



United States
Department of
Agriculture

Forest
Service

PSW

Reply to: 4060-3

Date: JUN 24 1994

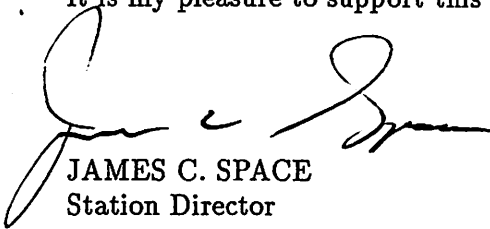
Subject: Establishment of W.B. Critchfield Research Natural Area

To: Regional Forester, R5

I have reviewed the enclosed Establishment Record and Environmental Assessment and I concur with the establishment of the W.B. Critchfield Research Natural Area on the Stanislaus National Forest. This concurrence is pending your finding that these documents are consistent with NEPA regulation.

The enclosed signature page was changed to reflect the Chief's delegation of authority for Research Natural Areas in his letter of May 24, 1994.

It is my pleasure to support this establishment of a new RNA.



JAMES C. SPACE
Station Director

Enclosures

cc:

David Diaz, R5 Timber Management
Connie Millar



Caring for the Land and Serving People

DECISION NOTICE AND FINDING OF NO SIGNIFICANT IMPACT
(RNA DESIGNATION ORDER) (LMP AMENDMENT)
USDA - FOREST SERVICE
ESTABLISHMENT OF W.B. CRITCHFIELD RESEARCH NATURAL AREA (F099303)
MI-WOK RANGER DISTRICT
STANISLAUS NATIONAL FOREST
TUOLUMNE COUNTY, CALIFORNIA

Decision and Reasons for the Decision

By virtue of the authority delegated to me by the Chief of the Forest Service in the Forest Service Manual Section 4063, I hereby establish the W.B. Critchfield Research Natural Area (RNA), consisting of 1003 acres (406 ha) of Forest Service land in Tuolumne County, California, on the Mi-Wok Ranger District of the Stanislaus National Forest, as described in the section of the establishment record entitled "Location."

This decision amends the land allocations in the Stanislaus National Forest Land and Resource Management Plan (LMP) as follows: land allocation status for the Bourland Meadow Candidate RNA within Management Area 6 is changed from "candidate RNA" to "established RNA;" and the name "Bourland Meadow Candidate RNA" is changed to "W.B. Critchfield RNA." The total number of acres and boundaries recommended for Bourland Meadow Candidate RNA in the LMP remain unchanged.

This decision implements Alternative 1 as described in the Environmental Assessment (EA) for the Establishment of W.B. Critchfield RNA. The W.B. Critchfield RNA will be managed in compliance with all relevant laws, regulations, and Forest Service Manual direction regarding RNAs, and in accordance with the management direction specified in the Stanislaus National Forest LMP.

The W.B. Critchfield RNA was recommended for establishment in the Record of Decision for the Stanislaus National Forest LMP on October 28, 1991 under the name Bourland Meadow Candidate RNA to provide a relatively undisturbed area representing the Red Fir Forest and Montane Freshwater Marsh target elements. That recommendation was the result of an analysis of the factors listed in 36 CFR 219.25 and Forest Service Manual 4063.41. The W.B. Critchfield area has been reexamined to ensure that the environmental effects of establishing the area as a RNA have not changed since 1991.

Factors other than environmental effects relevant to this decision include:

1. Establishing this RNA will further the goals and objectives of a nationwide system of Research Natural Areas.
2. Establishing this RNA will assist the Stanislaus National Forest in demonstrating compliance with provisions of special acts such as the Endangered Species Act, and the monitoring provisions of the National Forest Management Act.
3. The alternative has the effect of institutionalizing long-term protection, recognition, and maintenance of this example of the Red Fir Forest and Montane Freshwater Marsh target elements.

Alternative 1 is selected primarily because of factor #3 immediately above. Other alternatives considered include Alternative 2, "No Action" which would continue management of Bourland Meadow Candidate RNA under the direction for Management Area 6 in the Forest's LMP; Alternative A which would establish the W.B. Critchfield RNA and allow for an Argo Off Highway Vehicle (OHV) route to remain; Alternative B which changes the total number of acres to 600 thereby relocating the RNA boundary to exclude the Argo OHV route from the RNA; and Alternative C which withdraws the establishment recommendation made in the LMP.

Alternative 2 was not chosen because it was not responsive to factors #1 and #3 immediately above. Alternative A, Alternative B, and Alternative C were eliminated because they revisit a decision already made in the Forest LMP and do not address the purpose and need for the proposal. Alternative A and Alternative B also were not chosen because they violate the California Department of Fish and Game restrictions placed on critical deer fawning habitat. Furthermore, the boundary suggested in Alternative B is poorly discernible and eliminates the headwaters of Bourland Creek from the RNA. This would increase the areas susceptibility to modifying effects caused by humans or livestock, limit research opportunities, and limit the RNA's value for measuring baseline parameters, and long term ecological changes.

Public Involvement

Over 70 letters requesting public input were sent to government agencies, individuals, permittees, clubs, associations, organizations, and societies known to be interested in the establishment of this RNA. The list of parties potentially affected by or interested in this matter was developed based on: prior involvement in RNA aspects of Land Management Planning (LMP) for the Stanislaus National Forest; expressions of interest in RNA development; requests for notification of environmental analysis and documentation; or current involvement in resource issues associated with RNAs.

Five responses were received. Responses came from: Save The Redwoods League, Mud Sweat and Gears 4X4 Club, Central Sierra Environmental Resource Center, The Wilderness Society, and Delmar W. Dow. Issues raised by these parties include: Off Highway Vehicle (OHV) use and damage, pack station stock use, grazing use, recreational use, mineral potential, and mining claims. All these issues were previously addressed in the Final Environmental Impact Statement for the Stanislaus LMP and are not reanalyzed in the EA supporting this decision. No new issues were identified relating to establishment of the W.B. Critchfield RNA.

Legal notice of this decision will appear in the Sacramento Bee. The Stanislaus Forest Supervisor shall continue public involvement efforts by notifying the public of this decision and mailing a copy of the Decision Notice to all persons on the Stanislaus National Forest LMP mailing list.

Finding of No Significant Impact

Based on the EA, I find that establishment of the W.B. Critchfield RNA is not a major Federal action significantly affecting the quality of the human environment; therefore, an EIS will not be prepared. In arriving at this determination, I considered the following facts (EA, page 2):

Although this is an addition to the national system of RNAs, both short-term and long-term physical and biological effects are limited to the local area.

No known effects on public health and safety would occur with the establishment of this RNA.

No known effects on historic or cultural resources, actual or eligible National Register of Historic Place Sites, park lands, prime farmlands, wetlands, or wild and scenic rivers would occur with the establishment of this RNA. Effects on ecologically critical areas are minimal.

Effects on the human environment are not uncertain, do not involve unique or unknown risks, and are not likely to be highly controversial.

The action is not likely to set precedent for future actions with significant effects.

No known irreversible or cumulative effects or commitments of resources would occur with the establishment of this RNA.

The proposed action would not adversely affect an endangered or threatened species or its critical habitat.

The proposed action is consistent with Federal, State, and local laws and requirements for the protection of the environment.

Findings Required by Other Laws

Establishment of the W.B. Critchfield RNA is consistent with National Forest Management Act (NFMA) and with LMP management direction for the Bourland Meadow Candidate RNA.

Implementation Date

This decision may be implemented seven days after publication of legal notice in the Sacramento Bee. Publication will occur following signature of this decision by the Regional Forester of the Pacific Southwest Region of the USDA Forest Service.

Administrative Appeal Opportunities

This decision is subject to appeal pursuant to 36 CFR Part 217. To appeal this decision, a person must file two copies of a written Notice of Appeal with:

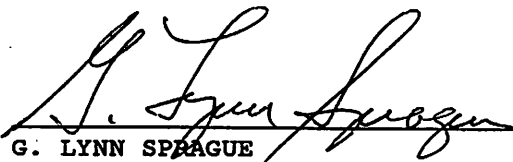
Chief, USDA Forest Service
14th & Independence Ave., S.W.
P.O. Box 96090
Washington, D.C. 20090-6090

Notices of Appeal must be prepared in accordance with the provisions of 36 CFR 217.9 and filed within 45 days of publication of the legal notice of this decision in the Sacramento Bee.

Contact Person

For additional information please contact:

Danella George, Forest RNA Coordinator
Stanislaus National Forest, Supervisor's Office
19777 Greenley Road
Sonora, CA 95370-1451
(209) 532-3671, Ext. 314



G. LYNN SPRAGUE
Regional Forester

11/25/94
Date

SIGNATURE PAGE

for

W.B. CRITCHFIELD

RESEARCH NATURAL AREA

F099303

USDA FOREST SERVICE

STANISLAUS NATIONAL FOREST

TUOLUMNE COUNTY, CALIFORNIA

The undersigned certify that all applicable land management planning and environmental analysis requirements have been met and that boundaries are clearly identified in accordance with FSM 4063.21, Mapping and Recordation and FSM 4063.41 5.e(3) in arriving at this recommendation.

Prepared by

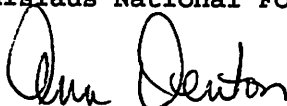


Robin R. Petersen, Botanist,
Stanislaus National Forest

Date

3/7/94

Recommended by

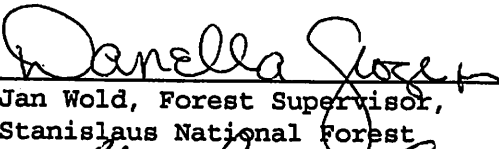


Ann Denton, District Ranger,
Mi-Wok Ranger District

Date

4/20/94

Recommended by



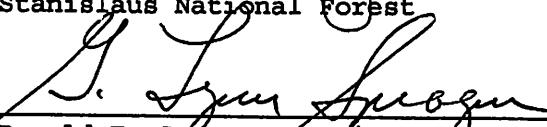
Jan Wold, Forest Supervisor,
Stanislaus National Forest

Date

4/20/94

Approved

Recommended by



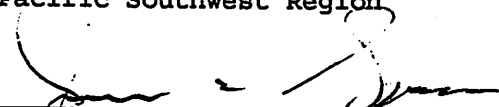
G. Lynn Sprague ~~Ronald E. Stewart~~, Regional Forester,
Pacific Southwest Region

Date

11/25/94

Concurrence

Recommended by



James C. Space ~~Barbara C. Weber~~, Station Director,
Pacific Southwest Research Station

Date

JUN 24 1994

Title Page

**Establishment Record for
William B. Critchfield Research Natural Area
Within Stanislaus National Forest
Tuolumne County, California**

A. INTRODUCTION

William B. Critchfield RNA, a 1003 acre (406 ha) watershed on the Mi-Wok Ranger District of the Stanislaus National Forest, was nominated in 1973. The site was originally called Bourland Meadow RNA, but the name was subsequently changed to honor the memory of William B. Critchfield whose work was instrumental in building the RNA program in the Pacific Southwest Region and in obtaining protection for this site.

A reconnaissance was carried out in 1973 (Johnson 1974), and an ecological survey was completed in 1976 (Talley 1976). The WBCRNA was originally considered on the basis of its suitability to represent the Red Fir Forest¹ target element in the central part of the Sierra Nevada physiographic region, and the ecological survey focused on the Red Fir and associated forest types. Subsequently recognizing the importance of the meadow and wetland features present within the RNA, Talley revisited the site in 1980 and submitted further comments to supplement the findings of his ecological survey.

Apparent human impact is low. Grazing occurred in the past, but there has been little or none in recent years. Recreational users pass through the WBCRNA on two established routes, but use away from these trails is low. The meadows remain lush and diverse, offering a rare opportunity for research and monitoring in near-pristine conditions.

All lands within the WBCRNA are under the jurisdiction of the Stanislaus National Forest. The WBCRNA is adjacent to the Emigrant Wilderness, but there are no Congressionally designated lands within its boundaries (Map 1)

1) Land Management Planning

The WBCRNA is included in Stanislaus National Forest Land and Resource Management Plan (U.S.D.A. Forest Service 1988) under the name Bourland Meadow RNA. It is included within the Research Natural Areas (RNA) Management Area (Management Area 6), which comprises four separate units.

B. OBJECTIVES

The primary objective for establishment of the WBCRNA is to preserve representatives of Red Fir Forest and associated forest types as well as Montane Freshwater Marsh and associated meadow and wetland types for the central part of the Sierra Nevada physiographic province. The WBCRNA will serve as a site for research on ecological processes and as a reference area for evaluating results of manipulative research and management practices on other sites. By protecting a diverse plant community from most forms of human

¹Vegetation types follow Holland (1986). Tree names follow Little (1979), all other plant names follow Munz and Keck (1968).

disturbance, the WBCRNA will contribute to conservation of genetic diversity as well as providing onsite educational opportunities.

C. JUSTIFICATION FOR ESTABLISHMENT

Taken as a whole, WBCRNA offers an exceptional diversity of terrestrial and aquatic communities within a single watershed, providing opportunities for research on broad-scale ecological processes. In addition, it offers representatives of target elements and aquatic features not well represented in established RNAs, including Red Fir and Montane Freshwater Marsh target elements as well as a stream, two small lakes, and a floating bog.

The Red Fir Forest target element is represented at two other RNAs in the Northern and Southern Sierra Nevada physiographic provinces: Mount Pleasant RNA on the Plumas NF, and Mountaineer Creek candidate RNA on the Sequoia NF. These two RNA are at opposite ends of the Sierra Nevada, and neither is representative of red fir (*Abies magnifica*) in the central part of its distribution. Home Camp Creek candidate RNA on the Sierra NF has some representation of red fir at the lower edge of its elevational distribution in the red fir-white fir transition zone. Patterns of geographic variation in genetically-based characteristics of red fir itself (Ustin 1976) and in characteristics of associated plant communities suggest that, rather than duplicating representation of Red Fir Forest, the WBCRNA will fill a significant gap for this target element.

The WBCRNA is unique among established and candidate RNAs in the central Sierra Nevada in offering a diversity of mid-elevation aquatic ecosystems. Included within its boundaries are the uppermost two miles of Bourland Creek, the shallow lake that is the source of Bourland Creek, and a deeper lake lower in the watershed. Harvey Monroe Hall RNA on the Inyo NF has numerous lakes, streams, and pools but is located in alpine and subalpine elevational zones. Addition of WBCRNA complements rather than duplicates Harvey Monroe Hall RNA in representing the range of aquatic communities present in the central Sierra Nevada.

No plant species listed as rare, threatened, endangered, or sensitive is known to occur at WBCRNA. However, habitat is present for *Silene invisa*, a species listed as sensitive by the Stanislaus National Forest. Northern goshawk (*Accipiter gentilis*¹), a Sensitive raptor, has been observed within the RNA, and habitat is present for a number of other listed vertebrates including California spotted owl (*Strix occidentalis*), great gray owl (*Strix nebulosa*), pine marten (*Martes americana*), fisher (*Martes pennanti*), and Sierra Nevada red fox (*Vulpes vulpes necator*). WBCRNA and the surrounding area are classified as Summer Critical Habitat for deer and is considered a key fawning area by the California Department of Fish and Game. The presence of these special habitat characteristics contributes to value of this site for research, education, and protection of biological diversity.

¹ Nomenclature for birds and mammals follows Laudenslayer et al. 1991.

D. PRINCIPAL DISTINGUISHING FEATURES

The WBCRNA is on the west slope of the Sierra Nevada, and consists of the uppermost watershed of Bourland Creek, a glaciated valley opening to the southeast. Exposed south-facing slopes, ridge crests, and open rocky areas primarily support Huckleberry Oak Scrub. Red Fir Forest is the predominant cover type on lower slopes and portions of the valley bottom, with Lodgepole Pine Forest and Aspen Forest also present in these areas. Small stands of pure Jeffrey pine (Pinus jeffreyi) grow in rocky areas at the head of the valley. Montane Meadow and Montane Freshwater Marsh cover much of the valley bottom in the lower part of the WBCRNA, and two smaller meadow areas are present higher in the watershed. Two lakes are present within the WBCRNA: Argo Lake at the source of Bourland Creek, and Heart Lake.

Geologic substrate includes both Mesozoic granitic rock and Pleistocene volcanics. Quaternary alluvium underlies the meadow areas. Soils vary from shallow pockets in granitic outcrops to deep organic meadow soils.

E. LOCATION

1) The WBCRNA is located on the Mi-Wok Ranger District of the Stanislaus National Forest.

2) The approximate center of the unit is at 38°7'15" North latitude, and 119°54'00" West longitude.

3) Boundary description (a certified copy of the legal boundary description of this area can be found in the forward section of this document):

Description of Bourland Meadow Candidate Research Natural Area¹.

Commencing at the intersection of the Emigrant Wilderness boundary and the highest point as shown (elevation 7990) on the Pinecrest Quadrangle dated 1979 and located in the E 1/2, NE 1/4, SE 1/4, NE 1/4 of Section 9, Township 3 North, Range 19 East, M.D.M.

Thence described as follows by latitude and longitude; (see attached map).

<u>Point No.</u>	<u>Latitude</u>	<u>Longitude</u>
1.	38°07'57.7"	119°53'18.7"
2.	38°07'44.8"	119°53'44.2"
3.	38°07'37.5"	119°54'08.0"

¹The name of this area has been changed to William B. Critchfield Research Natural Area, see page 1 above.

4.	38°07'30.3"	119°54'21.0"
5.	38°07'11.4"	119°54'37.8"
6.	38°06'50.5"	119°54'50.5"
7.	38°06'38.5"	119°54'00.0"

To the intersection of the South boundary of the SW 1/4 of Section 17, Township 3 North, Range 19 East, M.D.M.

Thence coincident with the section line in an easterly direction to the S 1/4 of said Section 17, thence east to the intersection of the Emigrant Wilderness boundary. Thence in a northeasterly direction coincident with the Emigrant Wilderness boundary to the point of beginning.

End of Description.

4) The WBCRNA encompasses 1003 acres (406 ha).

5) Elevations range from 7240 feet (2207 m) in the valley bottom at the southwest end of the WBCRNA to 7990 feet (2435 m) on the ridge at the northeast boundary (Map 2).

6) The best access is via State Highway 108 east from Sonora or west from U.S. Highway 395 (Map 1). Follow highway 108 to Long Barn, approximately 22 miles from Sonora. Travel time to the WBCRNA is approximately 1.5 hours from this point by automobile. At Long Barn, turn east on Long Barn Road, then immediately left on Merrill Springs Road (Forest Service Road 3N01). Continue 20.4 miles (32.8 km) on Road 3N01, then turn left (northeast) on Forest Service Road 3N16 and continue 6.2 miles (10 km) to the end of the road. The WBCRNA is reached by continuing cross-country on foot approximately 0.7 miles (1 km) northeast up the valley of Bourland Creek.

F. AREA BY COVER TYPE

SAF (Eyre 1980) TYPE	CODE	ACRES	HECTARES
Red Fir Forest	207	562	228
Lodgepole Pine Forest	218	90	36
Aspen Forest	217	60	24
Unclassified	-	<u>291</u>	<u>118</u>
TOTALS		1003	406

KUCHLER (1966) TYPE			
Red Fir Forest	K-7	562	228
Lodgepole pine-subalpine Forest	K-8	90	36
Unclassified	-	<u>351</u>	<u>142</u>
TOTALS		1003	406

HOLLAND (1986) TYPE			
Red Fir Forest	85310	562	228
Huckleberry Oak Scrub	37542	130	53
Lodgepole Pine Forest	86100	90	36
Aspen Forest	81B00	60	24
Dry Montane Meadow	45120	80	32
Wet Montane Meadow	45110	70	28
Montane Freshwater Marsh	52430	<u>10</u>	<u>4</u>
TOTALS		1003	406

G. PHYSICAL AND CLIMATIC CONDITIONS

The WBCRNA is situated about 18 miles west and 4000 feet (1200 m) below the crest of the Sierra Nevada in the central portion of the range (Map 2). It encompasses the uppermost watershed of Bourland Creek, which ultimately drains into the Tuolumne River. The crests of two northeast-southwest trending ridges form all but the southern boundary of the WBCRNA, where the boundary follows a section line across the mouth of the valley.

No permanent weather stations exist within the WBCRNA. Table 1 shows normals of temperature and precipitation for the period 1961 to 1990 at Cherry Valley Dam, located 9 miles (14 km) south of WBCRNA at an elevation of 4765 feet (1452 m). Given general patterns of temperature and precipitation in the Sierra Nevada, it is likely that these data reflect higher temperatures and lower precipitation than would pertain 2800 feet (850 m) higher at the WBCRNA.

Table 1: Monthly and annual normals of temperature and precipitation 1961-1990 for Cherry Valley Dam, Stanislaus National Forest, Tuolumne County, California.

	Temp. °F	Temp. °C	Precip. in	Precip. mm
	-----	-----	-----	-----
Jan	38.8	3.8	8.03	204
Feb	39.9	4.4	7.43	189
Mar	41.5	5.3	6.69	170
Apr	46.8	8.2	3.86	98
May	55.0	12.8	1.30	33
Jun	63.5	17.5	0.69	18
Jul	70.8	21.6	0.11	3
Aug	70.3	21.3	0.33	8
Sep	63.9	17.7	1.02	26
Oct	55.2	12.9	2.47	63
Nov	44.4	6.9	6.98	177
Dec	38.9	3.8	7.30	185
Annual	52.4	11.3	46.21	1,174

SOURCE: Owenby and Ezell 1992.

H. VALUES

1) Flora

Red Fir Forest is the predominant vegetation type on lower slopes and portions of the valley bottom, with Lodgepole Pine Forest and Aspen Forest also present along the lower margins. Small stands of pure Jeffrey pine grow in rocky areas at the head of the valley. Exposed south slopes, ridge crests, and open rocky areas primarily support Huckleberry Oak Scrub. Montane Meadow and Montane Freshwater Marsh cover much of the valley bottom in the lower part of the WBCRNA, and two smaller meadow areas are present higher in the watershed.

a) Red Fir Forest (Holland (1966) code 85310)

Red Fir Forest is one of the primary target elements for the WBCRNA. Red Fir is abundant in an elevational band throughout the length of the Sierra Nevada on the west slope, and occurs at scattered locations east of the crest. Red Fir is also widespread in the Cascade and Klamath Provinces and occurs at some high elevation locations in the north Coast Ranges (Griffen and Critchfield 1972)

The red fir forests at WBCRNA represent a full successional range for this forest type and present a mosaic of different stem densities and size classes. Average basal area for all red fir sites sampled by Talley (1976) was 307 square feet per acre ($69 \text{ m}^2/\text{ha}$), but basal area for sites with fully developed red fir stands was 517 square feet per acre ($119 \text{ m}^2/\text{ha}$). Stem density ranged from 61 to 732 stems per acre (150 to 1808 stems/ha).

Four subdominants occur with red fir, not exceeding 25 percent of total tree stratum cover either singly or in combination. These are lodgepole pine (Pinus contorta), western white pine (P. monticola), Jeffrey pine (P. jeffreyi), and white fir (Abies concolor). Lodgepole pine occurs as a major associate primarily on well drained northwest exposures. Western white pine occurs as an additional associate in red fir-western white pine stands on granitic substrates near the head of Bourland Creek. On southeast exposures white fir is the principal associate with red fir. These stands are typically open with Ceanothus cordulatus abundant in the understory. Jeffrey pine occurs as an additional associate in these red fir-white fir stands on sites with due south aspect.

Additional shrubs and sub-shrubs typical of red fir sites include:

Amelanchier pallida
Ledum glandulosum
Lonicera secunda
Phylodoce breweri
Ribes roezlii
Spirea densiflora
Vaccinium occidentale
Vaccinium nivictum

Herbaceous species common in various phases of the red fir forest include:

Chrysopsis breweri
Draba stenoloba var. nana
Erigeron peregrinus var. angustifolius
Hieracium albiflorum
Kelloggia galioides
Pedicularis semibarbata
Phacelia hydrophylloides
Pyrola picta
Pyrola secunda
Pterospora andromedia
Potentilla nevadensis
Smilacina amplexicaulis
Thalictrum fendleri
Veronica sp.
Viola purpurea

In more open stands additional species occur including:

Allium campanulatum
Antennaria rosea
Bromus marginatus
Collinsia parviflora
Monardella odoratissima
Poa bolanderi
Streptanthus tortuosa

A conspicuous yellow-green lichen, Letharia vulpina¹ or wolf-lichen, is present on trunks and branches of red fir trees throughout the WBCRNA. The moss Polytrichum juniperium² is abundant on some red fir sites as is bracken fern (Pteridium aquilinum). Although not observed during surveys, Red Fir Forest within the RNA is potential habitat for Silene invisa, a species listed as Sensitive by the Stanislaus National Forest.

b. Huckleberry Oak Scrub (Holland (1976) code 37542)

This form of montane chaparral occurs on rocky ridges, steep southfacing slopes, and patches of soil on open granitic outcrops. The largest area of Huckleberry Oak Scrub occurs on the granitic rock at the head of Bourland Creek watershed. Jeffrey pine grows among the huckleberry oak (Quercus vaccinifolia) patches, and scrubby California black oak (Quercus kelloggii) is present in one such patch. Western white pine and lodgepole pine also occur widely spaced within the scrub vegetation on rocky ridge crests.

On areas of deeper soil, Huckleberry Oak Scrub intergrades with adjacent forest types, taking the form of very open Jeffrey pine or red fir forest with huckleberry oak understory.

Shrub and herbaceous species occurring in Huckleberry Oak Scrub at WBCRNA include:

Eriogonum nudum
Pellaea bridgesii
Phlox diffusa
Prunus emarginata
Sambucus caerulea

c) Montane Freshwater Marsh (Holland type 52430)

This association occurs in the broad, pond-like channel of Bourland Creek at the lower end of Bourland Meadow. It also occurs at the margins of Heart lake. Open water remains in these areas throughout the year except during prolonged drought. The dominant species is beaked sedge (Carex rostrata) which typically forms a ring of varying width around the open water. Additional species of floating-leaved or submerged anchored hydrophytes include:

Elatine gracilis
Fontinalis sp.
Nuphar polysepalum
Potamogeton nutans
Sparganium multipedunculatum
Utricularia vulgaris

¹ Nomenclature follows Hale and Cole (1988).

² Nomenclature follows Lawton (1978).

³ Nomenclature follows Lawton (1978).

Other emergent species include:

Carex aquatilis
Carex athrostachya
Carex fracta
Juncus orthophyllus
Menyanthes trifoliata
Puccinellia pauciflora
Scirpus microcarpus

d) Montane Meadow (Holland type 45100)

Both wet and dry subtypes are present within the RNA. Much of the dry meadow area is interspersed with red fir forest and supports scrubby lodgepole pine and red fir. Tree establishment on many of these sites appears to be limited by soil fertility. In addition, a high incidence of stem breakage severely limits tree growth. On dry meadow sites with higher fertility, encroachment by red and white fir appears to be more successful, suggesting that these sites may eventually support forest. Lupinus breweri var. grandiflorus is conspicuous on these sites, along with Potentilla glandulosa, Monardella odoratissima, Collinsia parviflora, and Bromus marginatus. Other species typical of dry meadow areas include:

Achillea lanulosa
Allium campanulatum
Astragalus bolanderi
Caloptridium umbellatum
Collinsia torreyi
Eriogonum spergulinum
Gayophytum humile
Hackelia velutina
Lewisia nevadensis
Lotus spp.
Muhlenbergia richardsonis
Perideridia parishii
Phacelia mutabilis
Senecio integerrimus var. major
Wyethia mollis

Most of the meadow vegetation at the WBCRNA is of the wet subtype. Lodgepole pine invasion is conspicuous in some areas. Characteristic species include:

Carex athrostachya
Carex nebraskensis
Carex rossii
Carex rostrata
Dodecatheon jeffreyi
Habenaria leucostachya
Habenaria sparsiflora
Heleocharis sp.
Lotus oblongiflorus
Mimulus primuloides var. pilosus
Mimulus tilingii
Mimulus gutatus
Oxyopolis occidentalis
Pedicularis attolens

Penstemon heterodoxus
Perideridia sp.
Polygonum bistortoides
Senecio triangularis
Spiranthes romanzoffiana
Stellaria longipes
Veratrum californicum
Viola macloskeyi

e) Aspen Forest (Holland type 81B00)

This association occurs on a southeast exposure in the center of the WBCRNA and is surrounded by red fir forest. The site has rocky, boulder-strewn terrain and appears to have abundant subterranean water. Although stem density of aspen is high (670 stems/ha), canopy cover and basal area are low. The light, deciduous aspen overstory in combination with the mesic site conditions produce a floristically rich understory assemblage of species characteristic of both woodlands and meadows. Some additional species characteristic of Aspen Forest include:

Collomia grandiflora
Cystopteris fragilis
Elymus glaucus
Lithofragma heterophyllum
Mentzelia montanum
Orthocarpus hispida
Phacelia ramossissima
Polemonium californicum

f) Lodgepole Pine Forest (Holland type 86100)

Lodgepole Pine Forest occurs along meadow borders on both wet sites and dryer slopes. On wet sites, along the south and west perimeter of Bourland Meadow for example, lodgepole pine occurs as almost pure stands. On drier sites, aspen, red fir and white fir may also be present. Understory species on wet sites are mostly characteristic of wet meadows and include:

Arceuthobium pp.
Bromus marginatus
Carex fracta
Dodecatheon alpinum
Galium triflorum
Lewisia triphylla
Melica sp.
Mertensia ciliata
Osmorhiza chilensis
Senecio triangularis
Veratrum californicum

On drier sites, understory species include many of those mentioned above as associated with red fir forests, dry meadows, and semi-open forest sites and also include:

Calachortus leichtlinii
Castilleja lemonii
Cryptantha sp.
Galium aparine

Linquisticum grayii
Lupinus densiflorus
Montia perfoliata
Rumex paucifolium

2) Fauna

No wildlife surveys have been done specifically for the WBCRNA, but most of the RNA was included in a spotted owl survey during 1989 and 1990. Additional field visits and habitat analysis were conducted in 1993 for preparation of a Biological Evaluation (Appendix 1). The area is known to support a rich community of riparian birds, but appears to lack suitable habitat for willow flycatcher (Empidonax traillii). Northern goshawks (Accipiter gentilis) have been observed at Heart Lake within the WBCRNA. In addition, a reproductive pair of California spotted owls (Strix occidentalis) nests within 1 mile of the WBCRNA. Other management indicator species are known to use habitats similar to those found in the WBCRNA in nearby areas. These species include great grey owl (Strix nebulosa), pileated woodpecker (Dryocopus pileatus), fisher (Martes pennanti), marten (Martes americana), and Sierra Nevada red fox (Vulpes vulpes necator). Great gray owl is a State-designated endangered species. California spotted owl, great gray owl, goshawk, willow flycatcher, fisher, marten, and Sierra Nevada red fox are listed as sensitive species by the USDA Forest Service, Pacific Southwest Region.

Bourland Meadow is considered a key fawning area for mule deer (Odocoileus hemionus) by the California Department of Fish and Game and is designated as Summer Critical Habitat for deer in the Stanislaus National Forest Land and Resources Management Plan. Bourland Creek is a tributary of the Clavey River, a State designated Wild Trout River. Unlike many other streams in the Sierra Nevada, Bourland Creek has not been stocked and retains a relatively natural fish community, hence the aquatic habitats included in the WBCRNA are of particular interest and value.

3) Geology

The WBCRNA is a U-shaped valley bordered by broad, rounded ridges. The valley ascends from Southwest to Northeast in a series of progressively narrower and steeper steps, each formed behind a bedrock bench. Pleistocene glaciation has influenced the valley, scouring depressions behind each of the benches and leaving a veneer of boulders and finer alluvium over much of the valley sides. The depressions behind the upper two benches are partially filled with Quaternary alluvium, but still hold lakes. The lower depressions have been almost filled with alluvium, forming the long expanse of Bourland Meadow with only the shallow remnant of a lake at its lower end.

The site is underlain by both Mesozoic granitic rock and by Pliocene volcanics, with volcanics predominating (Koenig 1963) (Map 5).

4) Soils

Soils of the WBCRNA are shown on Map 4, and are described as follows (USDA Forest Service 1981).

- a) Lithic Cryumbrepts-Rock outcrop-Windy Family, moderately deep complex, 5-35 percent slope.

These soils occur on the ridges to the northwest and southeast of Bourland Meadow, associated with Red Fir Forest and Aspen Forest over most of this area.

Soils of this complex all consist of or are formed in material weathered from andesitic tuff. They range in depth from 0 inches (0 mm) on Rock outcrop, to 20 inches (50 cm) in Lithic Cryumbrepts, to 40 inches (100 cm) or more in Windy family soils.

Rock outcrops comprise 30 percent of this map unit. They consist of weakly to moderately consolidated andesitic tuff, usually rough and bare with shallow pockets of gravelly detritus.

The shallow Lithic Cryumbrepts comprise 40 percent of this map unit. These soils are brown loams with rock fragment content of 5 to 60 percent, typically granular in structure, very friable, and medium acid (pH 6.0).

The deeper Windy Family soils comprise 20 percent of this map unit. They have a surface layer of dark brown gravelly coarse sandy loam about 5 inches (13 cm) thick overlying subsoils of brown very gravelly sandy loam, with a rock fragment content of over 35 percent. The reference example (pedon) for Windy Family soils has weak medium subangular blocky structure throughout, a surface layer that is slightly hard, friable, and slightly acid (pH 6.3), and subsurface layers that are soft, very friable and ranging in reaction from medium to slightly acid (pH 6.0 to 6.5). This pedon has a surface layer of duff and litter that is hydrophobic when dry.

b) Windy Family, deep - moderately deep complex, 5 to 35 percent slope.

Soils in this map unit occur in a band extending south from the saddle of the northwest ridge almost to the valley floor at Bourland Meadow. They are associated with Red Fir Forest over much of this area.

Windy Family soils have been described above. This map unit is comprised 25 percent of the Windy Family moderately deep soils present in map unit 166, and 50 percent of Windy Family deep soils. These two phases of Windy Family soils are distinguished on the basis of depth to bedrock: 20 to 40 inches (50 to 100 cm) in the moderately deep phase and 40 to 60 inches (100 to 150 cm) in the deep phase. Inclusions of rock outcrop and other soils comprise 25 percent of the map unit.

c) Gerle Family, deep - moderately deep association, 5 to 35 percent slopes.

These soils occur in the valley bottom above and below Bourland Meadow and extend well up the ridges on both sides of the valley in the central portion of the WBCRNA. They are associated with Red Fir

Forest, Lodgepole Pine Forest, Aspen Forest, and Montane Meadow in this area.

Soils of the Gerle family are formed in glacial till weathered from granitic rocks, occurring on perched benches, moraines, and mountainsides. They range from 20 to more than 40 inches (50 to 100 cm) in depth to weathered bedrock or glacial till, and usually have stones and boulders on the surface and throughout the soil profile. Surface layers are typically sandy loams about 10 inches (25 cm) thick, ranging in color from dark grey to very dark brown, with slightly to medium acid reaction (pH 5.6 to 6.5). Subsurface layer are also sandy loams, but lighter in color and somewhat more acid in reaction (pH 5.1 to 6.0). The reference pedon of this soil has weak fine granular structure at the surface, friable and slightly hard, and moderate medium subangular blocky structure in the subsurface, very friable and soft.

d) Entic Cryumbrepts, deep, 1 to 10 percent slopes.

These soils occur in the valley bottom in and around Bourland Meadow. They are associated with Montane Meadow and Montane Freshwater Marsh, as well as some of the Lodgepole Pine Forest at the meadow edges.

Entic Cryumbrepts, deep, are soils formed in recent alluvium derived from both granitic and volcanic rocks. Typically, they are brown loam, sandy loam, and loamy sand to a depth of 40 inches (100 cm) or more. They range from 0 to 60 percent gravel and cobbles. The reference pedon for this soil has single grain structure, loose, and of medium acid reaction (pH 5.5).

e) Rock Outcrop

This map unit is present between the two lakes and extending to the ridge at the head of the Bourland Creek watershed. It is associated with Huckleberry Oak Scrub and Red Fir Forest in these areas. Rock outcrop is present over 85 percent or more of the ground surface, and less than 15 percent of the area is inclusions of soils deep enough to support plants. Both granitic and volcanic rock types are represented in this map unit.

5) Lands

All lands within the WBCRNA are under the jurisdiction of the Stanislaus National Forest. No lands have been acquired, or have any outstanding rights.

6) Cultural Sites

Foundation stones, trimmed logs and boards, and metal debris are visible at two sites where cabins once stood within the WBCRNA. These cabins were built in the latter half of the nineteenth century and are believed to have been occupied by the homesteaders for whom Bourland Meadow is named. Until the mid-nineteenth century, valleys like this one were used by people of the Miwok Nation primarily for deer hunting. A seasonal habitation site

was noted in an archeological reconnaissance of the area, but no further investigation has taken place.

7) Fire History

There are no recorded occurrences of fire within the WBCRNA. Near absence of pine regeneration in forested areas, absence of fire scars on mature fir trees, and absence of fire indicator species all suggest that no major fires have occurred on this site since at least the turn of the century. However, charring on down logs and wood fragments indicate that ground fires have occurred perhaps more recently. The Miwok people are known to have practiced understory burning as a management technique in forests like those present at the WBCRNA, and it is likely that their burning practices have influenced the vegetation at this site.

I. IMPACTS AND POTENTIAL CONFLICTS

1) Mineral Resources

The potential for occurrence of locatable or leaseable minerals within the WBCRNA is low, and there are no mineral claims within or adjacent to its boundaries (see Appendix 2: Mineral Potential Report). Following establishment, steps will be taken to withdraw the area from mineral entry.

2) Grazing

Grazing has not been permitted in the WBCRNA since its nomination in 1973 and will not be permitted following establishment. The surrounding area is included in a grazing allotment. A take-down fence along the ridge to the west of the RNA serves as a barrier to cattle from the surrounding allotment, and few enter the RNA itself.

Grazing has occurred within the WBCRNA in the past. Talley (1976) noted heavy use of meadow vegetation and speculated that past livestock grazing may have contributed to hydrologic changes and invasion of lodgepole pine in the upper portion of Bourland Meadow.

3) Timber

An 80 acre (32 ha) area in the SW corner of the WBCRNA was logged in 1967. Also, action was taken in 1977 to remove young lodgepole pines growing within meadow areas, but this practice has since been discontinued. An area totaling 610 acres (247 ha) within the WBCRNA is classified as commercial timber land. No timber harvesting has been permitted within the RNA since nomination, and none will be permitted following establishment.

4) Watershed Values

Establishment of the WBCRNA will serve to maintain ground cover and protect the soil surface, facilitating the protection of water quality and preventing excessive contribution of sediment to reservoirs lower in the Tuolumne River watershed.

5) Recreation Values

A trail crosses the center portion of the WBCRNA providing access to the Emigrant Wilderness. This trail receives very little use and is only obscurely marked. An Off Road Vehicle (ORV) route was established in

1976-77 following the northwest boundary of the RNA, cutting across the RNA approximately 300 feet (100 m) above Argo Lake, then following the common boundary of the RNA and the Emigrant Wilderness. Use of the trail has been by special use permit for two annual events sponsored by a 4WD club but this use has now been discontinued. Following establishment, visitor use and impacts will be monitored and measures will be taken to discourage recreation uses which contribute to modification of the RNA or which impair research or education values.

6) Wildlife and Plant Values

Elimination of grazing and timber harvest and measures to prevent ORV use have eliminated sources of disturbance to vegetation and soils that were noted during the ecological survey (Talley 1976) and other site visits. Following establishment, the WBCRNA will be managed to maintain vegetative and aquatic elements in natural conditions and protect against activities that directly or indirectly modify ecological processes (USDA Forest Service 1991). Although this management emphasis will limit actions undertaken solely for the purpose of enhancing habitat conditions for particular wildlife species, it will promote protection of wildlife habitat values and plant communities present within the RNA.

7) Special Management Areas

Management objectives of the WBCRNA are compatible with those of the adjacent Emigrant Wilderness area, and no conflicts are anticipated between Wilderness management direction and protection of RNA values. The WBCRNA and the surrounding area are classified as Critical Summer Habitat for deer in the Stanislaus National Forest Land and Resources Management Plan and designated as a key fawning area by the California Department of Fish and Game. Seasonal restrictions on entry to the RNA apply in connection with the latter designation, and permits from the California Department of Fish and Game may be required for research use during these periods. The WBCRNA is included within the area allocated by the Stanislaus National Forest Land and Resources Management Plan for maintenance of favorable habitat conditions for furbearers, and a portion of Bourland Creek was identified as eligible for Wild and Scenic River status. RNA designation will contribute to protection of deer and furbearer habitat and of Wild and Scenic River values for Bourland Creek.

8) Transportation Plans

Current access into the WBCRNA is adequate for RNA objectives. An unimproved Forest Service road terminates about 0.2 miles (300 m) west of the RNA. A trail traverses the center of the RNA (labeled 19E15 on Map 2) providing access to the Emigrant Wilderness as well as to the RNA. Both the road and the trail will be maintained following establishment. The ORV route following the boundaries and traversing the WBCRNA just above Argo Lake (see I.5) above) will continue to be used twice annually. The route will be checked following each use to repair any ground disturbance likely to concentrate runoff or cause increased sediment yield to lakes and streams lower in the watershed. In addition, analysis and monitoring of actual and potential impacts of ORV use on ecological values of the RNA will be conducted, and continuation of this use will be contingent on maintenance of acceptable levels of impact and risk. No additional roading is planned for the vicinity. Following establishment, no road or trail construction will be allowed within the WBCRNA.

J. MANAGEMENT PRESCRIPTION

Appendix 3 contains management direction for the WBCRNA as stated in the Stanislaus National Forest Land and Resource Management Plan (USDA Forest Service 1991). The management emphasis calls for maintenance of select vegetative and aquatic elements in natural conditions and protection against activities that directly or indirectly modify ecological processes.

1) Management Plan

The Stanislaus National Forest will prepare a Management Plan for the WBCRNA in consultation with the Pacific Southwest Forest and Range Experiment Station. The plan will specify project prescriptions, practices, uses, and monitoring conducive to the objectives for establishment of the WBCRNA.

K. ADMINISTRATIVE RECORDS AND PROTECTION

Responsibility for administration and protection of the WBCRNA is with the District Ranger, Mi-Wuk Ranger District, P.O. Box 100, Mi-Wuk Village, California, 95346. (209) 586-3234.

L. ARCHIVING

The research coordinator is the Director, Pacific Southwest Research Station, P.O. Box 245, Berkeley, California, 94701. The Director is responsible for approving and coordinating research, maintaining the area's research and data file, and lists of herbarium and species samples collected. This information will be made accessible to interested scientists, managers and other research stations. Plant specimens will be deposited at the herbarium of the University of California, Berkeley.

M. REFERENCES

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W.B. Critchfield Research Natural Area

APPENDICES

Appendix 1: Biological Evaluation

Appendix 2: Mineral Potential Report

Appendix 3: Management Direction

W.B. Critchfield Research Natural Area

APPENDIX 1

BIOLOGICAL EVALUATION

BIOLOGICAL EVALUATION

Prepared For The Proposed Designation Of
THE CRITCHFIELD RESEARCH NATURAL AREA

STANISLAUS NATIONAL FOREST

MI-WOK RANGER DISTRICT

PREPARED BY:

Tom Rickman
Tom H. Rickman
Wildlife Biologist

DATE: 27 September, 1993

I. INTRODUCTION

The purpose of this Biological Evaluation is to review the proposed action to formally establish the Critchfield Research Natural Area (RNA), on the MiWok Ranger District of the Stanislaus National Forest, to determine the action's effect on species of concern, and to determine whether the proposed action will result in a trend toward a Sensitive species becoming Federally listed. This Biological Evaluation is prepared in accordance with direction in FSM 2672.4.

This Biological Evaluation analyzes the potential affects of Alternative 1, the proposed action to designate the area. Designation would formally establish the Critchfield RNA, which is identified as the candidate Bourland Meadow RNA in the Stanislaus National Forest Land and Resource Management Plan (LMP; USDA, 1991). This RNA would consist of 1003 acres and would be managed according to direction provided in the LMP (pages IV 150-156) with site-specific management to be developed in the Critchfield RNA Management Plan. Critchfield RNA is located within the Stanislaus National Forest, Mi-Wok Ranger District, Tuolumne County, California and comprises portions of sections 8, 9, 16, and 17, T.3N., R.19E. as shown on the map found in the LMP (page IV 153). The elevation range within the area is 7,240 feet at Bourland Creek to 7,990 feet on top of the ridge at the northeast boundary.

No plant species listed as Threatened, Endangered, or Sensitive is known to occur in Critchfield RNA, however potential habitat does exist for one Sensitive plant species (Silene invisa). The RNA is above the elevational range for three other Sensitive plant species known to occur on the Mi-Wok Ranger District; these three species are Allium tribracteatum, Lomatium stebbinsii and Erythronium tuolumense. Northern goshawks (Accipiter gentilis), a Sensitive raptor, have been observed in the area. Potential habitat exists for five other Sensitive species: the California spotted owl (Strix occidentalis occidentalis), great grey owl (Strix nebulosa), pine marten (Martes americana), Pacific fisher (Martes pennanti) and Sierra Nevada red fox (Vulpes vulpes necator). The RNA is above the elevational range for the western pond turtle (Clemmys marmorata) and California red-legged frog (Rana aurora), and does not provide the willow/riparian shrub habitat necessary for willow flycatchers (Empidonax traillii).

II. CURRENT MANAGEMENT DIRECTION

A. Sensitive wildlife species

As stated above, the project area contains potential habitat for six Sensitive wildlife species and one Sensitive plant species. One of the six Sensitive wildlife species (the northern goshawk) has been located within or immediately adjacent to the project boundaries. Surveys specific for the other five Sensitive wildlife species either have not been conducted in the area or have been incomplete in coverage. Management direction for all Sensitive plant and wildlife species which may inhabit the project area are given below.

A. Sensitive wildlife species

California spotted owl

On March 31, 1993, Region 5 adopted new interim policy direction for spotted owl management as recommended by the California Spotted Owl (CASPO) Technical Team. This new direction is designed to retain and protect habitat components most at risk and difficult to replace (such as very large, old trees), and to protect spotted owl nest and roost sites. The CASPO guidelines are to remain in effect during a two to five year interim period in which permanent management guidelines for the California spotted owl are to be generated and adopted. Briefly stated, the CASPO guidelines maintain existing, 1,000 acre Spotted Owl Habitat Areas (SOHAs), and also create 300 acre Protected Activity Centers (PACs) around all known owl sites documented since 1987. Stand altering activities are to be avoided within SOHAs and the PACs, however, light underburning which would minimize removal of duff and large woody material is allowed. This new direction also places guidelines on timber harvest outside of SOHAs and PACs, and requires certain amounts of basal area and canopy cover to be left within harvest units. For a full description of this direction, refer to the California Spotted Owl Sierran Province Interim Guidelines Environmental Assessment (USDA Forest Service, 1993). The California spotted owl is listed by the US Fish and Wildlife Service (USFWS) as a Candidate 2 species, meaning that while there is some evidence of vulnerability, substantial biological information to support Federal listing of the species is not available at this time.

Northern goshawk

The LMP (U.S.D.A. Forest Service, 1991) requires the establishment of a network of 58 goshawk breeding territories, with the size of each territory to be from 50 to 120 acres, with 120 acres being the optimum. Within these territories there is to be no harvest unless it improves or maintains the condition of the stand for the goshawk. The LMP also states that no timber harvest, road building, or other disturbing activities are allowed within 0.3 miles of an active nest from March 1 until at least four weeks after the young have been fledged, or September 30 if the fledging date has not been determined for a particular nest. Less than half of the desired 58 territories have been identified on the Forest. The northern goshawk is listed by the USFWS as a Candidate 2 species.

Great Gray Owl

Great gray owl nest territories are provided with special management considerations on the Stanislaus National Forest. Nest territories are protected from management activity by protection of the nest and a 300-yard area around foraging meadows, and a minimum stubble height is maintained in meadows in which nesting pairs forage. These management guidelines are in effect where breeding has occurred at least once, or where, in a five year period, the owls are detected in at least two years. The great gray is not listed by the USFWS as a Candidate species for Federal listing.

Pine Marten

The LMP identifies 84 marten reproductive units, designed to maintain a population of 500-550 individuals. Most of the reproductive areas are located in established Wilderness areas. The pine marten is not listed by the USFWS as a Candidate species for Federal listing.

Pacific Fisher

The LMP identifies 19 areas to meet reproduction and dispersal needs of the fisher. The 19 reproductive areas are designed to sustain a population of 100-125 individuals. Areas vital to movement across the Forest to adjoining Federal lands will be managed to either maintain or achieve high habitat capability. The fisher is listed by the USFWS as a Candidate 2 species.

Sierra Nevada Red Fox

Specific direction in the LMP for the management of this species is lacking. The species will be managed under the blanket direction afforded to all Sensitive species, in that it will be managed to ensure conservation or enhancement of their populations and habitats so that the species does not suffer a trend towards Federal listing or a loss of viability. The USFWS lists this species as a Candidate 2 species.

B. Sensitive plant species

Silene invisa

Management direction on the Stanislaus National Forest is to conserve Sensitive plant populations by identifying their specific habitats and minimizing their disturbance (LMP, 1991).

III. DESCRIPTION OF PROPOSED PROJECT

The purpose of the proposed action is to formally establish the Critchfield RNA. RNAs are established for research and study purposes and also to conserve biodiversity. They are to be managed to maintain select vegetation, aquatic, and/or geologic elements in natural conditions. Protection is provided against any activities that directly or indirectly modify ecological processes.

The Critchfield RNA would contribute to a nationwide system of RNAs designated to "illustrate adequately or typify for research or education purposes, the important forest and range types in each forest region, as well as other plant communities that have special or unique characteristics of scientific interest and importance" (36 CFR 251.23). The Critchfield RNA contributes to this system by providing an example of the Red Fir Forest target element in the central part of the Sierra Nevada physiographic region. In addition, it offers representatives of target elements and aquatic features not well represented in established RNAs, including Red Fir and Montane

Freshwater Marsh target elements as well as a stream, two small lakes and a floating bog. An evaluation by the Regional RNA Committee, pursuant to direction in Forest Service Manual (FSM) 4063.04b of the need for RNAs, identified these types as suitable and desirable for inclusion in the national network. Establishment of the Critchfield RNA provides long-term protection and recognition of the Red Fir Forest target element.

IV. EXISTING ENVIRONMENT

Red fir forest is the predominant forest vegetation type within the RNA; lodgepole pine, Jeffrey pine and aspens are also present. Exposed south slopes, ridge crests, and open rocky areas primarily support huckleberry oak scrub. Montane meadow and montane freshwater marsh cover much of the valley bottom in the lower part of the Critchfield RNA, and two smaller meadow areas are present higher in the watershed. An ecological reconnaissance was performed in 1973 (Johnson 1974) and an Ecological Survey was completed in 1976 (Talley 1976). Detailed vegetative data can found in the Ecological Survey and the Establishment Record which are on file at the Stanislaus National Forest Supervisor's Office.

The soils within the area range from Windy family-deep-moderately-deep complex to rock outcrops. The soils were mapped into five categories in 1981 by the United States Forest Service. Detail descriptions and locations can be found in the Establishment Record.

The Critchfield RNA is a U-shaped valley bordered by broad rounded ridges. Pleistocene glaciation influenced the valley, scouring depressions behind each of the benches leaving a veneer of boulders and finer alluvium over much of the valley sides. The depressions behind the upper two benches are partially filled with Quaternary alluvium, but still hold lakes. The lower depressions have been almost filled with alluvium forming the long expanse of Bourland Meadow with only the shallow remnant of a lake at its lower end. The site is underlain by both Mesozoic granitic rock and by Pliocene volcanics, with volcanics predominating.

The following section provides species and habitat accounts for the Sensitive plant and wildlife species which may occur within the proposed project area. Much of the information given in the "Habitat Account" sections for each species was drawn from the Biological Evaluation for Drought-Related Timber Salvage on National Forests of the Sierra Nevada Province--Threatened, Endangered, Sensitive, and Proposed Animals (MacFarlane, 1992).

California Spotted Owl

Species Account

Much of the RNA was surveyed for spotted owls during 1989 and 1990. No spotted owls were located during these surveys. The area is

outside of PACs and SOHAs which have been established on the Mi-Wok Ranger District.

Habitat Account

Suitable habitat for this species is typically coniferous forests characterized by multi-layered, multi-species canopies with moderate to high canopy closure (70%). The canopy is typically dominated by large overstory trees with open space beneath the canopy closure, with the overstory trees featuring various stages of decadence including broken tops, cavities, and large snags. Downed logs and other woody debris are abundant on the forest floor. Foraging habitat can include medium to large tree stands with 50% or greater canopy closure. These types of habitats are most often found in the late seral stages of mixed conifer forests on the Mi-Wok Ranger District. Atypical suitable habitat generally consists of deep, shaded canyons densely grown to oaks or other hardwood species, and which may contain a scattered overstory of conifers. Red fir habitats were identified within the CASPO EA as Other strata, meaning spotted owls did not select this habitat in greater proportion than was available.

Northern goshawk

Species account

There has been one northern goshawk reported within the project boundaries. In 1993, an adult goshawk was observed at Heart Lake. Whitewash and feathers were located east of Heart Lake, indicating potential for a nest, however no nest was located. Surveys specific for this species have not been conducted within the area.

Habitat account

Optimal habitat for this species include the large-tree stages of mixed conifer, red fir, Jeffrey and ponderosa pine forests. Smaller tree stages of the same forest types as well as aspen habitats and lodgepole pine provide additional suitable habitat. Nest stands are characterized by high canopy cover (60-100% is optimal; 50-59% is suitable and 30-49% is marginal), and are generally located on gentle to moderate slopes on north or northeast aspects. Critchfield RNA provides both foraging and nesting habitat for this species.

Pine marten

Species account

Pine martens have not been reported within or adjacent to the project boundaries. The nearest detections have been at Bell Meadow approximately 3 miles to the north, and at Hyatt Lake approximately 2.5 miles east. Surveys for this and other furbearer species have not been conducted within the project boundaries.

Habitat account

Suitable pine marten habitat is typically composed of high-elevation, medium- to late-seral-stage forests with riparian and small-meadow habitats interspersed are most suitable for the marten. Snags and downed logs are important habitat components. High canopy closure (60-100%) also characterizes preferred habitat. Elevation range for marten in the northern Sierra is from 3,400 to 10,400 feet; in the southern Sierra the elevation range is from 4,000 to 13,100 feet. The forest and riparian habitats within Critchfield RNA represent prime habitat for this species.

Pacific Fisher

Species account

Fishers have not been reported within or adjacent to the RNA boundaries. Surveys for this and other furbearer species have not been conducted within the project boundaries.

Habitat account

This species inhabits late seral stages of mixed conifer, Douglas fir, montane hardwood-conifer, ponderosa pine, lodgepole pine and riparian habitats, at elevations ranging from 4,000 to 8,000 feet in the southern Sierra. Dense canopied (60-100%), multi-storied, late-seral stage stands are the preferred habitat type, especially when in close proximity to riparian corridors. Riparian areas provide important travel corridors for this species. The forest and riparian habitats within Critchfield RNA represent prime habitat for this species.

Sierra Nevada red fox

Species account

Sierra Nevada red foxes have not been reported from within the proposed project boundaries. The nearest location from which this species has been reported is approximately 3 miles to the north at Bell Meadow. Surveys for this or other furbearer species have not been conducted within the project boundaries.

Habitat account

This species inhabits mixed conifer and true fir forests, as well as lodgepole and ponderosa pine dominated stands. Forested areas interspersed with meadows and brush fields are preferred. This species occurs primarily over 7,000 feet, and is rarely encountered below 5,000 feet in elevation. Red foxes may be more tolerant of openings than either fisher or pine marten. Although very little information is available for this species, it is assumed that if habitat requirements for pine marten and fisher are met, the habitat requirements for this species will also be met. Red foxes, being more tolerant of openings than fisher or marten, may be able to more fully utilize the islands of forested habitat within the project boundaries.

The forest and meadow habitats within Critchfield RNA provide prime habitat for this species.

Great gray owl

Species account

Great gray owls have not been detected within the RNA. However, an activity center for this species was located in 1992 approximately 1 mile to the southwest of the RNA boundaries. Surveys specific for this species have not been conducted within the project area.

Habitat account

This species typically forages in wet meadows and nests and roosts in nearby dense (greater than 40% canopy closure) coniferous forest at elevations between 2,500 and 8,000 feet. Both old-growth and second-growth forest are used if suitable nest sites are available. Nest sites have been documented in broken-topped conifer and black oak snags, abandoned hawk nests and artificial nest structures. The combination of mature and old-growth red fir habitats and the large expanse of Bourland Meadow within the proposed RNA constitute what may be the best typical great gray owl habitat on the Mi-Wok Ranger District.

Silene invisa

Species Account

Surveys for this species have not been conducted within the proposed RNA boundaries; no populations of this plant have been recorded in the area. Populations have been recorded on the Summit Ranger District.

Habitat Account

This species grows on moist sites in association with red fir and lodgepole pine at elevations of 7,000 to 8,500 feet. It grows on volcanic soils, in shaded or filtered locations under tree canopy. The proposed RNA provides the necessary habitat components for this species.

V. EFFECTS OF PROPOSED ACTION

A.) Direct and indirect effects

The Sensitive wildlife species addressed in this document are species vulnerable to habitat loss and/or alteration. Official designation of the Critchfield RNA would protect the area from loss or alteration of habitat resulting from commodity extraction and would also eliminate potentially disruptive uses such as OHV events. As a result, designation of the RNA would likely constitute a beneficial effect for the five Sensitive species addressed in this evaluation.

B.) Cumulative effects

The proposed action would serve to prohibit or greatly restrict the potential for habitat alteration or loss as a result of management activities. However, a total hands off approach to managing the area may in time lead to some loss of meadow habitats due to encroachment by lodgepole pine. As evidenced by aerial photos taken since the 1940's, encroachment of lodgepole pine has eliminated some of the meadow habitats around Heart and Argo lakes. There may be some need in the future to manage the meadow/forest ecotone areas to ensure that encroachment by lodgepole pines does not begin to limit great gray owl foraging habitat.

C.) Compliance with management direction

The proposed action complies with management direction as provided for the establishment and management of RNAs and the management of Sensitive species.

VI. DETERMINATION

It is my determination that the proposed action, the official establishment of the Critchfield RNA, would have no affect on the Sensitive species addressed in this evaluation. Due to the restrictions on management activities which would result from designation, the proposal would likely have a beneficial effect on these species, which are vulnerable to loss and/or alteration of habitat.

VII. MANAGEMENT RECOMMENDATIONS

- 1) Conduct inventories within the Critchfield RNA boundaries to determine the status of the Sensitive species addressed in this document.

VIII. LITERATURE CITED

Johnson, L. 1973. Reconnaissance report of Bourland Meadow. USDA Forest Service, San Francisco, CA.

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Environmental Assessment. Pacific Southwest Region, San Francisco,
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W.B. Critchfield Research Natural Area

APPENDIX 2

MINERAL POTENTIAL REPORT

UNITED STATES
DEPARTMENT OF AGRICULTURE
FOREST SERVICE

MINERAL POTENTIAL REPORT FOR THE
WILLIAM B. CRITCHFIELD CANDIDATE RESEARCH NATURAL AREA
STANISLAUS NATIONAL FOREST

LANDS INVOLVED

T.3N., R.19E., Mount Diablo Meridian, Tuolumne County, California
Sec. 8, 9, 16, 17

containing 1003 acres

By

Jeanne Frieauf
Jeanne Frieauf, Geologist
Regional Office, MAM
August 1992

Technical Review

Management Review

William H. C.
Forest Service Reviewer

Forest Supervisor

12/30/92
Date

Date

Bureau of Land Management
Review

Date

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RECEIVED
JUL 30 1993
TIMBER MANAGEMENT

INTRODUCTION

The purpose of this report is to evaluate the potential for the occurrence of valuable minerals on the William B. Critchfield Candidate Research Natural Area (WBCRNA) on the Stanislaus National Forest. Opinions and conclusions in this report are based upon a review of available literature. The list of references consulted is included at the end of this report. A field investigation of the subject land was not conducted. This report should not be used for purposes other than that for which it was prepared.

Research Natural Areas (RNAs) are areas set aside to preserve representative examples of specific botanic, aquatic, and geologic features, for scientific and educational purposes. The primary objective for establishment of the William B. Critchfield RNA is to preserve representatives of Red Fir Forest and associated forest types as well as the Montane Freshwater Marsh and associated meadow and wetland types, for the central part of the Sierra Nevada physiographic province (U.S.D.A. Forest Service, in progress).

SUMMARY

After reviewing geologic and historical literature and public records, the subject land is considered to have a low potential for the development of locatable, leasable, and salable minerals. The area is considered non-mineral in character at this time.

LANDS INVOLVED

The subject land is described as follows:

William B. Critchfield Candidate Research Natural Area
T.3N., R.19E., Mount Diablo Meridian, