



United States Department of the Interior  
BUREAU OF LAND MANAGEMENT  
Mother Lode Field Office  
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El Dorado Hills, CA 95762  
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**EA Number:** CA-180-11-01

**Proposed Action:** To restore habitat for the rare and endemic Pine Hill flannelbush and El Dorado bedstraw transplants in the Pine Hill and Salmon Falls units of the Pine Hill Preserve, El Dorado County, California.

**Location:** The approximately 4,200-acre Pine Hill Preserve (Preserve), is located in the central Sierra foothills in western El Dorado County (EDC), north of Highway 50 and southeast of Folsom Lake, approximately 30 miles east of Sacramento. Habitat restoration for the Pine Hill flannelbush and the El Dorado bedstraw would take place on two 10-acre areas located at the central and northern portions of the Preserve (Figure 1), and within portions of the S1/2 of SW1/4 of Section 9, T.10N, R.9E, and the SE1/4 of NW 1/4 of Section 30, T.11N, R.9E, of the Mount Diablo Meridian.

## **1.0 Purpose and Need for Action**

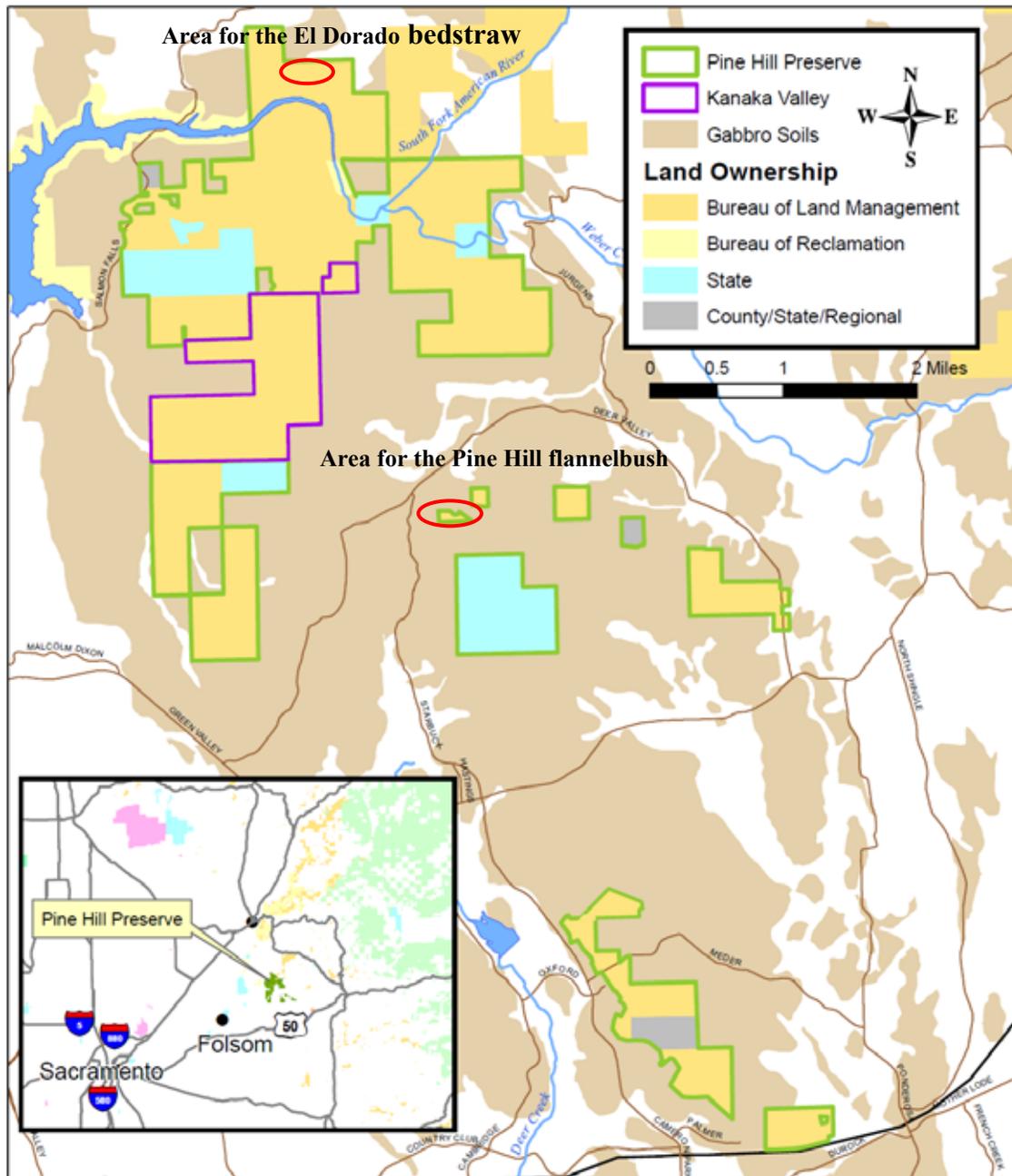
### **1.1 Need for Action**

The Pine Hill flannelbush and El Dorado bedstraw, two federally and State listed species protected at the Preserve, are extremely rare and have a narrow endemic distribution within the gabbro soil formation. Restoring habitat for rare plants at selected sites of the Preserve and preparing for the transplanting of Pine Hill flannelbush and El Dorado bedstraw will contribute to the knowledge needed to guide recovery efforts for these species. Results from this project will aid in effectively managing habitat for the rare plants and help to determine when artificial enhancement, repatriation and introduction of these species will be feasible. Implementation of this project will help to accomplish recovery tasks 5.1, 5.2, 5.3, 6.1.1 and 7 of the Recovery Plan for Gabbro Soil Plants of the Central Sierra Nevada Foothills (FWS 2002).

### **1.2 Conformance with Applicable Land Use Plans**

The proposed action is consistent with the BLM's 2008 Sierra Resource Management Plan (SRMP) management actions for Areas of Critical Environmental Concern (ACECs) described in page 38 of the SRMP and Record of Decision, approved February 2008.

The proposed action is also consistent with management actions described in the Management Issues and Strategies section of the BLM's 2008 Pine Hill Preserve Management Plan and the associated BLM's Environmental Analysis CA-180-08-03. In addition, the proposed action also provides for implementation of recovery actions for two of five federally listed species described in the US Fish and Wildlife Service (FWS) 2002 Recovery Plan for Gabbro Soil Plants of the Central Sierra Nevada Foothills.



**Figure 1.** Location of the Pine Hill Preserve and areas (circled in red) where habitat restoration for the rare Pine Hill flannelbush and El Dorado bedstraw would take place.

### **1.3 Background Information**

The mission of the Preserve is to conserve in perpetuity the rare plant species and plant communities of the western EDC gabbro soil formation. The Preserve provides protection and management for approximately 4,200 acres of rare plant habitat, 3,234 of which lie within a 5,001-acre area designated by the FWS for the recovery of five federally listed plants, and the conservation of three special status plants. The Preserve consists of several non-contiguous parcels located within an approximately 25,000-acre gabbro soil area (Figure 1). The climate at the Preserve area is characterized as Mediterranean with cool wet winters and hot dry summers. Average precipitation and temperature are 31 inches per year and 63° F, respectively. More than 700 plant species or about 10% of the California native flora are present at the Pine Hill area, making the Preserve a "hotspot" for biodiversity. A Cooperative Management Agreement among nine local, State, and federal agencies, and one private organization, enables the Preserve to work in coordination with these partners to increase protection of rare plant habitat and to provide the best management alternatives to maintain the rare plant populations' viability.

