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December 8, 2006

Randy Nagel
U.S. Fish and Wildlife Service
Carlsbad Field Office6010 Hidden Valley Road
Carlsbad, CA 92011

Subject: Clarification of Mapping Activities Proposed under the Low-Effect Habitat Conservation Plan for the Federally-Endangered Stephens' Kangaroo Rat at Beaumont Site 1 (Potrero Creek) and Site 2 (Laborde Canyon) Riverside County, California (mapping methodology included).

Mr. Nagel:

On March 6, 2006, representatives from the U.S. Fish and Wildlife Service's (USFWS), the Lockheed Martin Corporation (LMC), and the California Department of Fish and Game (CDFG) met to clarify the mapping requirements of the Low-Effect Habitat Conservation Plan (HCP) for the Federally-Endangered Stephens' Kangaroo Rat (SKR) at Beaumont Site 1 (Potrero Creek) and Site 2 (Laborde Canyon). As requested during the meeting, this letter summarizes the proposed mapping program for SKR and SKR habitat at both Sites.

LMC has been and continues to conduct groundwater and soil investigations at the Beaumont Sites in response to a California Department of Toxic Substances Control (DTSC) Consent Order (No. 88/89-034). An Incidental Take Permit and associated Low-Effect Habitat Conservation Plan (HCP) were signed on October 14, 2005 by the USFWS and a consistency determination was granted on November 18, 2005 by CDFG for the activities associated with these investigations. The document describes the various investigative activities and the potential for incidental take of SKR or its habitat. The document also discusses the management practices required to be implemented to avoid incidental take. This Low-Effect HCP calls for mapping of SKR habitat under the Monitoring, Management, and Reporting requirements in Section 3.4 on Page 14:

> "Mapping of SKR occupied habitat (with density categories) will be conducted by the biological monitor within 100 feet of the work area at both Sites and within the 565 acres of the applicant-owned property on Site 1 at the initiation of the Low-Effect HCP. At the completion of the contaminant investigation activities, the SKR mapping areas will be updated and will be compared with initial mapping performed to report any increase or decrease in SKR-occupied acreage or density levels."

There are uncertainties with the required mapping procedure stated above. The attached Proposed Methodology for Mapping SKR Habitat seeks to design a program that would more effectively measure the impacts of various LMC activities on SKR, and would provide more useful information to LMC and the USFWS on the temporary effects of these activities on SKR and SKR habitat.

LMC requests concurrence from your agency with the attached Proposed Methodology for Mapping under our current Low-Effect HCP. LMC looks forward to your response and appreciates the opportunity to clarify these mapping activities. If you have any questions or require additional information please feel free to contact Tom Villeneuve at (909) 381-1674.

Sincerely,

Christopher Ingalls

Christopher Ingalls
Lockheed Martin Corporation

Cc: Robin Maloney-Rames, California Department of Fish and Game
Stephen J. Montgomery, SJM Biological Consultants
BUR251 Beaumont 1 & 2 Clarification of Mapping Activities 12/06

PROPOSED METHODOLOGY FOR MAPPING STEPHENS' KANGAROO RAT HABITAT AT SITES 1 AND 2

Prepared by
Stephen J. Montgomery
SJM Biological Consultants
November 2006

BACKGROUND

The Low-Effect Habitat Conservation Plan (HCP) calls for mapping of SKR habitat under the Monitoring, Management, and Reporting requirements in Section 3.4 on Page 14:

> "Mapping of SKR occupied habitat (with density categories) will be conducted by the biological monitor within 100 feet of the work area at both Sites and within the 565 acres of the applicant-owned property on Site 1 at the initiation of the Low-Effect HCP. At the completion of the contaminant investigation activities, the SKR mapping areas will be updated and will be compared with initial mapping performed to report any increase or decrease in SKR-occupied acreage or density levels."

There are several uncertainties with implementing the above mapping procedure, including:

- Whether this type of mapping (i.e. relatively coarse scale) would provide any useful measure of how and to what degree Lockheed Martin Corporation (LMC) activities on the Sites affect SKR and its habitat, because these activities affect such small areas compared to the overall area of SKR-occupied habitat.
- A lack of clarity on specific mapping requirements at work areas, such as timing of mapping pre- and post-activity, and the size of the mapping area.
- Whether post-activity mapping should occur following the full completion of all contaminant studies (after 5 years), or each year, or throughout each year. Updates for this mapping requirement are a specified element of the annual reports to be prepared for this Low-Effect HCP.

This memo presents an alternative protocol for habitat mapping that will:

1. Be measurable at a scale commensurate with LMC's activities;
2. Provide useful information to LMC in their on-going efforts to minimize adverse effects to this species while conducting contaminant investigation activities; and

3. Provide useful data to the U.S. Fish and Wildlife Service in determining on-going potential adverse effects to this species from these types of activities.

PROPOSED MAPPING METHODS

The proposed methodology will be based on burrow counts at study plots located in activity areas and at associated control plots, as described below.

Activities to Be Conducted

Activities to be conducted under the Low-Effect HCP are defined on pages 7 and 8 of the HCP, and include:

1. Conducting quarterly groundwater level measurements, sampling, and repair;
2. Installing groundwater wells;
3. Abandoning groundwater wells;
4. Maintaining structures and groundwater treatment systems;
5. Maintaining roads;
6. Marking, surveying and drilling soil assessment boreholes:
7. Installing and sampling soil gas probes;
8. Removing CatOx unit at Site 1 (completed in 2005);
9. Temporarily depositing soils and concrete from on-site activities;
10. Mowing work areas;
11. Surveying work locations;
12. Conducting unexploded ordinance (UXO) characterizations and treatment activities (see letter to USFWS dated August 3, 2006 for clarification of these activities);
13. Conducting seismic surveys.

Activities to Be Mapped vs. Not Mapped

In general, mapping will only be conducted in areas of suitable SKR habitat, including all areas of Sites 1 and 2 that support grassland habitats whether they are known to be occupied by SKR or not. Mapping will not be conducted in areas of non-suitable habitat, such as on steep hillsides, in dense sage scrub or chaparral habitat, or in very sandy washes. Of the 13 activities listed above, the proposed mapping methodology described below will only be used for those activities that (a) could result in adverse effects to occupied SKR habitat from direct soil or vegetation disturbance or removal (see letter to USFWS dated August 3, 2006 for clarification of these activities), and (b) encompass an area large enough for any effects on SKR to be measurable (defined as a work area of approximately 250 square meters; i.e. an approximately 15m x 15m square). Such activities include:

- Installation of groundwater wells;
- Drilling boreholes for soil assessment;
- Groundwater well abandonment at sites where heavy equipment use is required at the work area;

- Maintaining and repairing roads when this activity covers an area of at least 250 square meters.
- Extensive mowing of work areas when this activity covers at least 2 acres.

The following activities were determined to cover an area too small, and/or result in such minimal disturbances to the substrate or vegetation cover, to provide measurable data:

- Conducting quarterly groundwater level measurements, sampling, and repair;
- Abandoning groundwater wells at sites where heavy equipment can be parked on adjacent roads and not brought on the work area;
- Maintaining structures and groundwater treatment systems;
- Maintaining and repairing roads when this activity covers an area of less than 250 square meters;
- Marking and surveying soil assessment boreholes;
- Installing and sampling soil gas probes if done by truck mounted direct push methods;
- Temporarily depositing soils and concrete from on-site activities;
- Mowing work areas when this activity covers an area of less than 250 square meters;
- Surveying work locations;
- Conducting UXO and MEC characterization activities, including limited UXO searches using hand tools and large-scale "towed array" methods with lightweight vehicles;
- Conducting seismic surveys.

Mapping Strategies

Four different mapping strategies will be used in order to attempt to appropriately measure effects in a feasible manner from the above work activities. These include:

1. 100% mapping of small work areas (including well installations and well abandonment).
2. 25% minimum sampling of work areas for linear activities (road maintenance).
3. 25% minimum sampling of work areas when numerous extremely small excavations will be clustered in an area.
4. 25% minimum sampling of work areas where extensive blocks of habitat will be mowed .

<u>100% Mapping of Small Work Areas (Figure 1)</u>
The effects on SKR of work activities such as well installation that encompass relatively small areas (e.g. approx. 250m^2) will be determined using small square plots centered directly on the activity and paired plots located 100m from the activity area.

Each work area plot will be centered on the location of a work activity and will be designated "Plot A." A paired location designated "Plot B" will be located in a random direction and 100 meters from the activity area and will serve as a control plot for the associated Plot A (see

figure below). All work area and control plots will be oriented in cardinal directions with the four corner points marked with a Global Positioning Systems (GPS) unit to an accuracy of less than 5 meters (UTM NAD 83). Plots will measure 15 x15 meters for all of these activities.

The direction to the center of Plot B from the center of Plot A will be determined randomly from one of 8 compass directions (N, S, E, W, NE, SE, SW, NW). If the initially selected control Plot B location does not fall in suitable and similar SKR habitat to Plot A, subsequent random directions will be progressively selected until the selected control plot falls in suitable and similar SKR habitat that does not overlap any other work area.

25% Minimum Mapping of Numerous Clustered Small Work Areas (Figure 2)
Numerous clustered small work areas, such as numerous soil brings in one area, will be assessed by sampling a series of small 15m x 15m square plots randomly selected within the activity area; control plots for such sample plots will be located in adjacent non-activity areas, either within 100m of the work area plot or as close as is feasible. A minimum of 25% of the work area will be sampled with this method. For activities involving numerous small disturbances to the substrate within a somewhat lager but still relatively small area (e.g. $500m^2$), the effects on SKR will be determined by sampling a minimum of 25% of these areas using the same method as that described above for "100% Mapping of Small Work Areas."

25% Minimum Mapping of Linear Work Areas (Figure 3)
The effects on SKR of linear activities such as road maintenance will be determined using long-narrow plots. For road maintenance activities, work area and control plots will measure 5m x 22.5m and be established on directly opposing sides of the road; each plot will begin at the edge of the road and extend 5m into the surrounding undisturbed habitat. Appropriate plot size for additional linear activities will be determined at the time of the initiation of the activity.

25% Minimum Mapping of Larger Mowing Work Areas (Figure 4)
More expansive work areas, such as the large areas requiring mowing for MEC investigations, will be assessed by sampling a series of small 15m x 15m square plots randomly selected within the activity area; control plots for such sample plots will be located in adjacent non-activity areas, either within 100m of the work area plot or as close as is feasible. A minimum of 25% of the work area will be sampled with this method. Since the October 26, 2006 Esperanza fire burned all grasslands at Potrero Creek, this method of assessing the effects of widespread mowing on SKR will not be used at the current time. This method will be used if any future investigations require mowing of large blocks of grassland vegetation.

Frequency and Timing of Mapping

Pre-activity surveys would be conducted within 7 days prior to an activity. Post-activity surveys would be conducted within 7 days (±2 days), 6-weeks (±5 days) and 6-months (±7days) subsequent to each activity. These mapping surveys will provide data on immediate and long-term effects of each activity on localized populations of SKR in the immediate vicinity of the activity, and also may provide information regarding enhanced use of the activity area by this species.

Burrow Counts

All active kangaroo rat burrows inside the boundaries of each pair of plots (e.g. 1A and 1B, 2A and 2B, etc.) will be counted and their locations noted on standard plot forms during all pre- and post-activity surveys. The map and number of burrows counted at each plot will serve as records of SKR presence/absence and as an index of SKR activity and abundance at each plot.

Analysis and Reporting

The burrow counts and plot maps from all pre- and post-activity surveys at work areas and control plots will be compared over time to determine if particular activities produce any measurable difference in SKR presence and/or abundance compared to the associated control plots. Burrow count data will be analyzed using a paired-sample t- test or other appropriate paired sample statistical method. If plots of different sizes are required during the study, the burrow counts recorded for all sites will be standardized to number of burrows per square meter.

All burrow counts and plot maps from surveys conducted each year, and the associated analyses, will be compiled and presented in an annual monitoring report for the Low-Effect HCP. Any natural occurrences such as weather events or fires would be assumed to affect each study plot and its paired control site in a similar way. Such unavoidable occurrences are not expected to affect the validity of the study results because of the use of paired study and control plots, which will be similarly affected by natural phenomenon and can therefore be compared.

Figure 1
100% Sampling of Small Work Areas

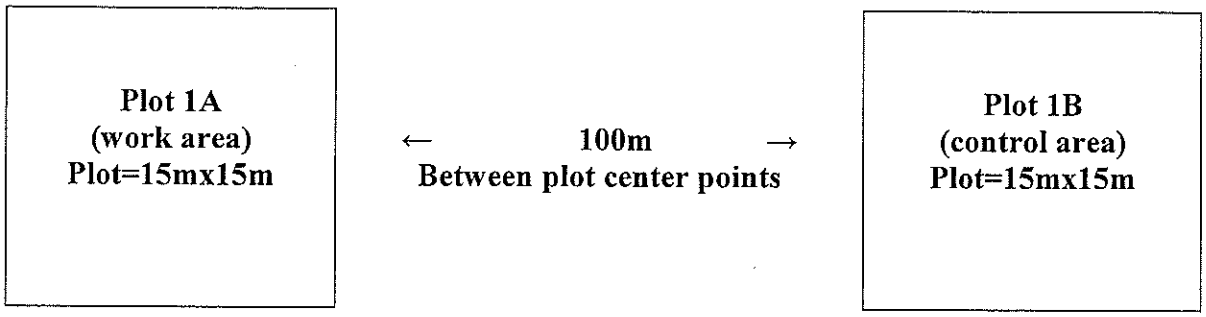

Figure 2
25% Minimum Sampling of Numerous Clustered Small Work Areas
(asterisks are work areas, heavy outline is e.g. 25% sample plot area)

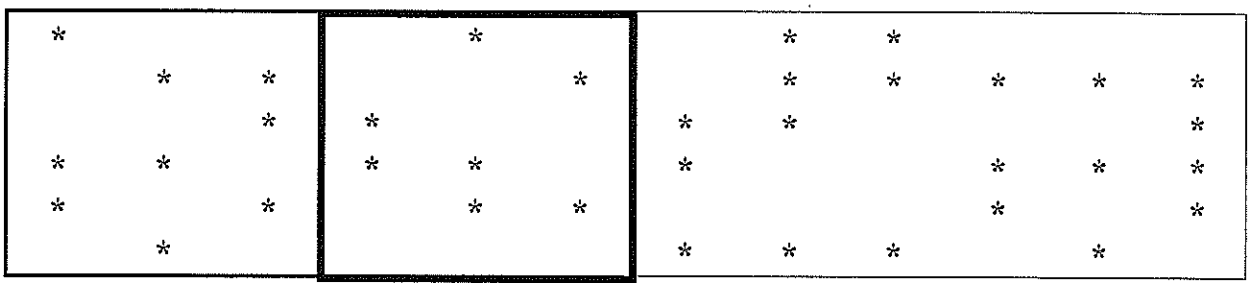

Figure 3
25% Minimum Sampling of Linear Work Areas

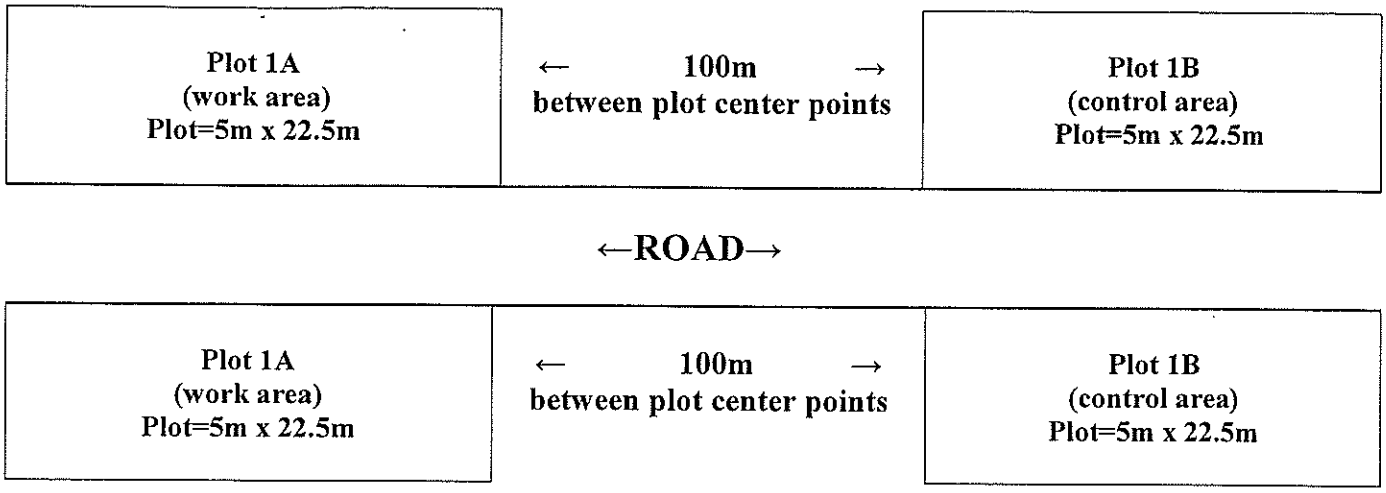

Figure 4
25% Minimum Sampling of Larger Mowing Work Areas