, there is no evidence for large-bodied herbivores in the area before the introduction of cattle. The native deer are much smaller and have a very different diet.

The introduction of domestic livestock added a new type of perturbation to western (including California) ecosystems, e.g., heavy native plant predation and heavy trampling (Mack and Thompson 1982, Holland and Keil 1995, Schiffman 1997, Belsky and Gelbard 2000).

IMPACTS TO SOILS

Intensively grazing and trampling can cause a reduction in plant and litter cover, can reduce infiltration of water, increase runoff, erosion, and spatial arrangement of nutrients (Milton et al. 1994).

Three types of water erosion affect rangelands: gully, stream bank, and sheet-rill. Sheet-rill erosion is often unnoticed, but is capable of reducing soil productivity and causing significant soil loss to uplands (Heady and Child 1994, Rangeland Reform '94). Wind erosion can be a problem along trails or on disturbed surfaces (Rangeland Reform). Heady and Child (1994) point out that shrubs can be important in reducing soil loss to wind.

TERRACETTES and LIVESTOCK TRAILS

Terracettes are step-like microforms that are frequent features of steep slopes around the world (Klein 1987). Animals are at least responsible for accelerated terracette genesis, providing the slope materials are suitable.

In California, terracettes probably develop as a response to livestock trampling on steep, fundamentally unstable slopes (Klein 1987). Probably terracettes are formed and maintained when soils are in a wet, plastic state (Higgins 1982). After terracettes are developed, they may in turn promote development of soil fractures and shallow failures by altering the subsurface hydrologic regime (Higgins 1982).

Animal trampling contributes substantially, but terracette formation also involves complex interactions between topography, soil and vegetation factors (Klein 1987).

Cattle prefer to walk on flat ground, avoiding tussocks and other obstacles (Balph and Malecheck 1985, Klein 1987). Where fine soil particles creep down slope and accumulate behind obstructions, microslope inflections develop (Klein 1987). Grazing animals exploit these slope breaks. Once these paths are initiated, they then may be compacted by repeated trampling.

Distinct stock trails have clear impacts on soils (Klein 1987). Trails tend to retain greater surface moisture than adjacent, steeper slopes. Permeability of the surface 10 cm of soil may be greatly reduced. Degradation of surface structure by trampling fosters xeric moisture regimes and alters the pasture's botanical composition.

Trampling appears to hasten failure of the soil mass in areas where hillsides have been compacted from repeated use as access routes upslope (Klein 1987). Terracettes developed on gentler slopes appear to be more stable than terracettes on steeper slopes. Relatively gentle terracette slopes display little evidence of mass movement, but terracettes on very steep slopes occur commonly, along side large rotational slips, shallow soil slides, and theater-headed gullies.

MYCORRHIZAE

Belowground biomass is usually ignored, largely because aboveground phenomena are visible and relatively easy to study (what Fitter (1989) called the "weather forecast" syndrome: forecasts always are most detailed for areas nearest the forecaster). However, belowground biomass may constitute 85% of total community biomass, and a significant component of this belowground ecosystem can be mycorrhizal associations (Doerr et al. 1984).

The presence of mycorrhizae in grasslands was documented as early as 1929 (Reece and Bonham 1978).

Mycorrhizal associations are present in most plant species, although weedy, ruderal, and colonizing species may be facultatively mycorrhizal or nonmycorrhizal (Reece and Bonham 1978, Pendleton and Smith 1983, Doerr et al. 1984, Wicklow-Howard 1994). Mycorrhizal associations frequently occur in environments where water and nutrients may be limiting (Slankis 1974, St. John and Coleman 1984). In some semi-arid taxa, most or all dominant plant species may be mycorrhizal (Reeves et al. 1979, St. John and Coleman 1983, Wicklow-Howard 1994), with >90% of root length can be colonized (Wicker-Howard 1994). Fungal hyphae extending into the soil serve as extensions of root systems and are physiologically and geometrically more effect absorption organs than the roots themselves (Bethlenfalvay et al. 1984). In oak woodlands, fungal hyphae can extend out several times the canopy width (D. DesJardins, pers. comm.).

The ecological importance of mycorrhizae in arid and semi-arid habitats appears to be related to acquisition of water and nutrient resources (e.g., Allen et al. 1981, Allen and Allen 1986, Dickman et al. 1984, Hetrick et al. 1989, and citations therein). Mycorrhizal associations may strongly influence plant competitive abilities, plant species success, community composition, and succession (Miller 1979, Moorman and Reeves 1979, Reeves et al. 1979, Koske and Halvorson 1981, St. John and Coleman 1983).

There is limited information available about impacts of livestock to mycorrhizal associations.

Grazing generally reduces root biomass (Biswell and Weaver 1933, Weinmann (1948, Crider 1955, Baker 1957, Weaver 1958, Ellison 1960, May 1960, Jameson 1963, Reece and Bonham 1978, Santos and Trilica 1978, Harradine and Whalley 1981, Stanton 1983, Ingham and Detling 1984, Richards 1984, Holland and Detling 1990, Painter and Belsky 1993, Engel et al. 1998), which changes root/shoot ratios and reduces root colonization (Bethlenfalvay et al. 1985).

The resultant reduced nutrient uptake could influence competition with non- or facultatively mycorrhizal taxa (e.g., weeds). In severely disturbed areas, nonmycorrhizal taxa (e.g., Russian thistle) may have a competitive advantage over mycorrhizal taxa (Reeves et al. 1979). Bethlenfalvay and Dakessian (1984) reported a significant shift in floristic composition and density of mycorrhizal plant species, as well as a decrease in fungal colonization of grazed plants.

Bethlenfalvay et al. (1985) found that severe grazing significantly decreased numbers of mycorrhizal fungal spores. This could reduce or inhibit colonization of seedlings, giving an advantage

to non- or facultatively mycorrhizal taxa. Reeves et al. (1979) suggested that recovery of disturbed areas may be inhibited by lack of mycorrhizal fungi to infect seedlings.

In studies of other types of disturbances in arid and semi-arid habitats, it has been observed that these lands are normally invaded by either nonmycorrhizal or facultative mycorrhizal plant species, including many weedy species, e.g., alien annual grasses (Pendleton and Smith 1983, Doerr et al. 1984, Wicklow-Howard 1994). Success of these species further reduces propagules of mycorrhizal fungi (Wicklow-Howard 1994). Re-establishment of later successional taxa may be related to propagule density (Allen and Allen 1980). Thus, soil disturbance and management that removes or diminishes native species and promotes alien species may strongly negatively impact this essential component of the nutrient cycle (Wicklow-Howard 1994), which in turn may influence successful re-establishment of native taxa.

BIOLOGICAL SOIL CRUSTS

Biological (cryptobiotic, cryptogamic) soil crusts are important elements of arid and semi-arid ecosystems worldwide, representing over 70% of living cover in some of these systems (Belnap et al. 1994, Beymer and Klopatek 1992, St. Clair and Johansen 1993, Belnap et al. 2001). Biological crusts consist of eukaryotic algae, lichens, bryophytes, cyanobacteria, and fungi that live on or just below the soil surface (Beymer and Klopatek 1992, St. Clair and Johansen 1993, Belnap et al. 2001).

Land managers have been slow to include biological soil crusts in rangeland evaluations (Belnap et al. 2001).

In California, these crusts have been found in a number of types of chaparral communities and other open, dry upland habitats (Belnap et al. 2001).

Biological soil crusts are associated with increased organic matter, increased essential mineral elements, increased soil stability, increased soil moisture, reduced water runoff, enhanced germination and seedling establishment of many native plants, decreased germination of some large-seeded aliens, and increased survival of some native vascular plant taxa (Belnap 1994a,b, Belnap and Gardner 1993, Belnap et al. 1994, Beymer and Klopatek 1992, Brotherson et al. 1983, Harper and Marble 1988, Harper and Pendleton 1993, St. Clair and Johansen 1993, Webb and Wilshire 1983, Belnap et al. 2001). Biological soil crusts provide little fuel to carry fire and may act as refugia, slowing fire, decreasing its intensity, and contributing to the mosaic pattern of vegetation (Belnap et al. 2001).

In semiarid and arid ecosystems, biological soil crusts are involved in the operation of the system including energy flow, water cycling, and nutrient balance (Billings 1994). The presence of crusts on soils coastal California may be especially important, where a combination of highly erodible soils, steep slopes, and sparse vegetation may permit large amounts of water runoff and soil loss unless soil surfaces are protected. Biological soil crusts can mitigate these. Biological soil crusts play an important role in micro-structuring of soils, as well as influencing soil nutrient levels and status, and enhancing germination and establishment of vascular plants (Belnap 1994b, St. Clair et al. 1984, Harper and St. Clair 1985). Biological soil crusts also reduce wind and water erosion, hold otherwise loose material on steep slopes, increase water-holding capacity of sandy soils, and reduce water runoff. Cyanobacteria and cyanobacterial components of soil lichens fix atmospheric nitrogen, and are sometimes the dominant source for associated seed plants. Levels of at least 7 nutrients have been found to be higher in plants growing on crusted soils.

Trampling negatively affects the cohesion and coverage of crusts, especially when dry (Mack and Thompson 1982, Belnap 1994a,b, Belnap et al. 2001). There is a high probability that much of this essential ecosystem component has already been damaged or lost, so it is important that the analysis area be surveyed for remaining intact and semi-intact biological soil crusts and that these crusted soils be protected from additional damage.

High-intensity, short-duration grazing is deleterious to Biological soil crust cover and species richness (Johansen 1993, Belnap et al. 2001).

Trampling, compaction, and other disturbances caused by hooves of domestic livestock have negative impacts on soil crusts, especially during dry periods (Belnap and Gardner 1993, Beymer and Klopatek 1992, Harper and Marble 1990, St. Clair and Johansen 1993, Belnap et al. 2001). Both cover and species richness are reduced by livestock damage (Belnap et al. 2001). Grazing can reduce nitrogen fixation by as much as 95% (Belnap et al. 2001).

Recovery rates after damage have been found to often be very slow, possibly centuries for some components (e.g., lichens, mosses) may take centuries (Belnap 1994b, Belnap et al. 2001). Both cover and biomass of the biological soil crust has been found to be reduced on areas grazed by domestic livestock and exposed soil to increase (Beymer and Klopatek 1992, Brotherson et al. 1983). Significant correlations can exist between biological soil crust cover and the composition of vascular plant communities, so that damage can result in an altered vascular flora (Beymer and Klopatek 1992, Brotherson et al. 1983).

Invasive alien plants generally decrease biological crust cover and specie richness (Belnap et al. 2001).

IMPACTS ON PLANTS

There is no compelling evidence that herbivory is beneficial to impacted plants (e.g., see Ellison 1960, Caughley and Lawlor 1981, Belsky 1986, Crawley 1987, 1993).

"One cannot be very greatly impressed, after examining th[e] catalog of presumed contributions of grazing animals to the welfare of range vegetation, by the supporting evidence." (Ellison 1960)

"[T]he evidence of grazed plants' dependence on grazing animals is rather negative: the relation appears to be essentially one of parasitism by the animals." (Ellison 1960)

"[P]lant defenses attest the obvious: being eaten is usually a bad thing." (Caughley and Lawlor 1981)

"[N]o convincing evidence supports the theory that herbivory benefits grazed plants." (Belsky 1986)

"In an early review of the effects of grazing on rangeland species and communities, Ellison (1960) concluded that there was no evidence to support the claims that grazing benefits plants. In the last quarter century, there have been more reports claiming the benefits of grazing to plants. However, other than for plants grown under artificial conditions, no new evidence has been reported that renders Ellison's conclusion any less accurate today." (Belsky 1986)

"[W]hen a range of...studies have been reported, and the jury returns from its deliberations, my

money is on a guilty verdict: herbivory is bad for the plants that get eaten and good for the ones that don't." (Crawley 1993)

"It is easy to make up stories...where the Darwinian fitness of a plant might be increased by herbivory. ...However a major body of life-history theory is built on the sensible alternative, supported by a wealth of empirical evidence, that herbivory is deleterious to the individual plants that suffer it; it is often highly deleterious, sometimes much less deleterious, but generally harmful nonetheless." (Crawley 1993)

Even light grazing caused significant change in *Nassella* stands (Hamilton 1997).

Cattle feces, dropped at the rate of 0.97 m²/bovine/day (354 m²/bovine/year), are slow to decompose in arid and semi-arid climates (Heady and Child 1994). In California, like much of the West, cattle fecal decomposers are limited or missing, so dung is not readily recycled (Mack and Thompson 1982, Anderson et al. 1984). Anderson et al. (1984) found that feces can require several years to decompose. Because feces can smother plants beneath them (Anderson et al. 1984, Heady and Child 1994), feces accumulation can represent a significant plant biomass loss to the ecosystem.

Effects on roots

Despite what is said in the EAs, there is no compelling evidence that defoliation does not impair root production. Biswell and Weaver (1933), Weinmann (1948), Crider (1955), Baker (1957), Weaver (1958), Ellison (1960), May (1960), Jameson (1963), Reece and Bonham (1978), Santos and Trilica (1978), Harradine and Whalley (1981), Stanton (1983), Ingham and Detling (1984), Richards (1984), Holland and Detling (1990), Engel et al. (1998) all reported **significant reductions** in root production following defoliation.

Trampling can also damage roots (Watkins and Clements 1978, Belsky and Gelbard 2000).

OAKS

Quercus spp. are important indicators because livestock have been implicated in limited success in or the failure of many oak taxa to successfully regenerate, including *Q. douglasii* (blue oak), *Q. lobata* (valley oak), and *Q. wislizeni* (interior live oak) (Bosinger 1988, Duncan and Clawson 1980, Muick and Bartolome 1987, Pavlik et al. 1992, Rossi 1980, Swiecke and Barnhardt 1991, Stephenson and Calcarone 1999). In addition to facilitating the spread of competitive alien taxa, livestock also directly impact oaks by eating acorns, leaves, and young shoots. Livestock browsing is thought to suppress or kill many or most seedlings and saplings, as well as sometimes stressing older trees.

There have been an impressive number of studies of oaks and oak communities in California. Griffin et al. (1987) lists ca. 790, only 44 of which deal with seedling establishment or natural regeneration. Quite a few more studies have been published since this bibliography was compiled, including Borcher et al. (1989), Calloway and D'Antonio (1991), Pavlik et al. 1991, Calloway (1992).

Results of studies of effects of livestock on oak recruitment have been equivocal. However, as early as 1956, rancher and botanist Ernest Twisselman suggested that livestock grazing and alien annuals were both detrimental to oak recruitment (Pavlik et al. 1991). Certainly the problem is more complex than just livestock. However, one cannot ignore known impacts of livestock, both direct (defoliation, consumption of acorns, rubbing damage, breakage & consumption of seedlings, etc.) and

indirect (soil compaction, damage to roots and mycorrhizae, increased alien plant taxa, decreased native plant understory, loss of nurse plants, etc.).

Alien plants (particularly alien annual grasses) can diminish water supplies to oak seedlings (Stephenson and Calcarone 1999).

Shrubs are known to play a role in seedling establishment for some oak taxa (Calloway and D'Antonio 1991).

Few studies of oak regeneration have followed recruitment of seedlings to sapling stage; fewer still have followed recruitment to sexual maturity.

Feral pigs are becoming an increase threat to the plants and vegetation in the Santa Lucias. Feral pigs destroy vegetation and leaf litter cover, alter soil characteristics, and facilitate alien plant naturalization (Schiffman 1997). The EAs do not discuss feral pigs, interactions between feral pigs and domestic livestock, nor the potential for synergistic impacts. The combination of feral pigs and domestic livestock has the potential of seriously negatively impacting oaks.

In oak woodlands, mycorrhizal fungal hyphae can extend outward several times the canopy width (D. DesJardins, pers. comm.). Both livestock and feral pigs can negatively impact these essential fungi.

MANAGEMENT and MONITORING

FORAGE

Both quantity and quality need to be included in estimations of 'available' plant resources (Vallentine 1990), therefore, monitoring needs to be plant-taxon specific. Often, many of the plant taxa that have been included in 'forage' estimates are unpalatable, are palatable only part of the year, or are to some degree hazardous or toxic. Palatability of many plant taxa (particularly rare taxa) can only be determined through observation of livestock use or laboratory analysis. However, information on palatability of some taxa frequently found at the monitoring sites is easily obtainable (e.g., Fuller and McClintock 1986, Stubbendieck et al. 1991).

FORAGE QUALITY

Many grasses contain a number of secondary chemicals that can diminish forage quality and palatability. Included in these are a number of genera that may be included in forage in the allotments. Redak (1987) discussed grasses containing alkaloids, cyanogenic glycosides, benzoxazinones, phenolics, polyphenolics (tannins), proteinase inhibitors, terpenes, plant hormones, and silica. Grass genera with species containing alkaloids include *Arundo*, *Avena*, *Bromus*, *Chloris*, *Dactylis*, *Echinochloa*, *Festuca*, *Hordeum*, *Lolium*, *Muehlenbergia*, *Panicum*, *Phalaris*, *Phragmites*, *Poa*. Grass genera with species shown to be cyanogenic include *Agrostis*, *Avena*, *Briza*, *Cortaderia*, *Festuca*, *Glyceria*, *Hordeum*, *Lolium*, *Panicum*, *Poa*. Grass genera with species containing phenolics include *Avena*, *Bromus*. Grass genera with species containing polyphenolics (tannins) include *Panicum*. Proteinase inhibitors have been found in appreciable amounts in species of *Hordeum*.

Stubbendieck et al. (1991) point out that *Avena barbata* is good during winter and spring, but of low quality and palatability after mature. *Avena fatua* is good to excellent until florets are shed and

herbage dies. *Bromus diandrus* is excellent in seedling stage and during vigorous vegetative growth, poor to fair at flowering, and worthless at maturity. *Bromus hordeaceus* is excellent to good while immature, good to fair when mature. *Nassella pulchra* is good to fair forage, but the callus of floret may cause livestock injury.

Fuller and McClintock (1986) point out the species of *Bromus*, *Hordeum*, and *Stipa* (including *Nassella*) can cause mechanical injury to livestock. In addition, they also point out that many grasses have been found to cause illness or death in livestock, including a number of none native grasses that have been found on or near the allotments: *Cynodon dactylon*, *Festuca arundinacea*, *Glyceria striata*, *Lolium perenne*, *Phalaris minor*.

AVAILABLE FORAGE

If sufficient herbaceous forage is not available, nearly all shrub and tree taxa are utilized by livestock at some time (Merrill 1972). *Artemisia*, *Quercus*, *Rhus*, and *Salix* spp. will be eaten if preferred food sources are unavailable (Dietz 1972, Merrill 1972, Stubbendieck et al. 1992). *Quercus* spp. are important indicators because livestock have been implicated in limited success in or the failure of many oak species to successfully regenerate (Bosinger 1988, Duncan and Clawson 1980, Muick and Bartolome 1987, Pavlik et al. 1992, Rossi 1980, Swiecke and Barnhardt 1991). Livestock also directly impact oaks by eating acorns, leaves, and young shoots. Livestock browsing is thought to suppress or kill many or most seedlings and saplings, as well as sometimes stressing older trees. *Salix* spp. often suppressed or lost from heavily utilized riparian areas, but may be indicators of recovery (Chaney et al. 1990). Some shrubs and trees appear to be very unpalatable and poor forage. *Pinus* spp. are considered "worthless" as livestock forage, and some species can cause abortion (Stubbendieck et al. 1992). *Arctostaphylos* spp. should be included as indicator species because they are relatively unpalatable and not readily eaten by livestock (Stubbendieck et al. 1992, USDA 1937, Van Vuren and Coblenz 1987). The leaves, stems and seeds may contain toxic quantities of hydrocyanic acid of *Prunus virginiana* (Stubbendieck et al. 1992).

Distance from water, steepness of slopes, and availability of shelter are all important in determining how 'available' forage actual is.

According to Andrew (1988), when water is available at only a few scattered points, these become the main foci of animal activities and impacts (e.g., accumulation of livestock feces, density of livestock trails, soil compaction, damage to the cryptobiotic crust, amount of bare soil, degree of herbage defoliation, etc.). Concentric rings of utilization are usually found around watering points, with utilization decreasing as distance from water increases (Vallentine 1990). Cattle will often excessively utilize less preferred forage close to water rather than travel long distances to better forage.

Stuth (1991) defined optimum foraging area for cattle as an approximate circle with a radius generally not more than 0.8 km (0.5 miles) from water and a maximum outer limit of 1.6 km (1 mile).

Another important factor is steepness of the slopes, particularly those between the preferred riparian areas and other forage. Holechek (1988) recommends the following assumptions be used for calculation of utilization: no reduction for 0–10% slopes, 30% reduction for 11–30% slopes, 50% reduction for 31–60% slopes, and 100% reduction for slopes over 60%. Cattle avoid steep slopes and preferentially use more accessible areas (Ganskoff and Vavra 1987, Heady and Cook 1994, Vallentine

1990), greatly increasing impacts on flatter areas, especially those near water or shelter.

The need by livestock for shelter also needs to be considered. Vallentine (1990) pointed out that cattle consistently seek shade when temperatures exceed 85° F and need protection during inclement weather. Newly burned areas and other areas with limited sources of shelter often will not be used during warmer periods or inclement weather, increasing impact on areas with trees, sheltering banks and cliffs, etc.

MONITORING

Objective, quantifiable monitoring is essential for effective management (Christensen et al. 1996).

Because of the documented ecological costs associated with livestock herbivory, if monitoring is not being done frequently and properly, livestock should be excluded. Therefore it should be in the best interest of the permittees to insist that monitoring be done on schedule by qualified personnel. Evidence of subjective monitoring should carry a penalty, one that would make the permittee insist on better monitoring (e.g., exclusion of livestock or severe reductions in stocking rates to balance possible bias producing underestimations of utilization). Permittee self-monitoring sounds attractive to the Forest Service, but it only works if there are objective checks in place and there have been no problems with the permittee in the past. Self-monitoring should never be allowed if there have been problems or conflicts.

BOTANICAL RESOURCES (e.g., forage, vegetation, plant taxa) MONITORING

Monitoring livestock 'utilization' is important to determine if stocking rates are valid and if resources are being protected adequately. Information concerning number and type of livestock, season of use, duration and frequency, spatial distribution, etc., is required. Decisions on these should be consistent with resource objectives and based on established ecological principles.

There are three general techniques for measuring impact: residual dry matter, stubble height, and proportion of standing crop removed (level of utilization). Most utilization guidelines are based on vegetation type, as well as season and duration of use, with guidelines for reduction in utilization based on topography, distance from water, availability of shade, etc. Of the three techniques, residual dry matter is the most prone to error.

According to Jasmer and Holechek (1984), for California annual rangelands, the absolute amount and distribution of forage residue is more important than the percentage of the forage crop that remains. However, the annual grasslands are not a natural vegetation type and should not be a management goal. The best monitoring technique probably would be a combination of stubble height and level of utilization. This would require that non-grazed reference exclosures be established, to allow undamaged plant heights to be determined.

No single monitoring tool can answer a broad range of management questions (Clary and Leininger 2000). From a biological standpoint, level of utilization, stubble height, and residual dry matter are all important. Sauer (1978) found that standing dead material influenced grass productivity; plants that had the dead material removed in January were found to produce less green material and

have shorter leaves than plants that entered spring growth with dead material intact. A number of researchers (e.g., Ganskopp et al. 1993, Johnson and Nichols 1982, O'Connor 1991, Sheppard 1919, Weaver 1954, Williams 1897) reported that for many perennial grass species (particularly bunchgrass species) standing dead functioned as a protection from overutilization.

Some authors suggest setting utilization guidelines based on stubble height (Vallentine 1990). Recommendations can vary greatly: Pearson (1950) recommended a stubble height of 6 inches, but Talbot (1937) felt that a stubble height of 6 inches represented excessive utilization. Plant species have differing tolerance of close grazing (even on the same site), and a suitable minimum stubble height for one species may severely stress another. Therefore, stubble heights must be set for minimizing impacts to the most susceptible species or must vary by species.

Because RDM and stubble heights are monitoring tools rather than predictive tools, Vallentine (1990) recommend that a **proper use factor** (converting standing crop to grazing capacity based on the portion that is usable forage), adjusted for slope and for distance from water and shelter, be used to calculate stocking rates, rather than RDM. Vallentine (1990) suggested 50-60% as a proper use factor for Mediterranean annual-type grasslands, with use of the lower value for areas used during the dormant season for season-long continuous grazing. However, Mediterranean annual-type grasslands are not a natural vegetation type (and therefore are not an appropriate objective for vegetation management). Therefore, public lands should be managed (and utilization set) for the potential **natural** vegetation. Vallentine recommends a proper use factor of only 30-40% for oak woodland and chaparral and 45-55% for western foothill vegetation (again using the lower value for areas continuously grazed or grazed during the dormant season). Holechek et al. (1995) recommended 40% or less utilization of 'key' forage species in coniferous forests. Ratliff et al. (1987) recommended utilization limits of 20-35% for wet and dry meadows and 35-45% for moist meadows. All of these values depend on ecological condition and management goals. A maximum allowable utilization for 'key' perennial species of 20% of current year's growth was set for the Carrizo Plain Natural Area.

Since forage production in arid and semi-arid areas can vary by 500% and plant taxa respond differently to defoliation under stress, the same proportion of forage used has different impacts in wet and dry years (Vallentine 1990). Therefore, no single value is appropriate for all years, all vegetation types, and all plant taxa.

Levels of predation/utilization that is acceptable to LPNF and to other interested parties needs to be established for all plant taxa subject to livestock predation on the allotments. While 'severe utilization' (> 80%, Vallentine 1990) of alien annual grasses might be acceptable, no amount of predation is acceptable for 'sensitive' plant taxa.

A set of plant indicator ('key') species should be used for monitoring. These should be **native** species and should include several species from each community type. Each community indicator group should include (as applicable) trees, shrubs, forbs, and grasses, and should be selected to include those most sensitive to and/or preferred by livestock, and those only consumed under duress. Important food plants for a large array of wildlife should also be treated as indicator species, as well as plant species that have been found to be good indicators of ecosystem stability and all rare and endemic plant species, as well as species known to be limited by livestock herbivory and species that are indicative of 'endangered habitats', e.g., riparian woodlands and valley grasslands (Bowler 1990, Pavlik et al. 1991), or are considered rare (Skinner and Pavlik 1994). A larger number of native species should be on the list for composition of desired community composition than are necessary for

utilization monitoring, if the latter are chosen carefully.

Residual Dry Matter [RDM]

In a review of the monitoring plan for Santa Rosa Island (Bartolome and Clawson 1992), U.S. Fish and Wildlife Service pointed out that **measuring residual dry matter (RDM) is inadequate to monitor indicators of ecosystem health** (e.g., composition and diversity of species) and condition of rare plant taxa (Federal Register, Vol. 60 No. 142, 25 July 1995).

Any values set on annual production need to be carefully designed, since, according to Biondini et al. (1991), over-estimations of production are common. One monitoring technique based on production is residual dry matter (RDM). Not only is there a very real potential for over-estimating production but recommended levels can vary widely. According to Vallentine (1990), 500 lbs/acre was recommended by Hooper and Heady for Mediterranean annual-type grasslands, while Holechek recommended up to 1100 lbs/acre, and Jasmer and Holechek (1984) point out that from 500 to 2500 lbs/acre of residue are needed on California annual rangelands, depending on the site, to maintain forage production. Frost et al. (1990) recommends a minimum RDM for **annual** grasslands of approximately 400 lbs/acre for lower flat slopes, 600 lbs/acre for average gentle slopes, and 800 lbs/acre for steep upper slopes. Annual grasslands are not a native vegetation type, and these levels may be inappropriate for native vegetation. In fact, exclusively measuring RDM may be inappropriate. Most RDM monitoring regimes are designed to be used in alien-annual-dominated grasslands on privately owned ranches to maximize profit while minimizing impacts on forage production (e.g., Clawson 1990). RDM monitoring has limited predictive powers (Vallentine 1990). RDM is most effective when forage production is very low. The data do not provide information usable to explain why monitoring sites have RDM levels at or below recommended levels in average or above average years. Because RDM is rarely sorted by species, it provided little or no information of differential impacts, and no information concerning desired conditions or potential natural community.

Even as an estimation of 'forage', the RDM monitoring has significant shortcomings (Sellgren 1994a,b 1995b 1996), including the following: (1) It assumes pastures are homogeneous, and that there is uniform livestock predation on herbaceous plant biomass. (2) It therefore does not reflect amounts of plant biomass in areas with greater or less livestock predation than the sampling sites. (3) It treats all biomass collected as 'available forage', whether or not that material is palatable or being consumed.

The methods by which residual dry matter (RDM) is to be determined on the allotments is not described in the EAs, nor is any document cited. The EAs also do not provide important information about the placement of monitoring sites. This may be important because estimating production based on RDM assumes uniform utilization. If placement of monitoring sites is concentrated in areas receiving moderate impacts and neglects those areas receiving heavy impacts (adjacent to water sources) and those with reduced impact (steeper slopes), available forage may be over-estimated and actual utilization underestimated.

According to Biondini et al. (1991), over-estimations of production are relatively common (generally resulting in a positive bias and overestimations of forage production). Depending on the case, reported overestimates may be as much 700% too high, though more often they are in the 200–400% range.

WATER MONITORING

Water quality monitoring should include (1) fecal coliform analysis, (2) conductivity, (3) pH, (4) turbidity, and (5) macro-invertebrate community composition.

California Extension Service Rangeland Water Quality Management Program Fact Sheet No. 15 points out that water quality monitoring projects involve more than one type of monitoring, both short-term and long-term. Recommended short-term monitoring includes vegetation evaluation, climate records, and residual dry matter maps. Recommended long-term monitoring includes trend transects, trend photo points, and aerial photos.

California Extension Service Rangeland Water Quality Management Program Fact Sheet No. 22 provides a basic watershed evaluation checklist for principal vegetation cover, primary land uses, primary beneficial uses of water, potential water pollutants, and general watershed condition.

CULTURAL SITES MONITORING

Impacts to cultural resources are to be monitored. Livestock can negatively impact archeological and ethnographic resources, prehistoric and historic structures, and cultural landscapes. Livestock activities should be restricted or eliminated if a determination is made that impacts to cultural resources are occurring. Quantitative measurements are possible, and photographic monitoring can document changes and damage. Parameters used to determine livestock impacts on cultural resources include, but are not limited to (1) structure decay by rubbing and trampling, (2) breakage of artifacts through trampling, (3) rock art or historic monument degradation due to rubbing, (4) consumption of historically or ethnographically significant vegetation.

Livestock trampling on or otherwise disturbing surface archeological resources, displacing, damaging, causing the disappearance of small artifacts, and destroying spatial integrity is a growing area of concern among archeologists working in areas with livestock (Van Vuren 1982, US Army 1990).

ANIMAL UNIT MONTHS [AUMs] and CAPACITY FOR PRIMARY RANGE

The EAs do not provide sources for the AU equivalents used for calculating the approximate numbers of AUMs being allocated for each allotment. As can be seen in the table of AU equivalents below, these can vary markedly among sources. Without a cited source, one must assume that the values are the personal opinions of the EA preparers. Unsubstantiated personal opinions not an acceptable basis for management decisions.

Grazing capacity generally is considered to the average number of animals that a particular site can sustain over time (Galt 2000). The EAs do not provide information on what total capacity means in the EAs nor how total capacity for primary range was determined. Does this represent minimum capacity, maximum capacity, or average capacity? Was it based on residual dry matter data? Was all herbaceous vegetation included, or only appropriate forage plants? Were woody plants included? What is the variation among years, especially the extremes? Without these types of data and/or an accessible source cited, one must assume that the values are the personal opinions of the EA preparers. Unsubstantiated personal opinions not an acceptable basis for management decisions.

ANIMAL UNIT [AU] EQUIVALENTS

Calculated AU equivalents used in EAs

	Kind and class of animal	animal unit equivalents
Alder Creek	horses	1.25
Buckhorn	cattle	1.0
Cozy Cove Ranch	cattle	1.0
Gorda	cow/calf pairs	1.32
Salmon Creek	livestock	1.0
San Carpoforo	yearling cattle	0.75
Torre Canyon	?	?
Twitchell	?	?

Data from 2 recent major range management texts

	Kind and class of animal	animal unit equivalents
Vallentine (1990)	cow and calf pair	1.35
	mature cow, nonlactating (1000 lbs)	1.0
	pregnant heifer, nonlactating (10 mo. +)	1.0
	yearling (18-24 mo, 875 lbs average)	0.9
	yearling (15-18 mo, 750 lbs average)	0.8
	yearling (12-15 mo, 625 lbs average)	0.7
	draft horse (mature)	1.5
	saddle horse (mature)	1.25
	mule deer (mature)	0.23

Holechek, Pieper, Herbel (1995)	cattle (mature, 1000 lbs)	1.0
	cattle (yearling, 750 lbs)	0.75
	horses (1200 lbs)	1.80
	mule deer (150 lbs)	0.15

IMPACTS ON NUTRIENTS

On-going, cumulative nutrient losses are not considered EAs, although these may have significant negative impacts to ecosystems and the rare taxa in them. Severe decreases in nutrients and/or their availability to native taxa may result from livestock damage to both the biological soil crusts and mycorrhizal fungal hyphae in the soils.

Livestock herbivory always results in a net loss of nutrients, since livestock are exported rather than decomposing in place (Ellison 1960, Mack and Thompson 1982, Painter 1995). Nutrients are also lost through urine volatilization.

Cattle feces, dropped at the rate of 0.97 m²/bovine/day (354 m²/bovine/year), are slow to decompose in arid and semi-arid climates (Heady and Child 1994). In California, like much of the West, cattle fecal decomposers are limited or missing, so nutrients in dung are not readily recycled (Mack and Thompson 1982, Anderson et al. 1984). Anderson et al. (1984) found that feces can require several years to decompose. Because feces can smother plants beneath them (Anderson et al. 1984, Heady and Child 1994), feces accumulation can also represent a significant plant biomass loss to the ecosystem.

DUST

Until recently, the effects of dust on plant communities have been under-studied (Farmer 1993). Effects of industrial- and vehicle-generated dust on plant taxa and communities has been the focus most dust pollution research. A seldom considered but potentially important negative impact in arid and semi-arid environments is dust raised by domestic livestock. Substantial numbers of large animals moving across dry soil often raise considerable amounts of dust. Dust negatively affects plants in a number of ways, including reducing photosynthesis, respiration, and transpiration, allowing the penetration of phytotoxic pollutants, and inhibiting pollination (Farmer 1993). These and other negative impacts can lead to changes in community structure and composition. Both animals and vehicles belonging to the commercial livestock ranch/hunt operation are probably creating dust-related negative impacts, and the implications of this need to be discussed

IMPACTS ON AESTHETICS

Aesthetic concerns should be considered. How a resource looks can be important to the public.

Cattle feces, dropped at the rate of 0.97 m²/bovine/day (354 m²/bovine/year), are slow to decompose in arid and semi-arid climates (Heady and Child 1994). In California, like much of the West, cattle fecal decomposers are limited or missing, so dung is not readily recycled (Mack and Thompson 1982, Anderson et al. 1984). Anderson et al. (1984) found that feces can require several years to decompose. Such feces accumulation can be aesthetically unpleasant.

ALIEN PLANT TAXA (especially weeds and pest plants)

'Aliens' (non-native, non-indigenous, exotic) are those taxa occurring in an area in which they have not evolved since the last Ice Age and whose introduction or immigration was supported deliberately or involuntarily by human activities (Kowarik 1995).

Although the Forest Service has issued a policy on the management of aggressive invasive plant taxa (Schierenbeck 1995) and USDA Forest Services Southern California Mountains and Foothills Assessment (Stephenson and Calcarone 1999) extensively discussed the problems, the EAs limit discussion to a very small group of taxa. By restricting discussion to a few 'Noxious Weeds'. The EAs ignore some of the most damaging pest plants included on California Exotic Plant Pest Council's [CalEPPC] lists of Wildland Pest Plants [<http://www.caleppc.org/index.html>].

Invasive, biologically weedy alien plants are a form of biological pollution (Noss and Cooperrider 1994, Schiffman 1997). Alien pest plants have caused large-scale ecosystem changes, including altered fire and water cycles (Howald 1997).

Invasive alien plants not only decrease structural diversity of native vascular plant communities, but also decrease biological crust cover and species richness (Belnap et al. 2001).

'Weeds'

The term 'weed' is often casually used; however, to weed scientists and most other biologists, 'weeds' are not simply 'any plants growing where they are not wanted', which requires a value judgment by the observer (Holland and Keil 1995, Stuckey and Barkley 1993). An explanation of the differences between definitions of *weed* based on value judgments and definitions based on biological attributes can be found in Stuckey and Barkley (1993) and Holland and Keil (1995).

In a series of publications, H. G. Baker described the biological attributes of "an ideal weed" (Stuckey and Barkley 1993):

1. germination requirements fulfilled in many environments;
2. discontinuous germination (internally controlled) and great longevity of seeds;
3. rapid growth through vegetative phases to flowering;
4. continuous seed production for as long as growing conditions permit;
5. self-compatible, but not completely autogamous or apomictic;
6. when cross-pollinated, unspecialized visitors or windborne;
7. very high seed output in favorable environmental circumstances;
8. produces some seed in wide range of environmental conditions;
9. tolerant and plastic;
10. has adaptations for short- and long-range dispersal;
11. if perennial, has vigorous vegetative reproduction or regeneration from fragments;
12. if perennial, has brittleness, so not easily drawn from the ground;
13. has ability to compete interspecifically by special means (rosette, choking growth, allelochemicals).

Based on biological attributes, Holland and Keil (1995) describe *weeds* as species introduced by human activities to areas outside their natural range that aggressively invade stands of undisturbed native vegetation as well as areas that have been subjected to disturbance (particularly human-induced disturbance). This description does not place a value judgment on a species' economic impact or

aesthetic qualities.

Most biological weeds are flowering plants (Stuckey and Barkley 1993). There are biological weeds of all growth forms and many life-styles, from tiny annual herbs to trees.

McClintock (1987) divided naturalized alien plant taxa into three general groups:

1. persisting only locally where they derive benefits from cultivation (e.g., garden and lawn weeds, many agricultural weeds). An example of Group 1 garden or lawn weed is *Bellis perennis*.
2. occupy disturbed habitats (e.g., pasturelands, rangelands, vacant lots, roadsides, other waste areas). Most of the biologically weedy alien taxa in the allotments are in Group 2.
3. capable of invading areas of native vegetation. Examples of Group 3 taxa found in the area are *Ailanthus altissima*, *Arundo donax*, *Genista monspessulanus*, *Vinca major*.

One of the attributes of an 'ideal weed' is great longevity of seeds. Burnside et al. (1996) tested germination over 20 years in 41 taxa. Several alien taxa known on or near the allotments are among those reported as germinating after 12 years of burial: *Bromus tectorum*, *Chenopodium album*, *Echinochloa crus-galli*, *Rumex crispus*, *Salsola tragus*, *Tribulus terrestris*, *Verbascum thapsus*.

Noxious Weeds

'Noxious weed' is a legal term under California and federal noxious weed laws (see *The Jepson Manual*, p. 10), and the term should be reserved for those plant taxa that are legally so designated. *The Jepson Manual* provides this information (generally in the species description), which can also be obtained from appropriate state and federal agencies.

In California, 'Noxious Weeds' are rated according to the damage they cause to agriculture (McClintock 1987). By restricting discussion to 'Noxious Weeds', the EAs ignore serious pest plants included on CalEPPC's lists of Wildland Pests.

Rarely are entire genera or tribes designated as Noxious Weeds. It is therefore best if precise scientific names are used whenever noxious weeds are discussed.

Alien grasses as 'weeds'

Most of the common alien grasses fit the biological definition of 'weeds' (Holland and Keil 1995). Some are on CalEPPC's lists of Wildland Pest Plants [<http://www.caleppc.org/index.html>].

Stephenson and Calcarone (1999) point out that alien grasses account for the largest number (181 taxa) non-native plants in California. Among those they included in their discussion of "especially problematic" alien grasses are *Avena barbata*, *Avena fatua*, *Bromus madritensis* subsp. *rubens*, *Bromus tectorum*, *Bromus diandrus*, *Cortaderia selloana*, *Cortaderia jubata*, *Hordeum* spp., *Vulpia myuros*.

Most (possibly all) the alien annual grasses on the allotments are aggressive, biologically weedy invaders (e.g., see James 1995, McClintock 1987).

Invasion of alien annual plants into perennial plant communities can pose a long-term threat to biological soil crusts, because the crust-dominated interspace between perennial plants is often heavily invaded (Belnap et al. 2001).

Weeds and the problem with common names

The word *weed* is often part of common names; however, the name alone may prejudice some people against them (Holland and Keil 1995). Many (possibly most) of these are neither economically undesirable nor aggressively colonizing, e.g., most ‘milkweeds’, ‘locoweeds’, and ‘tarweeds’ (Holland and Keil 1995). As a result, the CNPS *Inventory* (Skinner and Pavlik 1994) does not use common names that imply weediness (Holland and Keil 1995).

GRAZING AND PROLIFERATION OF ALIEN PLANTS (including ‘weeds’ and pest plants)

Livestock grazing has been found to be a factor in the proliferation of alien plants by

- 1 transporting seeds into uninfested sites on their coats, feet, and in their guts (Lacey 1987, Schiffman 1997, Belsky and Gelbard 2000, Jones 2001)
- 2 preferentially grazing native plant species over alien species (Van Dyne and Heady 1965, Lacey 1987, Fleischner 1994, Belsky and Gelbard 2000, Jones 2001)
- 3 changing competitive relationships in ways that favored alien species (Baker 1978, Lacey 1987, Belsky and Gelbard 2000, Jones 2001)
- 4 creating patches of bare, disturbed soils that act as alien-plant seedbeds (Ellison 1960, Schiffman 1997, Belsky and Gelbard 2000, Jones 2001)
- 5 destroying biological soil crusts that stabilize soils and inhibit alien seed germination (Belsky and Gelbard 2000, Belnap et al. 20001)
- 6 creating patches of nitrogen-rich soils, which favor nitrogen-loving alien species (Belsky and Gelbard 2000)
- 7 reducing concentrations of soil mycorrhizae required by most western native species (Belsky and Gelbard 2000)
- 8 accelerating soil erosion that buries alien seeds and facilitates their germination (Belsky and Gelbard 2000)

Cole and Liu (1994) found that the appearance of *Erodium* pollen in soil cores corresponded with the introduction of large herbivores (which was more than a century after first white contact on Santa Rosa Island).

Restoration includes weed control and eradication. Control programs require long-term commitments, and short-term lapses may negate years of expensive control efforts.

Externally imposed disturbance (e.g., livestock herbivory, unnaturally frequent fire) is recognized as a major source of entry for invasive alien species (Billings 1994, Keeley 1995, Schierenbeck 1995, Schiffman 1997, Belsky and Gelbard 2000, Jones 2001). Ecosystems where alien plant species dominate or are important members significantly differ ecologically from pre-settlement ecosystems they have superseded (Vitousek 1992). Ecologists are beginning to understand the biology of some alien plant species and ecological changes that accompany their proliferation (see Johnstone 1986, Schierenbeck 1995). Alien plant species have become important components or dominants in many areas of California, particularly the alien-annual-dominated grasslands. Many of the alien plant species that have successfully invaded or successfully introduced in California originated in areas with similar climates, especially the Mediterranean region, and many have evolved in close proximity to continual human-imposed disturbances related to agriculture, including domestic livestock grazing (Baker 1989, Jackson 1985, Stuckey and Barkley 1993). These together indicate that many of the successful alien

plant species were at least somewhat pre-adapted by selective agents in their original environment to conditions in their new environment (Jackson 1985).

By dispersing seeds into and throughout communities, livestock facilitate invasion of entire landscapes (Belsky and Gelbard 2000). Dore and Raymond (1942) found that 1 single cow could deposit an average of 37,000 viable seed of annuals in dung per day.

One of the greatest changes in community composition and structure related to livestock grazing in California is the existence of alien-annual-dominated grasslands. Alien-annual-dominated grasslands represent a type conversion from native community types. In California, much of what now primarily covered by non-native annual grasses was historically scrubland, chaparral, or oak woodland (Hamilton 1997). Only in Hawaii have native taxa been obliterated to the extent they have in the alien-annual-dominated grasslands in California (Loope 1992).

This vegetation 'type' actually represents large patches dominated by alien plants that fit Holland and Keil's (1995) definition of "weeds" (pp. 460–461), mostly from the Mediterranean Region, and probably owing their presence of livestock (Baker 1978, Heady 1990, Jackson 1985). Common alien annual grass taxa include *Bromus diandrus*, *Bromus hordeaceus*, *Avena fatua*, *Avena barbata*, *Hordeum murinum* subsp. *leporinum*, *Vulpia*. Both *Avena* spp. are allelopathic (Halvorson 1992). All the alien annual grasses should be should be treated as pervasive (and among the most troublesome) weeds. Because the livestock are also alien, the importance of alien plant taxa in livestock diets should not influence decision-making concerning their control.

Because seeds can take several days to pass through animals, animals transport seeds consumed from one grazing site to another and can become a source for unwanted alien introductions.

Many of the alien plant taxa that have successfully invaded or successfully introduced in California originated in areas with similar climates, especially the Mediterranean region, and many have evolved in close proximity to continual human-imposed disturbances related to agriculture, including domestic livestock grazing (Baker 1989, Stuckey & Barkley 1993). These together indicate that some (many?) alien plant taxa that have been successful in California were somewhat pre-adapted by selective agents in their original environment to conditions in their new environment. In addition, unnatural livestock-related changes in nutrients, competition, soil compaction, etc., may better suit alien taxa than natives. Alien taxa from the same regions as alien grazers may have better grazing resistance mechanisms to those grazers than native taxa have, giving the alien plant taxa another advantage. Annual grass species usually are adapted better to the conditions caused by excessive trampling (Grime 1979).

IMPACTS ON RIPARIAN AREAS, WETLANDS, ETC, (including water quality)

Watershed hydrology, stream channel morphology, soils, vegetation, wildlife, fish and other riparian-dependent species, and water quality are all impacted by livestock, at both local and landscape scales (Belsky et al. 1000).

Virtually all riparian habitats in the West have been impacted by unmanaged grazing (Ohmart 1997). There is a general acceptance by managers that most riparian areas are in unacceptable condition (Elmore and Kauffman 1994). Ohmart (1997) states this more strongly: “my experiences are that almost all riparian areas are in unacceptable condition.”

Cattle spent 5-30 times longer in riparian habitats than in adjacent uplands (Skovlin 1984). Because cattle prefer riparian areas, deterioration has been significant and much of the deterioration continues (Platts 1979).

California Extension Service Rangeland Water Quality Management Program Fact Sheet No. 3, points out that nonpoint source pollution may be caused by grazing and that grazing activity is a potential source of excessive sediments, nutrients, and pathogens.

California Extension Service Rangeland Water Quality Management Program Fact Sheet No. 14 lists the following as direct effects of livestock grazing:

- 1 higher stream temperatures from lack of sufficient woody streamside cover
- 2 excessive sediment from bank and upland erosion
- 3 high coliform bacteria
- 4 channel widening from hoof-caused bank sloughing and later erosion by water
- 5 change in the form of the water column and the channel it flows in
- 6 change, reduction, or elimination of vegetation
- 7 elimination of riparian areas by channel degradation and lowering of the water table
- 8 gradual stream channel trenching or braiding...with concurrent replacement of riparian vegetation with more xeric plant species

Pathogens

Livestock grazing increases water-borne bacteria and protozoa through direct fecal deposition into water, fecal matter in runoff, and sediments containing buried microorganisms that are churned up by hoof action.

Fecal-borne bacteria can be a significant water quality problem, one that can cause serious illness in humans (EPA 1993).

There are few available reports on pathogen loads specifically for coastal California, indicating that these may not be monitored appropriately on public lands.

In areas grazed by livestock in Channel Islands National Park, bacterial levels have been as high as 80 times the maximum levels permitted for recreation water contact were recorded (CHIS N-1.219 in NPS 1994). High coliform levels probably reflected the unlimited access of cattle to impacted streams (Sellgren 1995a).

Tate et al. (2000) examined *Cryptosporidium parvum* transport from cattle fecal deposits on California rangelands and found that "the hypothesis that *C. parvum* oocysts are not transported at least 1.0 m as overland flow from fecal deposits with natural rainfall can be rejected. Transport of *C. parvum* oocysts increases as slope increases.... Under the realistic scenario examined in this study, it is clear that *C. parvum* oocysts in fresh fecal pats on rangeland can be released with rainfall and become available for transport to water-bodies."

As Tate et al. (2000) pointed out, "...only a few oocysts would need to remain infective in order to pose a risk to humans. The illness can be fatal to persons with compromised immune systems.

Experimental studies in healthy humans determined that as few as 30 bovine-derived oocysts were capable of initiating cryptosporidiosis in humans (DuPont [et] al. 1995).”

Erosion and sedimentation

Cole and Liu (1994), working in a marsh on Santa Rosa Island (with soils, slopes, etc., not unlike those on the allotments), found that rates of sediment accumulation for the 5000 years prior to the introduction of large herbivores averaged 0.7 mm/year. Post-settlement and the introduction of livestock, the rates of sediment accumulation were more than an order of magnitude higher, averaging 13.4 mm/year.

'SENSITIVE' TAXA OTHER THAN PLANTS

The EAs contain limited information on known and potential steelhead use of the streams on the allotments. California Extension Service Rangeland Water Quality Management Program Fact Sheet No. 17 points out that the beneficial uses [as defined under the Clean Water Act] that may be impaired by livestock include spawning habitat of anadromous fish. Southern steelhead are known from the San Carpoforo Creek drainage (Stephenson and Calcarone 1999) and may be in some of the other drainages on the allotments. Until a biological assessment is completed, the proactive approach would be to consider all drainages possible.

The EAs contain little or no information on known and potential impacts to other sensitive animal taxa.

California red-legged frogs are known from the San Carpoforo Creek drainage (Stephenson and Calcarone 1999) and may be in some other drainages (Davidson et al. 2001). Foothill yellow-legged frogs are known from the San Carpoforo Creek and Willow Creek drainage (Stephenson and Calcarone 1999) and may be in some other drainages.

Other sensitive taxa Stephenson and Calcarone (1999) listed as occurring in the northern Santa Lucia region (which included the allotments) are California legless lizard, golden eagle, peregrine falcon, prairie falcon, western small-footed bat, Townsend's big-eared bat, pallid bat, western spotted skunk, American badger.

Other sensitive taxa Stephenson and Calcarone (1999) listed as potentially occurring in the northern Santa Lucia region (which included the allotments) are California condor (allotments within flight range), western mastiff bat.

Riparian birds of concern Stephenson and Calcarone (1999) listed as occurring in the northern Santa Lucia region (which included the allotments) are Cooper's hawk, tree swallow, Swainson's thrush, American dipper, Warbling vireo, yellow warbler, common yellowthroat, yellow-breasted chat, Lawrence's goldfinch.

Riparian birds of concern Stephenson and Calcarone (1999) listed as potentially occurring in the northern Santa Lucia region (which included the allotments) included the black swift.

'SENSITIVE' PLANT TAXA

Rare and Endangered Plant Taxa in California

Much of the knowledge of rare and endangered taxa of California began in 1968 when Dr. G. Ledyard Stebbins (then president of the California Native Plant Society) organized a statewide compilation of a list of the state's rarest plants (Berg et al. 1997). From this endeavor grew both the California Native Plant Society's (CNPS) *Inventory of Rare and Endangered Vascular Plants of California* and the California Department of Fish and Game's Natural Diversity Data Base (NDDDB).

In the fifth edition of the California Native Plant Society's (CNPS) *Inventory of Rare and Endangered Vascular Plants of California* (Skinner and Pavlik 1994), 1742 taxa (ca. 28 %) of native

California taxa were included on CNPS's five lists, and 857 (ca. 14%) are on list 1B, those considered rare or endangered throughout their range (Skinner and Pavlik 1994, Faber 1997 inset p. 12). Recent research for the sixth edition of the Inventory has identified nearly 600 additional taxa as potentially warranting inclusion in the *Inventory* (Skinner and Fiedler 1997).

Different legal protection is afforded plants under the federal Endangered Species Act and the California Endangered Species Act.

The most serious threats (by percentage of taxa affected) to taxa officially listed by the State of California are development (50.2%), **livestock grazing (33.8%)**, off-road vehicles (25.8%), road construction and maintenance (24.4%), agriculture (20.2%), **alien plants (19.2%)**, water projects (17.4%), mining (12.7%), **trampling (11.3%)**, and feral animals (6.6%) (Skinner and Fiedler 1997).

Among the threats listed specifically for the plants of the Santa Lucia mountains are **direct effects of livestock, conversion of habitat** (e.g., chaparral and coastal scrub) **to rangeland** and other agricultural uses, development, road maintenance, recreational activities, and **invasive alien plants** (Danielsen 1997).

The 'sensitive' taxa discussed in my comments are included in California Department of Fish and Game Natural Diversity Data Base Special Vascular Plants, Bryophytes, and Lichens List (January 2001). Most are on CNPS lists.

The 'sensitive' taxa include taxa that

1. are listed, proposed for listing, candidates for listing under federal Endangered Species Act, or considered as sensitive or of special concern by US Fish and Wildlife Service, US Forest Service, Department of Defense, or another government agency (e.g., former Category 1 and 2 taxa that are not currently Candidates);
2. are listed under California Native Plant Protection Act or the California Endangered species Act or are eligible for state listing,
3. meet definition of rare, threatened, or endangered under the California Environmental Quality Act (CEQA);
4. meet the California Department of Fish and Game Natural Diversity Data Base definitions of 'special plants';
5. are considered by CNPS to be rare, threatened, or endangered (lists 1, 2);
6. are listed by CNPS as taxa about which more information is needed (list 3);
7. taxa of limited distribution (list 4);
8. are proposed for inclusion in one of the above CNPS lists
9. are included in documents as taxa of 'special concern' or 'sensitive' taxa for Ft Hunter Liggett [which is adjacent to or near the allotments]

Differences from taxa listed in the Biological Evaluations [BEs] for the allotments should not be seen as a criticism of the Biological Evaluations.

I think that the data in the BEs are as complete as they could be given the available resources.

Not all the herbarium records are readily available. Most herbaria do not yet have databases of collections available. It is very expensive and time-consuming to record each of the hundreds of thousands of specimens in even a medium-sized herbarium. Most don't have staff or funds.

CalFlora , CA DFG NDDDB, and other lists are continuously being updated, but there is always a lag time.

Santa Barbara Botanic Garden is putting together a database of plant records for the Central Coast (Monterey to Ventura Counties), but it is not yet publicly available.

According to Los Padres personnel, priorities for plants are

1. federally listed or proposed
2. Forest Service designated Sensitive Species, decided by the regional office [most are former federal category 1 or 2 taxa]
3. Species of local [i.e., Los Padres NF] concern (this group has no official standing except as covered by Forest Plan direction to treat them as Regionally listed Sensitive Species)

According to Los Padres personnel, decisions on adding plants to the local [i.e., Los Padres NF] 'sensitive' plant list are based on

1. U.S. 'Species of Concern' [mostly former federal category 1 or 2 taxa]
 2. CNPS list 1B as a starting point and basically included all list 1Bs unless there was some compelling reason not to (like new info about abundance that will ultimately move a taxon off of list 1B).
 3. G1s, G2s, S1s, and S2s, including the infraspecific taxa
1. Information from local botanists about their "species of concern".

It is my understanding that additional taxa are being recommended to the regional office for designation as Sensitive Species, including (but not limited to) CNPS list 1B taxa not already on the list. Many of these recommendations will reflect changes made in CNPS lists for the recent 6th inventory (<http://www.cnps.org/rareplants/inventory/6thEdition.htm>).

I found that at least 23 CNPS list 1B taxa that had a reasonable possibility of being found on one or more of the allotments (see attached list). There is at least one CNPS list 3 taxon. There are at least 21 CNPS list 4 taxa. And there is at least one taxon of undetermined CNPS status listed by CA DFG NDDDB. Thus there are **at least 48 'sensitive' plant taxa** with a reasonable possibility of being found on one or more of the allotments.

The lack of 'forage value' does not preclude all damage to a 'sensitive' plant, it only reduces the risk of defoliation (except when sufficient forage is available).

If suitable habitat is present, not locating a non-woody taxon does not mean it is not present. Nearly all the herbaceous 'sensitive' taxa are capable of long-term dormancy as bulbs, corms, other belowground perennating organs, and/or seeds

- San Simeon baccharis *Baccharis plummerae* A. Gray subsp. *glabrata* Hoover
CNPS list 1B, CA DFG NDDDB Special Plants List
documented from Hearst Ranch property and from Los
Burros gorge through Burro Mountain [Ft Hunter Liggett]
- late-flowered mariposa lily** *Calochortus weedii* Alph.Wood var. *vestus* Purdy
U.S. 'species of concern', **CNPS list 1B**, CA DFG NDDDB
Special Plants List
CNPS notes: threatened by **grazing**
Included in Alder Creek, Buckeye, Cozy Cove Ranch,
Gorda, Salmon Creek, San Carpofofo Biological
Evaluations
Documented on or near Gorda, Salmon Creek, San
Carpofofo allotments
- South Coast Range morning-glory *Calystegia collina* (Greene) Brummitt subsp. *venusta*
Brummitt
U.S. 'species of concern', CNPS list 4, CA DFG NDDDB Special
Plants List
Documented on or near Gorda allotment
- Brewer's spineflower *Chorizanthe breweri* S.Watson
CNPS list 1B, CA DFG NDDDB Special Plants List
Documented on or near San Carpofofo allotment
- Jolon clarkia *Clarkia jolonensis* D.Parnell
CNPS list 1B, CA DFG NDDDB Special Plants List
Documented on or near Alder Creek, Gorda allotments
- Hutchinson's larkspur** *Delphinium hutchinsoniae* Ewan
U.S. 'species of concern', **CNPS list 1B**, CA DFG NDDDB
Special Plants List
EA says taxon occurs on Torre Canyon allotment
Included in Torre Canyon Biological Evaluation
- yellow-flowered eriastrum *Eriastrum luteum* (Benth.) Mason
CNPS list 1B, CA DFG NDDDB Special Plants List
Nearest documented populations near San Antonio River
[Ft Hunter Liggett], reported from LPNF/Ft Hunter
Liggett boundary areas near Nacimiento and San Antonio
Rivers
- San Benito fritillary** *Fritillaria viridea* Kellogg
U.S. 'species of concern', CNPS list 4, CA DFG NDDDB Special

Plants List

Included in Alder Creek, Buckeye, Cozy Cove Ranch,
Gorda, Salmon Creek, San Carpoforo, Twitchell

Biological Evaluations

Documented on or near Gorda, Salmon Creek, Twitchell
allotments

Cone Peak bedstraw

***Galium californicum* Hook. & Arn. subsp. *luciense* Dempster & Stebb.**

U.S. 'species of concern', CNPS list 1B, CA DFG NDDDB

Special Plants List

Included in Alder Creek, Buckeye, Cozy Cove Ranch,
Gorda, Salmon Creek, San Carpoforo, Torre Canyon,
Twitchell Biological Evaluations

Documented on or near Alder Creek, Gorda, Salmon
Creek, San Carpoforo, Torre Canyon, Twitchell
allotments

Santa Lucia bedstraw

Galium clementis Eastw.

CNPS list 1B, CA DFG NDDDB Special Plants List

Documented on or near Alder Creek, Gorda, Twitchell
allotments

Hardham's bedstraw

***Galium hardhamiae* Dempster**

CNPS list 1B, CA DFG NDDDB Special Plants List

Included in Alder Creek, Gorda, Salmon Creek, San
Carpoforo Biological Evaluations

Documented on or near Gorda, Salmon Creek, San
Carpoforo allotments

Arroyo Seco bush mallow

Malacothamnus palmeri (S.Watson) Greene var. *lucianus* Kearney

U.S. 'species of concern', CNPS list 1B, CA DFG NDDDB

Special Plants List

Included in Torre Canyon, Twitchell Biological
Evaluations

Palmer's monardella

Monardella palmeri Gray

CNPS list 1B, CA DFG NDDDB Special Plants List

Documented on or near San Carpoforo allotment

Santa Lucia Mint

Pogogyne clareana J.T.Howell

U.S. 'species of concern', CA ENDANGERED, CNPS list 1B,

CA DFG NDDDB Special Plants List

Nearest documented population Italian Flat (Ft Hunter
Liggett)

- adobe sanicle** *Sanicula maritima* S.Watson
U.S. '**species of concern**', CA **RARE**, CNPS list 1B, CA DFG
NDDDB Special Plants List
Gorda Biological Evaluation, taxon found on allotment in
southernmost pasture of Pacific Valley Unit
Environmental Assessment says taxon on terrace above
Jade Cove
- Hickman's checkerbloom *Sidalcea hickmanii* Greene subsp. *hickmanii*
CNPS list 1B, CA DFG NDDDB Special Plants List
Included in Gorda Biological Evaluations
Documented populations on western Ft Hunter Liggett
- most beautiful jewel-flower *Streptanthus albidus* Greene subsp. *paramoenus* Kruckeb.
U.S. '**species of concern**', **CNPS list 1B**, CA DFG NDDDB
Special Plants List
CNPS notes: threatened by **grazing**
Documented on or near Gorda, Salmon Creek, San
Carpoforo allotments
- Cook's triteleia *Triteleia ixioides* (S.Watson) Greene subsp. *cookii* (Hoover) L.Lenz
CNPS list 1B, CA DFG NDDDB Special Plants List
Documented on or near Salmon Creek, San Carpoforo
allotments
- Abrams' lupine *Lupinus albifrons* Benth. var. *abramsii* (C.P.Smith) Hoover
CNPS list 3, CA DFG NDDDB Special Plants List
Documented on or near Gorda, Salmon Creek, Twitchell
allotments
- coast rock cress *Arabis blepharophylla* Hook. & Arn.
CNPS list 4, CA DFG NDDDB Special Plants List
CA DFG NDDDB Special Plants List
Documented on or near Alder Creek, Gorda allotments
- Hoover's manzanita *Arctostaphylos hooveri* P.Wells
CNPS list 4, CA DFG NDDDB Special Plants List
Documented on or near Alder Creek, Gorda, San
Carpoforo, Twitchell allotments
- bishop manzanita *Arctostaphylos obispoensis* Eastw.
CNPS list 4, CA DFG NDDDB Special Plants List
Documented on or near Alder Creek, Buckeye, Gorda,
Salmon Creek, San Carpoforo allotments

Carlotta Hall's lace fern	<i>Aspidotis carlotta-halliae</i> (W.Wagner & Gilbert) Lessinger CNPS list 4, CA DFG NDDDB Special Plants List Documented on or near Alder Creek, San Carpofooro allotment
Brewer's calandrinia	<i>Calandrinia breweri</i> S.Watson CNPS list 4, CA DFG NDDDB Special Plants List Documented on or near Gorda allotments
Douglas's spineflower	<i>Chorizanthe douglasii</i> Benth. CNPS list 4, CA DFG NDDDB Special Plants List Documented on or near Alder Creek, Gorda allotments
Palmer's spineflower	<i>Chorizanthe palmeri</i> S.Watson CNPS list 4, CA DFG NDDDB Special Plants List Documented on or near Alder Creek, Cozy Cove Ranch, Gorda, Salmon Creek, San Carpofooro allotments
Lewis's clarkia	<i>Clarkia lewisii</i> Raven & D.Parnell CNPS list 4, CA DFG NDDDB Special Plants List Documented on or near Alder Creek allotment
Rattan's cryptantha	<i>Cryptantha rattanii</i> Greene CNPS list 4, CA DFG NDDDB Special Plants List Documented on or near Gorda, Salmon Creek, San Carpofooro allotments
stinkbells	<i>Fritillaria agrestis</i> Greene CNPS list 4, CA DFG NDDDB Special Plants List Documented relatively near Alder Creek, Buckeye, Gorda, Salmon Creek, San Carpofooro allotments
Santa Lucia horkelia	<i>Horkelia yadonii</i> B.Ertter CNPS list 4, CA DFG NDDDB Special Plants List Nearest documented populations in Los Burros Creek and Pozo Hondo [Ft Hunter Liggett]
spring lessingia	<i>Lessingia tenuis</i> (A.Gray) Cov. CNPS list 4, CA DFG NDDDB Special Plants List Documented on or near Gorda allotment
small-leaved lomatium	<i>Lomatium parvifolium</i> (Hook. & Arn.) Jepson CNPS list 4, CA DFG NDDDB Special Plants List Documented on or near Alder Creek, Gorda, Salmon

Creek, Twitchell allotments

- Santa Lucia lupine *Lupinus cervinus* Kell.
CNPS list 4, CA DFG NDDDB Special Plants List
Documented on or near Gorda, Twitchell allotments
- one-sided monkeyflower *Mimulus subsecundus* Gray
CNPS list 4, CA DFG NDDDB Special Plants List
Documented on or near Gorda allotment
- adobe yampah *Perideridia pringlei* (Coult. & Rose) A.Nelson & Macbr.
CNPS list 4, CA DFG NDDDB Special Plants List
Documented on or near Gorda, Salmon Creek, San
Carpoforo allotments
- Santa Lucia gooseberry *Ribes sericeum* Eastw.
CNPS list 4, CA DFG NDDDB Special Plants List
Documented on or near Gorda allotment
- Hoffmann's sanicle *Sanicula hoffmannii* S.Watson
CNPS list 4, CA DFG NDDDB Special Plants List
Documented on or near San Carpoforo allotment
- Lemmon's sytrichopappus *Syntrichopappus lemmonii* (A.Gray) A.Gray
CNPS list 4, CA DFG NDDDB Special Plants List
Documented on or near Gorda allotment
- Vortriede's spineflower *Systemotheca vortriedei* (Brandege) Rev. & Hardham
CNPS list 4, CA DFG NDDDB Special Plants List
Documented on or near Alder Creek, Buckeye, Gorda,
Salmon Creek allotments
- marsh zigadenus *Zigadenus micranthus* Eastw. var. *fontanus* (Eastw.) D.McNeal
CNPS list 4, CA DFG NDDDB Special Plants List
Documented on or near Buckeye, Gorda, Salmon Creek
allotments
- Snow Mountain calycadenia *Calycadenia truncata* DC. subsp. *microcephala* Keck
CA DFG NDDDB Special Plants List
Documented on or near Alder Creek, Gorda, Salmon
Creek allotments
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