## **2.0 Proposed Action and Alternatives**

### **2.1 Proposed Action**

The proposed action is to remove existing dense chaparral over two 10-acre sites at the Pine Hill and Salmon Falls units of the Preserve (Figure 2) and restore habitat for the rare and endemic Pine Hill flannelbush and El Dorado bedstraw transplants. Seeds and/or cuttings of these species would be collected from individual plants located in adjacent privately-owned parcels and/or in proximity to the sites proposed for restoration. The collected plant materials would be propagated under the guidance and care of Cornflower Farms, a native plant nursery with experience propagating many native plant species including the Pine Hill flannelbush. Specific activities for this project are described in the FWS Formal Consultation on the Proposed Habitat Restoration Project for Pine Hill flannelbush and El Dorado the Pine Hill and Salmon Falls units of the Pine Hill Preserve, El Dorado County, California (Biological Opinion document 81240-2008-F-1588-1, attached).

**2.2 Project Design Features** The sites chosen for this project present habitat and microhabitat characteristics that make them ideoneus for the two rare plants. The Pine Hill unit site has Northern Mixed chaparral with rocky outcrops and, although the Pine Hill flannelbush is not present there, it is present at three of the surrounding privately-owned properties. The Salmon Falls unit site has Pine/Oakland wood with black and live oaks and common species of bedstraw known to grow in areas where the rare El Dorado bedstraw grows. Specific activities for this project include the removal of existing dense chaparral using mechanical methods, piling up the cut materials into piles and burning the

piles in order to decrease the amount of fuels and prepare the habitat for introduction of the two rare plants. Mitigation measurements under the Section 7 of the Endangered Species Act for activities associated with this project are described in the attached FWS Biological Opinion.

### **2.3 No Action**

Under the no action alternative, the restoration of habitat for the rare and endemic Pine Hill flannelbush and El Dorado bedstraw transplants in the Pine Hill and Salmon Falls units of the Pine Hill Preserve would not take place. No action would maintain the status quo and not allow for potential expansion of the distribution and numbers for the two above mentioned species.

### **2.4 Alternatives Considered but Eliminated from Detailed Analysis**

None

### **3.0 Affected Environment**

A total of 20 acres of Northern Mixed chaparral and Pine/Oak woodland habitat types within the Pine Hill and Salmon Fall units of the Preserve would be affected.

The Pine Hill unit comprises a 360-acre parcel and smaller disjunct parcels near the Pine Hill, including the 10-acre parcel where habitat restoration for the Pine Hill flannelbush would be implemented (Figure 2). This unit is surrounded by housing developments, although house parcels surrounding the 10-acre site tend to be larger (5-10 acres), allowing for some of the natural habitat and the rare plant species to survive on privately owned parcels. Main vegetation type at the site is Northern Mixed chaparral.



**Figure 2.** A 10-acre parcel (delineated in red) in the northern portion of the Pine Hill unit where habitat restoration and transplanting of Pine Hill flannelbush would take place.

The Pine Hill flannelbush is a perennial shrub that grows up to 1.5 m in height. The flowers are orange and the blooming period is from April to July. This species is usually present on rocky ridges within the chaparral and woodland communities, such as the micro sites at the 10-acre parcel of the Pine Hill unit proposed for the transplant of this species. To date, only 84 acres of occupied habitat and 104 individuals for this species have been documented inside the Preserve boundaries at the Pine Hill Unit (BLM 2010).

The Salmon Falls unit is a mostly contiguous 2,699-acre unit located in the Salmon Falls/Webber Creek area, approximately 10 acres in the northern portion of this unit (Figure 3) would be restored to provide habitat for El Dorado bedstraw transplants. The area surrounding this unit is mostly undeveloped, and the recently acquired Kanaka Valley area provides connectivity between this unit and the Martel Creek unit. Main vegetation types in this unit are Northern Mixed Chapparral and Pine/Oak woodland.

The El Dorado bedstraw is a small perennial herb, with hairy stems up to 30 cm in length. This species grows in the understory of live oak or black oak woodlands, although at the Preserve it is also found in the understory of chaparral areas. A total of 120 acres of occupied habitat for this species have been documented on Preserve lands and the estimated number of individuals for this species at all documented sites is more than 21,000 (BLM 2010).



**Figure 3.** A 10-acre area (delineated in white) located in the northern portion of the Salmon Falls unit would be used for habitat restoration and transplanting of El Dorado bedstraw.

#### **4.0 Environmental Effects**

The following critical elements have been considered for this environmental assessment, and unless specifically mentioned later in this EA, have been determined to be unaffected

by the proposal:, prime/unique farmlands, floodplains, water quality, hazardous waste, wetlands and riparian zones, wild and scenic rivers, wilderness, hydrology and environmental justice.

#### **4.1 Impacts of the Proposed Action and Alternatives**

**Air quality:** at this point in time conducting a prescribed burn for the 10-acre Pine Hill area is not feasible, however there is the potential to temporarily affect the air quality at the area immediately adjacent to the 10-acre parcel if the burning of wood piles takes place (an alternative to pile burning is to chip the cut materials). To minimize potential effects by smoke the BLM would pile cut materials in areas no larger than 6x6 feet, and burning would take place only if the adequate climatic conditions are met. The BLM has extensive experience in conducting these types of pile burns and the BLM's fuels manager specialists are currently preparing the burn plan for similar shrub removal projects that have been conducted at the Preserve. If the burning of piles in relation to this project takes place, the BLM would adopt similar mitigation measures adopted at other Preserve sites and carefully monitor weather conditions such as temperature, humidity and direction of the wind during the pile burning sessions. The BLM would also follow State and local regulations while conducting the burn and, if during the burning activities climatic conditions are not adequate, the BLM would immediately suspend all burning activities.

**Threatened or endangered species:** in order to minimize impacts to federally listed species as a result of activities related to this project, mitigation measures listed in the Biological Opinion would be implemented. These measures include marking federally listed species before conducting activities, avoiding these species during the removal of shrubs, and aiding the permanent establishment of these species in the treated areas. Because the goal of this project is to enhance habitat in order to increase the distribution and numbers of rare plant species, the temporary effects due to the removal of vegetation are would not be permanently detrimental for these species.

**Invasive nonnative weeds:** conservation measurement described in the Biological Opinion, such as surveys after treatments are applied to detect early weed infestation and mechanical removal of weeds would be implemented. If chemical control is deemed necessary the BLM would conduct a separate Environmental Assessment and Sec. 7 consultation with the FWS.

**Fire/fuels:** implementation of this project would contribute to decrease accumulated fuels at the two 10-acre sites by removing the shrub layer and conducting burning of cut and

piled materials *in-situ*. Removal of the shrub layer would help to decrease the chances of wildfire occurrences and would reduce the possibility to impact human lives and property.

**Soils:** access to the two 10-acre sites would be accomplished by using existing roads and entering the treatment areas by foot. Also, because only aerial parts of vegetation would be cut and/or removed soils would not be disturbed during the shrub removal activities. The content of nutrients in the soil would temporarily be increased after the pile burning activities, and it is expected that these nutrients would be available and used by native vegetation. No erosion is expected to occur as a result of the shrub removal or other activities associated with this project.

**ACEC values:** because of their unique natural resource values that include rare and endemic plant species, the Preserve lands within the BLM have been designated Pine Hill Preserve ACEC (area of critical environmental concern). Implementation of this project is expected to enhance these unique values, by restoring habitat for two endemic species and by increasing their numbers and occupied habitat.

**Visual resources:** The Pine Hill ACEC has been given a Class II Objective under the BLM's Visual Resource Management System, and the BLM manages this ACEC to retain the existing character of the landscape. Changes in the landscape due to the removal of the shrub layer would be temporal and would not affect the long term aspect of the landscape.

**Cultural resources:** compliance under the Section 106 of the National Historic Preservation Act is described in the BLM Section 106 document for the Pine Hill flannelbush and El Dorado bedstraw habitat restoration project, Pine Hill Preserve, El Dorado County, CA (attached).

#### **4.2 Impacts of the No Action Alternative**

No action would maintain the status quo and prevent increases on the distribution and numbers of rare plants. The no action alternative would also prevent management of accumulated fuel loads in the areas where the removal of shrubs would take place, and would increase the potential occurrence of non-controlled fires at the Preserve.

#### **4.3 Cumulative Impacts**

There are no negative cumulative impacts associated with the implementation of this project. Overall long term impacts due to the implementation of this project are expected to benefit natural habitat and populations of at least two rare plant species. Additional benefits are reducing the chances of catastrophic fire events on Preserve lands that may put at risk human lives and property.

## 5.0 Agencies and Persons Consulted

Tyler P. Willsey- Wildlife Biologist, FWS Sacramento Field Office  
Caroline Prose- CVPIA HRP Coordinator, FWS Pacific Southwest Regional Office  
Jeremiah M. Karuzas –Wildlife Biologist, FWS Sacramento Field Office

### 5.1 BLM Interdisciplinary Team

Reviewers:

<i>/s/ James Barnes</i>	<i>11-22-10</i>
_____ James Barnes NEPA coordinator/Cultural Resources	_____ Date
<i>/s/ Peggy Cranston</i>	<i>11/17/10</i>
_____ Peggy Cranston Wildlife Biologist	_____ Date
<i>/s/ Graciela Hinshaw</i>	<i>11/17/10</i>
_____ Graciela Hinshaw Pine Hill Preserve Manager/Botany	_____ Date
<i>/s/ Jeff Horn</i>	<i>11/18/10</i>
_____ Jeff Horn Recreation Planner	_____ Date
<i>/s/ Brian Mulhollen</i>	<i>11/18/10</i>
_____ Brian Mulhollen Fuels Management Specialist	_____ Date

### 5.2 Availability of Document and Comment Procedures

This EA, posted on Mother Lode Field Office's website ([www.blm.gov/ca/motherlode](http://www.blm.gov/ca/motherlode)) under Information, NEPA (or available upon request), will be available for a 15-day public review period. Comments should be sent to the Mother Lode Field Office, 5152 Hillside Circle, El Dorado Hills, CA 95762 or e-mailed to us at [ghinshaw@blm.gov](mailto:ghinshaw@blm.gov).

## **6.0 Literature Review**

Bureau of Land Management 2007. Draft for the Pine Hill Preserve Management Plan.

iv+ 82 pp.

Bureau of Land Management 2008. Sierra Resource Management Plan and Record of

Decision Office, California. ii+ 111 pp.

U.S. Fish and Wildlife Service. 2002. Recovery Plan for Gabbro Soil Plants of the

Central Sierra Nevada Foothills. Portland, Oregon. xii + 220 pp.



## United States Department of the Interior



FISH AND WILDLIFE SERVICE  
Sacramento Fish and Wildlife Office  
2800 Cottage Way, Room W-2605  
Sacramento, California 95825-1846

In Reply Refer To:  
81240-2008-F-1588-1

### Memorandum

To: Field Manager, Mother Lode Field Office, Bureau of Land Management,  
El Dorado Hills, California

From: Field Supervisor, Sacramento Fish and Wildlife Office,  
Sacramento, California

Subject: Formal Consultation on the Proposed Habitat Restoration Project for Pine Hill  
flannelbush and El Dorado bedstraw in the Pine Hill and Salmon Falls units of the  
Pine Hill Preserve, El Dorado County, California

This letter is in response to your June 4, 2010, request for formal consultation on the Bureau of Land Management's (BLM) proposed Habitat Restoration Project for Pine Hill flannelbush and El Dorado bedstraw in the Pine Hill and Salmon Falls units of the Pine Hill Preserve, in El Dorado County, California. Your request was received by the U.S. Fish and Wildlife Service (Service) on June 4, 2010. At issue are the potential effects of the project on the endangered Pine Hill flannelbush (*Fremontodendron californicum* ssp. *decumbens*), El Dorado bedstraw (*Galium californicum* ssp. *sierrae*), and the threatened Layne's butterweed (*Packera layneae*). Our response is issued under the authority of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*) (Act).

While potential habitat is present, Layne's butterweed has not been found during multiple surveys within the project area and is not included in any of the restoration activities, therefore the Service has determined the proposed project is not likely to adversely affect the species.

This document represents the Service's biological opinion on the effects of the proposed project on Pine Hill flannelbush and El Dorado bedstraw. Our analysis of potential effects from the proposed project on these listed plants is based on: (1) a May 27, 2010, site visit conducted by BLM (Graciela Hinshaw, Julie Wynia and Sandra Namoff), Service (Tyler Willsey), and Cornflower Farms (Neal Funston) staff; (2) the June 4, 2010, *Biological Assessment for the Habitat Restoration for Pine Hill flannelbush and El Dorado bedstraw in the Pine Hill and Salmon Falls units of the Pine Hill Preserve* (biological assessment); (3) email and phone communications between BLM and the Service; and (4) other information available to the Service.



### **Consultation History**

- May 27, 2010: The Service, BLM, and Neal Funston (Cornflower Farms) visited the project site. Mr. Funston provided written input regarding possible propagation methods for the species included in this project.
- May 28, 2010: BLM provided the Service a draft Biological Assessment for the project.
- June 4, 2010: BLM provided the Service a Biological Assessment for the project.
- August 12, 2010: The Service requested additional information from BLM.
- August 23, 2010: BLM provided the Service with the requested information on the project.
- September 1, 2010: The Service requested additional information from BLM.
- September 1, 2010: BLM provided the Service with the requested information on the project.

## **BIOLOGICAL OPINION**

### **Description of the Proposed Action**

The Mother Lode Field Office of BLM is proposing to restore and prepare potential habitat for Pine Hill flannelbush and El Dorado bedstraw transplants within two locations at the Pine Hill Preserve (Preserve). The proposed sites are located in the Northern portions of their respective units and are contained in the gabbro soils formation. The area is located in El Dorado Hills, a highly developed area in El Dorado County, which had contained a large population of the two plants in the past but currently encompasses a very small and scattered population of these listed plants. Restoration activities in these areas will include fuels treatment and the introduction of Pine Hill flannelbush on a 10-acre section of the Pine Hill Unit of the Preserve and the introduction of El Dorado bedstraw on a 10-acre section of the Salmon Falls unit of the Preserve.

### **Pine Hill Unit**

BLM is proposing to remove existing dense chaparral in order to prepare the habitat for introduction of Pine Hill flannelbush. In order to remove the chaparral, BLM is proposing to conduct a prescribed burn over the entire 10-acre parcel. The prescribed burn will be conducted under the supervision of BLM Fuels Management Specialist, the Preserve Manager, and other trained staff.

If it is not feasible to conduct a prescribed burn over the entire area, chaparral will be removed by an approximately twenty (or less)-person hand crew using chainsaws and other hand tools. A majority of woody plants more than two feet in height will be cut at ground level. The brush will be cleared to approximately 15 percent or less of the total original cover. Some shrubs will be retained to provide habitat structure for wildlife. The cut shrubs will be deposited in piles 6 feet by 6 feet, allowed to dry, and will then be burned in place. Piled vegetation will be located in

areas where no listed plants are present and the herbaceous layer will be left undisturbed. Clearing activities will be conducted under the oversight of BLM Fuels Management Specialist, the Preserve Manager and other trained staff to prevent accidental cutting and trampling of listed plants.

Since the goal of this project is to enhance habitat in order to increase the number of individual Pine Hill flannelbush, if a sufficient number of seedlings do not emerge within a year of the clearing, Pine Hill flannelbush cuttings and seeds will be collected from individual plants located in the adjacent privately-owned parcels. The collected plant materials will be propagated under the guidance and care of Cornflower Farms, a native plant nursery with experience propagating many native plant species including Pine Hill flannelbush. Pine Hill flannelbush seedlings/cuttings will be planted within the restored area in the fall, before the rainy season, or during the spring if watering of the transplants can be done to help with their initial establishment. If plants are planted outside the rainy season, watering will be conducted at the time of transplanting, a week after (if needed) and once every 2-3 weeks until the rainy season. Once plants are established (by the end of the first growing season), watering will be stopped.

### **Salmon Falls Unit**

At the Salmon Falls unit a majority of the chaparral layer will be removed at the site by an approximately twenty-person hand crew using chainsaws and other hand tools to create space in preparation for transplantation of El Dorado bedstraw seedlings. The tree canopy will be kept at 25 percent or higher relative cover, and planting of black oaks (*Quercus kelloggii*) may be conducted to create the desired percent of shaded cover. In addition, in dense timber stands, thinning to crown-spacing of 20 feet by 20 feet will take place and dense shrub cover will be reduced to 15 percent or less. Some trees and shrubs will be retained to provide vegetation structure for wildlife habitat. The cut shrubs and limbs will be dragged from the site directly to an existing road/trail for processing using a chipper. There will be no burning of piles at the Salmon Falls unit site, and materials will be hauled away and/or broken down with a chipper and the chips will be dispersed over habitat. Currently, no federally-listed plants have been documented in the 10-acre area where restoration activities will take place, but if any federally listed or rare plants are discovered during restoration activities, they will be flagged and avoided. The removal of shrubs will be implemented by crews closely supervised by BLM Fuels Management Specialist, the Preserve Manager and other trained staff to minimize impacts to any rare or listed plant species.

Following the removal of the existing chaparral overstory, BLM will begin transplanting/planting El Dorado bedstraw as soon as possible in the newly cleared area to reduce the risk of chaparral re-growth occurring prior to planting. El Dorado bedstraw materials to be used in the transplanting will be taken from individuals growing in other areas of the Salmon Falls unit. Preserve staff and BLM will continue to work with Cornflower Farms nursery to determine techniques for propagation and transplantation of this species to the restored site. Cornflower Farms does not have experience working with species of bedstraw, but they conducted a site visit to observe El Dorado bedstraw and have agreed to conduct propagation tests with other species of common bedstraw growing on Preserve lands. The number of seeds and/or cuttings that will be planted and/or transplanted will depend on the

availability of seeds or plant parts to be collected during the ongoing season, and the size and distribution of suitable habitat patches within the 10-acre restored areas.

El Dorado bedstraw seedlings/cuttings will be planted in the fall, before the rainy season, or during the spring if watering of the transplants can be done to help with their initial establishment. If plants are planted outside the rainy season, watering will be conducted at the time of transplanting, a week after (if needed) and once every 2-3 weeks until the rainy season. Once plants are established (by the end of the first growing season), watering will be stopped.

### **Monitoring**

In order to assess whether the clearing and burning of fuels allows for greater vigor of these listed plants, BLM has proposed to monitor plant recruitment and growth after treatment. BLM will establish permanent monitoring transects in treatment areas prior to fuels reduction activities to obtain baseline data of the habitat and evaluate changes after treatment over time. At least three 30-meter transects (two in the areas where the removal of shrubs will take place and one in a "control" area), and the associated 30x2 meter plots will be used to characterize the composition and structure of vegetation and document percentage of shrub cover before and after the removal of shrubs. These transects will be evaluated annually to determine changes in vegetation composition and structure.

If seedlings of Pine Hill flannel bush germinate following the restoration activities, they will be monitored on an individual basis, and their survival and phenology will be documented for several years or at least until the individuals become adults and reach the reproductive stage. In areas where rare plants are present, the expansion and growth of the species will be documented using a GPS unit. The extension of these patches will be monitored yearly to evaluate changes in size and permanent 2x4 meter plots will be established to gather information regarding plant survival, stem numbers and number of flowering stems for both Pine Hill flannelbush and El Dorado bedstraw. Information within the plots will be evaluated yearly to determine changes in stem numbers, and also any potential reproductive effects of the transplanting. At least three plots will be established in the area where the species will be transplanted, and at least two "control" plots will be established at the site(s) from where cuttings of this species will be taken in order to be able to assess whether the transplants are exhibiting normal growth patterns.

Survival of transplants will be documented and numbers of flowering stems, flowers, fruits and seeds, will be recorded. The term for this project is three years and four months after the initiation of habitat restoration activities, however, monitoring and evaluation of plots, transects, and transplanted individuals will continue beyond the termination date of the project.

Progress reports of activities will be submitted quarterly to the Service. Annual reports will also be submitted at the end of each year and a final report will be submitted upon termination of the project.

### **Maintenance**

Maintenance of the restored areas will be conducted throughout the duration of the project in

order to provide appropriate habitat for the transplanted rare plants. After restoration activities and during the establishment of transplanted rare plants, careful monitoring and manual control of weeds will be conducted to prevent and remediate potential infestation of the restored sites. Other activities will include further treatment of restored areas to prevent shrubs from displacing the rare plant transplants before they are established. Treatment activities will be conducted using the hand-clearing methods previously described and under the supervision of BLM or Preserve staff to ensure no listed plants are harmed. No burning will be conducted on-site during maintenance activities.

### **Conservation Measures**

In order to minimize the effects of the proposed project on Pine Hill flannelbush and El Dorado bedstraw, BLM will implement the following conservation measures:

1. Prior to vegetation removal, the preserve manager, BLM botanists, and other trained staff will survey the treatment area and flag all rare plant populations and individuals.
2. Areas of the project that support listed plants will be avoided and no removal of such plants will take place during the shrub and tree cutting activities.
3. Preserve staff will conduct a worker-awareness program for all personnel on the work crews that will be participating in the removal of shrubs and/or tree branches. The program will include plant identification (including recognition of the federally-listed and BLM Sensitive Species), standard avoidance measures, proper conduct with tools and fuel, and reporting requirements.
4. Treatment with chipper will result in dispersal of ground litter. The ground litter will not exceed three inches and will help prevent erosion of the soil. No deposition of cut debris will be directed to cover patches of existing rare plants.
5. Preserve and/or BLM staff will be on site daily to monitor avoiding/minimizing impacts to listed plant species.
6. Crews will remain on existing trails while accessing areas where fuels reduction will be conducted.
7. Vehicles and equipment will be cleaned prior to entry to the Preserve to reduce exotic species spread.
8. The season after an area has been treated and during the following two years, the area will be surveyed for noxious weeds. Hand-pulling or string trimmers will be used to combat any new infestations of noxious weeds (including yellow star-thistle (*Centaurea solstitialis*) resulting from this project under the supervision of BLM or Preserve staff to ensure no listed plants are adversely affected. If these methods prove ineffective and herbicides are deemed necessary to combat noxious weed introductions, BLM will consult with the Service before any herbicides are applied.

9. Fueling and refueling of equipment will be done in areas away from rare plant locations and conducted in a manner to avoid spilling oil and fuel directly onto soil.
10. Fuel containers will be kept clean and will be checked to ensure they are leak free. Fuel containers will be placed on top of plastic sheeting (such as garbage bags), and fueling will be conducted on the plastic. Rags will be kept with fuel for cleanup. If fuel spills on the plastic, rags will be used to absorb the fuel, to keep the fuel out of contact with the soil surface.
11. All trash will be removed from the site at the end of each work day.
12. A monitoring plan will be written to determine effects of vegetation clearing on the rare plants. The plan will be submitted to the Service for review and approval prior to implementation.
13. Prior to transplanting, a detailed description of all transplanting activities and post transplanting care techniques will be submitted to the Service for review and approval.
14. A burn plan will be prepared that will include the expected immediate effects of treatment. The plan will be submitted to the Service for review and approval prior to implementation.
15. BLM will report study and survey results to the Service.

### **Analytical Framework for the Jeopardy Analyses**

In accordance with policy and regulation, the jeopardy analyses this biological opinion relies on four components: (1) the Status of the Species, which evaluates the species' range-wide condition, the factors responsible for that condition, and its survival and recovery needs; (2) the Environmental Baseline, which evaluates the condition of the species in the action area, the factors responsible for that condition, and the relationship of the action area to the survival and recovery of the species; (3) the Effects of the Action, which determines the direct and indirect impacts of the proposed Federal action and the effects of any interrelated or interdependent activities on the species; and (4) Cumulative Effects, which evaluates the effects of future, non-Federal activities in the action area on the species.

In accordance with policy and regulation, the jeopardy determination is made by evaluating the effects of the proposed Federal action in the context of the species' current status, taking into account any cumulative effects, to determine if implementation of the proposed action is likely to cause an appreciable reduction in the likelihood of both the survival and recovery of the species in the wild.

The jeopardy analysis in this biological opinion places an emphasis on consideration of the range-wide survival and recovery needs of Pine Hill flannelbush and El Dorado bedstraw and the role of the action area in the survival and recovery of these species as the context for evaluating

the significance of the effects of the proposed Federal action, taken together with cumulative effects, for purposes of making the jeopardy determination.

### **Action Area**

The action area for the habitat restoration project is considered to be the 10-acre parcel within the Pine Hill unit, the 10-acre parcel in the Salmon Falls unit, and the areas in which seeds/cuttings will be collected from for propagation. Pine Hill flannelbush seeds/cuttings will be collected from a private residence located adjacent to the proposed restoration site. El Dorado bedstraw seeds/cuttings will be collected from a location inside the Salmon Falls unit of the Preserve.

### **Status of the Species-Gabbro Plants**

On October 18, 1996, Pine Hill flannelbush, and El Dorado bedstraw were federally listed as endangered (Service 1996). These plants, referred to as gabbro plants, occur exclusively or primarily on gabbro soils in chaparral and woodland communities in the Central Sierra Nevada foothills in California. The gabbro plants are most commonly associated with the Rescue soils series, especially Rescue very stony sandy loam and Rescue extremely stony sandy loam, on the Pine Hill formation, an area of approximately 25,700 acres, in western El Dorado County. Pine Hill flannelbush and El Dorado bedstraw are endemic to gabbro-derived soils on the Pine Hill formation. No critical habitat has been designated for these species.

Historically, gold rush activities and clearing for agriculture reduced and fragmented habitat in western El Dorado County. Habitat loss, habitat fragmentation, alteration of natural fire regime, and suppression of disturbance (all mainly due to urbanization) are the current major threats facing gabbro plant species. Ongoing residential or commercial development within the Pine Hill formation continue to threaten a large majority of the remaining sites within the Pine Hill formation and adjacent serpentine in western El Dorado County, and either directly or indirectly will adversely affect most of the range of both taxa.

In 2002, the Service published the *Recovery Plan for Gabbro Soil Plants of the Central Sierra Nevada Foothills* (Recovery Plan). The Service's 2002 Recovery Plan identifies a recommended Pine Hill preserve system, designed for the protection of the gabbro soil plant species, covering approximately 5,001 acres in El Dorado County. The Recovery Plan outlines the creation of a widely-distributed preserve system which includes the Pine Hill, Salmon Falls/Martel Creek, Penny Lane, and Cameron Park units as well as a 60-acre El Dorado bedstraw specialty preserve.

### Pine Hill flannelbush

Pine Hill flannelbush is a branched spreading shrub of the cacao family (Sterculiaceae) growing to 4 feet tall. Dense star shaped hairs cover the leaves and the younger twigs and branchlets. Its' leaves are elliptic ovate to ovate, shallowly or deeply palmately lobed with 5 to 7 lobes. Pine Hill flannelbush produces flower buds in late winter with light orange to reddish brown flowers appearing from late April to early July. Pine Hill flannelbush can be distinguished from other flannelbush species by its decumbent growth habit, its relatively long peduncles (stalks that support the inflorescence), and its copper orange flowers.

Pine Hill flannelbush occurs on scattered rocky outcrops in chaparral and black oak woodland on and in the vicinity of Pine Hill. It is only known from one localized area near Pine Hill in western El Dorado County, scattered within an area of approximately 5,000 acres on the Pine Hill formation. Community associates are ponderosa pine (*Pinus ponderosa*), foothill pine (*Pinus sabiniana*), chamise (*Adenostoma fasciculatum*), toyon (*Heteromeles arbutifolia*), and bigberry manzanita (*Arctostaphylos glauca*) (Kelman 1991; Boyd 1996).

Boyd and Serafini (1992) studied loss of flower buds, flowers, and immature fruits prior to the fruit opening; seed predation; seed germination; seed longevity; seed establishment and survival; and population structure of Pine Hill flannelbush. In studying reproductive attrition (decrease in the number of reproductive structures, flowers, fruits, seeds), Boyd and Serafini (1992) found the production of seeds in Pine Hill flannelbush was severely limited by insect predation. Over 98 percent of flower buds failed to produce fruit because of predation by insects. In addition, rodents destroyed 90 percent of seeds under shrubs within 8 to 10 months (Boyd and Serafini 1992). Boyd and Serafini (1992) also found that Pine Hill flannelbush cannot establish seedlings without fire. They concluded that over a time span longer than at least a few decades sexual reproduction may be necessary in order to maintain genetic diversity and establish plants at new locations within the boundaries of the current populations (Boyd and Serafini 1992).

Experiments conducted to assess the effects on seed germination of scarification by heat or mechanical methods, resulted in the discovery that treatments which disturbed the seed coat increased germination rates 18 to 26-fold over untreated seeds. The highest germination rate, 72.2 percent, was obtained when heat treated seeds were planted in ash from chamise (Boyd and Serafini 1992). In a 1983 study, Boyd (1987) examined the effects of fire on Pine Hill flannelbush. By conducting a prescribed burn in habitat occupied by Pine Hill flannelbush, Boyd determined that Pine Hill flannelbush was adapted to naturally-occurring fires and required fire to stimulate reproduction. In response to the fire, recruitment of additional Pine Hill flannelbush individuals occurred through the fire-stimulated germination of the seed bank and the production of sprouts from the roots of established plants (Boyd 1987).

Additional experiments involving Pine Hill flannelbush and seed longevity established that Pine Hill flannelbush seeds are able to survive for years in the soil (Boyd and Serafini 1992). In studying seedling establishment and survival, Boyd and Serafini (1992) found that none of the natural seedlings that were discovered on Pine Hill, nor seedlings that were planted in pots, survived. Most of the seedlings were destroyed by predators. Those that had escaped predation eventually died from drought, suggesting that recruitment of additional Pine Hill flannelbush is low.

Boyd (1994) studied pollination biology of Pine Hill flannelbush. Basic information on importance of floral visitors to seed production, limitations to reproduction from pollen availability, and behavior of floral visitors was obtained. Almost all of the floral visits were made by native solitary bees. The primary floral visitor to the flowers was an anthrophorid bee (*Tetralonia stretchii*) followed by the megachilid bee (*Callanthidium illustre*) (Boyd 1994). Hand pollination did not increase the amount of fruiting bodies, but almost doubled the number of seeds per fruit (Boyd 1994). Studies on seed dispersal for Pine Hill flannelbush documented that seeds were dispersed up to 39 feet from the parent plant by harvester ants.

The Recovery Plan identifies the Pine Hill unit as important for the recovery of Pine Hill flannelbush. The Recovery Plan recommends the protection of at least one very large occurrence of Pine Hill flannelbush greater than 320 acres; three medium occurrences each between 10 and 100 acres; and four small occurrences each smaller than 10 acres.

At the time the Recovery Plan was written, Pine Hill flannelbush was believed to occupy approximately 380 acres (Service 2002). Although there were reports of Pine Hill flannelbush occurring in some small scattered populations in Nevada County, Kelman *et al.* (2006) showed that the extant population at Nevada County is genetically different than the population at the Pine Hill; therefore it is not appropriate to include the Nevada County population towards the recovery of this species. Current information on the distribution of this species encompasses approximately 227 acres (CNBBD 2009). While there is a large difference in the estimated 380 acres in 2002 and the current acreage, this difference in distribution does not suggest a recent loss of 153 acres of plants and habitat, rather is the result of a refinement in the distribution mapping. Of the known 227 acres of Pine Hill flannelbush, approximately 99 acres are protected within the Pine Hill unit of the preserve.

#### El Dorado bedstraw

El Dorado bedstraw is a softly hairy perennial herb in the coffee family (Rubiaceae). Four narrow leaves are arranged at each node. The pale yellow flowers, which are clustered at the tips of stems, appear in May and June. Minute hairs cover the fleshy fruit. Several other *Galium* species also occur on gabbro-derived soils in the Pine Hill area (Wilson 1986); however, El Dorado bedstraw is not easily confused with any other species of *Galium* (Dempster 1977) and can be distinguished from other subspecies of *G. californicum* by its very narrow leaves.

El Dorado bedstraw is restricted to the Pine Hill formation in the north, central, and south areas. It is an obligate understory species that occurs in oak woodland communities, including sites with ponderosa pine (*Pinus ponderosa*) and foothill pine (*Pinus sabiniana*). It has a naturally patchy distribution and is the rarest of all the listed gabbro plants. Population sizes vary from as few as 11 plants to thousands of individuals (CNDDDB 2009). Very little is known about the biology or ecology of El Dorado bedstraw and details of the reproductive biology and demography of the species are not available.

There is no information on the susceptibility or response of El Dorado bedstraw to fire, overstory removal, or soil disturbance (Service 2002). Due to the species' existence adjacent to a chaparral community with a relatively short fire frequency, the El Dorado bedstraw is likely to persist if a fire occurred during the dry season. El Dorado bedstraw has persisted in a plant community that burns periodically and it is associated with species that have specific adaptations for fire (Service 2002). Although there is no experimental evidence on this subject, the species may be adapted to tolerate fire. Following a 2007 wildfire within the Pine Hill Preserve, El Dorado bedstraw plants were discovered growing in portions of the recently burned area. Surveys did not detect the species but due to proximity and habitat it is likely that they exist in the seed bank.

The reasons for the decline of the species include residential development, road construction, irrigation, and inadequate regulatory mechanisms. Its restricted distribution and the limited

number of individuals make the species susceptible to catastrophic events such as pest outbreak, disease infestation, severe drought, and other natural disasters or human-caused disturbances (Service 2002).

Seedling survival and establishment is poor. The species is best protected in the Salmon Falls/Martel unit where four occurrences are known from non-edge effect areas. In the Pine Hill unit, three of the four occurrences are situated at least partially in edge habitat overlapping or abutting developed parcels. These “developed” parcels have single homes on >5 acre lots and may still represent suitable habitat. However, without conservation easements on these private parcels, future viability of the plants is unknown.

The Recovery Plan identifies the Salmon Falls/Martel Creek, the Pine Hill, and Cameron Park units as important for the recovery of El Dorado bedstraw, as well as an El Dorado bedstraw specialty preserve in the southern portion of the Pine Hill formation. The Recovery Plan recommends the preservation of sufficient habitat to preserve this species, and specifically recommends the protection of at least one large occurrence of El Dorado bedstraw greater than 85 acres; six medium occurrences each between 10 and 85 acres; and five small occurrences each smaller than 10 acres.

At the time the Recovery Plan was written, records of El Dorado bedstraw were believed to cover approximately 240 acres (Service 2002). However, current information on the distribution of this species encompass approximately 173 acres (CNDDDB 2009). This difference in distribution is not necessarily indicative of a loss of 67 acres of plants and habitat, rather more the result of a refinement in the distribution mapping. Of the known 173 acres of El Dorado bedstraw, approximately 99 acres are protected within the Salmon Falls, Pine Hill, Penny Lane, and Cameron Park units of the preserve.

## **Environmental Baseline**

### **Pine Hill flannelbush**

The 10-acre area at the Pine Hill unit is an isolated Preserve parcel where fuels reduction activities were conducted during 2009. Fuel-break lines have been constructed along the northern and eastern boundaries of this parcel. Access to this parcel is provided by paved and dirt roads along the northern and western boundaries, respectively. The parcel has suitable habitat and microhabitat for the Pine Hill flannelbush and, although the species is not present within the 10-acre parcel boundaries, it is present in the surrounding privately-owned parcels. A reason for the absence of Pine Hill flannelbush within the 10-acre Preserve parcel may be the presence of very dense chaparral. The presence of a soil seed bank in the area is assumed to exist as the surrounding areas contain the species, but has not been confirmed.

### **El Dorado bedstraw**

The northern portion of the Salmon Falls unit is comprised of an oak woodland overstory with mixed chaparral which provides habitat for El Dorado bedstraw. Numerous surveys have not resulted in the detection of this species. El Dorado bedstraw is found in other portions of the Salmon Falls unit, but again a soil seed bank has not been detected.

### **Effects of the Proposed Action**

For species that develop long-lived seed banks, a census of plants growing above ground may not accurately reflect the total number of plants at the site (Rice 1989; Given 1994). Population sizes of gabbro soil plants, including Pine Hill flannelbush and El Dorado bedstraw fluctuate due to varying environmental conditions. Therefore, total extirpation cannot be assumed when above-ground individuals of the species are not observed at a site. Furthermore, declines in population size over a few years may not necessarily indicate that the habitat is unsuitable for the species (Given 1994), merely that environmental conditions within the area have not favored seed germination.

Currently, there are no known Pine Hill flannelbush individuals in the 10-acre parcel, but it is expected that the combination of shrub removal and use of fire will enhance and/or restore the habitat for this species. The use of fire will benefit the transplanting efforts for the flannelbush by opening space where this species can be established and by releasing nutrients from the burned materials that will become available to the transplanted flannelbush. Because individuals of these species are present in adjacent parcels, manipulation of the habitat with fire may result in germination of seeds currently dormant in the soil and/or establishment of seedlings.

The burning process could result in loss of an existing soil seed bank for these rare plant species. The pile burning method results in a higher amount of heat released in a smaller area relative to a broadcast burn. Broadcast burns disperse the heat over a much larger area for the same amount of material and burn significantly cooler. High temperatures could result in the mortality of seeds for these rare plants that lay dormant in the soil and make them no longer viable for growth. Burning could also make the soil unsuitable for the introduction of flannelbush. High temperatures can denature nutrients contained in burned plants and naturally occurring in the gabbro soils making them unusable by plants. The lack of nutrients can be a severely limiting factor in the success of rare plants. Use of a broadcast burn will reduce the likelihood restoration activities creating the excess heat and the aforementioned negative effects.

Opening up the habitat and allowing the seed bank to germinate is expected to benefit Pine Hill flannelbush and El Dorado bedstraw, as long as the latter is able to germinate in absence of fire. The removal of the dense chaparral overstory and neighboring vegetation around these rare plants may diminish competition for soil resources, clear the habitat for the rare plants, and may allow the plants to colonize areas previously occupied by shrubs.

The Salmon Falls unit will be covered with chips following restoration and therefore is unlikely to experience the same pattern of natural revegetation from seed that it would experience after a wildfire. A layer of wood chips covering the soil will affect light, nutrients, moisture, and temperature at the soil surface. All of these factors are known to affect seed germination. Many chaparral species are adapted to regenerate from seeds located in the soil after a wildfire. For many species the first few years after a fire is the only stage of plant community development when their seedlings can be successful because there is reduced competition and an abundance of nutrients available. These conditions are unlike those that follow chipping, which leaves a layer of organic matter above the soil surface and does not have the nutrients release by the burned

materials. Therefore the deposition of chips on potential habitat may result in reduced seed germination for El Dorado bedstraw.

Since El Dorado bedstraw is most often found growing in partial shade, the reduction in shading that will occur with shrub removal may affect the species negatively or positively. If there is an optimal degree of shading for the species in its pre-restoration condition, then microhabitat areas that were optimally shaded are likely to become less ideal as shrubs are cut, resulting in decreased shade and changes in microclimate. Microhabitats that were previously suboptimal because they were too shady may approach the optimal shade condition as shade is reduced. The tree canopy may also be affected by the proposed project if deemed necessary in both the clearing of existing tree branches to reduce shade and the planting of new trees to increase shade. As alterations in shading will be applied as needed, it is less likely that the habitat will be negatively altered, but the aforementioned negative changes in microhabitat may still occur as well as the introduction of excess shade. Monitoring will provide an opportunity to assess the importance of the shading provided by the shrub layer.

In preparation for the introduction of Pine Hill flannelbush and El Dorado bedstraw into the newly restored areas, seeds/cutting must be collected to be propagated and grown into seedlings that can be introduced at the sites. El Dorado bedstraw plants will be harvested from other areas of the Salmon Falls unit while Pine Hill flannelbush seeds /cuttings will be collected from privately owned lands adjacent to the Pine Hill unit if the burn does not result in sufficient germination and growth of individuals of the species. The removal of potentially viable seeds from an area reduces genetic variation and lessens the ability of a population to adapt should it be subject to disease, severe weather, wildfire or predation. The soil seed bank insures a plants genetic material will pass on to the next generation and, should the mother plant perish, that it will be replaced and remain part of the population (Levin 1990). Removing viable seeds could cause the plant to be unable to replace itself following a catastrophic event such as wildfire, extreme weather, predation or disease.

Mortality could occur during the propagation process prior to transplanting. Cornflower Farms has experience working with Pine Hill flannelbush but has never attempted to propagate El Dorado bedstraw. A proven method of propagation is not known for bedstraw species and attempts to propagate plants in incorrect ways can result in the death of the plant. Although Cornflower Farms has successfully propagated Pine Hill flannelbush in the past, mortality could still occur due to unforeseen factors with this species as well. Incorrect methods of propagation and care can result in underdeveloped root systems which can cause plants to have insufficient hold on soil making them vulnerable to washing away during high rains and can also limit the plants ability to uptake nutrients and water from the soil. Practicing propagation with common species of bedstraw should allow Cornflower Farms to determine a successful method of propagation and reduce the likelihood of these adverse effects.

Mortality could occur from the transplanting of shrubs into the area following the restoration activities. Transplanted plants often require long periods of time to acclimate to their new environment and can even perish as a result of the shock of their new surroundings. Watering newly introduced plants can help them overcome the initial shock of transplanting. However, providing a native drought tolerant plant with an artificially high amount of water can cause the

plant to be reliant on artificial watering and therefore less drought tolerant. Discontinuation of a water source could stress the plant and may lead to mortality. Close monitoring and timing of transplanting just before the rainy season should minimize these adverse effects.

Direct effects may occur to these species during activities conducted by the maintenance work crew. Mortality or damage may occur to listed plants from trampling underfoot and from dragging debris to the chipper or transport truck. Plant mortality may also occur as a result of injuries afflicted during the clearing process. Chainsaws may cut or damage plants, other cut trees and shrubs may fall onto, crush or cover plants directly killing or damaging them. Death may occur in subsequent years following injury and is often associated with the secondary agents of disease, fungus, or insects. The resistance of plants to these agents is often lowered by injury, and wounds to plant tissue may provide an entry point for pathogens (USDA 2000). By training crews in the identification of listed-plants, having a botanist on site during the start of any maintenance activity and flagging all listed plants, BLM will minimize the likelihood of these adverse effects.

Shrub removal and ground disturbance from the work crew and mechanical equipment may result in an invasion of invasive plant species such as yellow star-thistle. Establishment of this or other noxious weeds could potentially out-compete listed plants. Implementing conservation measures, such as monitoring, cleaning of work equipment prior to moving it to the site, and subsequent eradication of noxious weeds using hand pulling and string trimmers, will help minimize these impacts by preventing their establishment.

### **Cumulative Effects**

Cumulative effects include the effects of future State, Tribal, local, or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed Habitat Restoration project for Pine Hill flannelbush and El Dorado bedstraw in the Pine Hill and Salmon Falls units of the Pine Hill Preserve are not considered in this section; they require separate consultation pursuant to Section 7 of the Act. The Service is not aware of specific projects that might affect Pine Hill flannelbush and El Dorado bedstraw in the action area that are currently under review by State, County, and local authorities.

The global average temperature has risen by approximately 0.6 degrees Celsius during the 20th Century (Intergovernmental Panel on Climate Change 2001, 2007; Adger et al 2007). There is an international scientific consensus that most of the warming observed has been caused by human activities (Intergovernmental Panel on Climate Change 2001, 2007; Adger et al. 2007), and that it is “very likely” that it is largely due to increasing concentrations of greenhouse gases (carbon dioxide, methane, nitrous oxide, and others) in the global atmosphere from burning fossil fuels and other human activities (Cayan et al. 2005, Adger et al. 2007). Eleven of the twelve years between 1995 and 2006 rank among the twelve warmest years since global temperatures began in 1850 (Adger et al. 2007). The warming trend over the last fifty years is nearly twice that for the last 100 years (Adger et al. 2007). Looking forward, under a high emissions scenario, the International Panel on Climate Change estimates that global temperatures will rise another four degrees Celsius by the end of this Century; even under a low emissions growth

scenario, the International Panel on Climate Change estimates that the global temperature will go up another 1.8 degrees Celsius (Intergovernmental Panel on Climate Change 2001). The increase in global average temperatures affects certain areas more than others. The western United States, in general, is experiencing more warming than the rest of the Nation, with the 11 western states averaging 1.7 degrees Fahrenheit warmer temperatures than this region's average over the 20th Century (Saunders et al. 2008). California, in particular, will suffer significant consequences as a result of global warming (California Climate Action Team 2006). In California, reduced snowpack will cause more winter flooding and summer drought, as well as higher temperatures in lakes and coastal areas. The incidence of wildfires in California also will increase and the amount of increase is highly dependent upon the extent of global warming.

No less certain than the fact of global warming itself is the fact that global warming, unchecked, will harm biodiversity generally and cause the extinction of large numbers of species. If the global mean temperatures exceed a warming of two to three degrees centigrade above pre-industrial levels, twenty to thirty percent of plant and animal species will face an increasingly high risk of extinction (Intergovernmental Panel on Climate Change 2001, 2007). The mechanisms by which global warming may push already imperiled species closer or over the edge of extinction are multiple. Global warming increases the frequency of extreme weather events, such as heat waves, droughts, and storms (Intergovernmental Panel on Climate Change 2001, 2007; California Climate Action Team 2006; Lenihan et al. 2003). Extreme events, in turn, may cause mass mortality of individuals and significantly contribute to determining which species will remain or occur in natural habitats. As the global climate warms, temperate terrestrial habitats are moving northward and upward, but in the future, range contractions are more likely than simple northward or upslope shifts. Ongoing global climate change (Kerr 2007; Inkley et al. 2004; Adger et al. 2007; Kanter 2007) likely poses a threat to Pine Hill flannelbush and El Dorado bedstraw. Since climate change threatens to disrupt annual weather patterns, it may result in a loss of habitat and/or pollinators. Where populations are isolated, a changing climate may result in local extinction, with range shifts precluded by lack of habitat.

## **Conclusion**

After reviewing the current status of Pine Hill flannelbush and El Dorado bedstraw, the environmental baseline for the action area, and the effects and cumulative effects of the proposed action, it is the Service's biological opinion that the proposed Habitat Restoration project for Pine Hill flannelbush and El Dorado bedstraw at the Pine Hill Preserve is not likely to jeopardize the continued existence of these species. This determination is reached because these species were not located in the restoration area to be affected by the clearing during numerous surveys for them although seeds may be present in the soil, and the goal of the project is to generate and introduce new individuals of these listed species to the project sites.

## **CONSERVATION RECOMMENDATIONS**

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities that can

be implemented to further the purposes of the Act, such as preservation of endangered species habitat, implementation of recovery actions, or development of information and data bases.

1. BLM should continue to conduct surveys for El Dorado bedstraw and Pine Hill flannelbush on other BLM lands within the range of these species and determine whether management actions such as prescribed burning could be implemented to enhance any newly discovered populations.
2. BLM should continue to monitor any effects that the fuels reduction projects have on listed plants.
3. BLM should design and implement a scientific study comparing effects of their manual fuels reduction projects versus prescribed fire on the germination, growth, and reproductive success of El Dorado bedstraw and Pine Hill flannelbush.

In order for the Service to be kept informed of actions minimizing or avoiding adverse effects or benefiting federally-listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations. The Service further requests that the results of any surveys or monitoring be submitted annually for our records and review.

#### **REINITIATION—CLOSING STATEMENT**

This concludes formal consultation on the proposed Habitat Restoration project for Pine Hill flannelbush and El Dorado bedstraw in the Pine Hill and Salmon Falls units of the Pine Hill Preserve. As provided in 50 CFR §402.16, reinitiation of formal consultation is required and shall be requested by the Federal agency or by the Service, where discretionary Federal involvement or control over the action has been retained or is authorized by law and: (a) if the amount or extent of taking specified in the incidental take statement is exceeded; (b) if new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered; (c) if the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the biological opinion; or (d) if a new species is listed or critical habitat designated that may be affected by the identified action.

Please contact Tyler Willsey, staff biologist at (916) 414-6577 or Jeremiah Karuzas at (916) 414-6737k, if you have any questions regarding this biological opinion on the proposed Habitat Restoration within the Pine Hill and Salmon Falls units of the Pine Hill Preserve project.

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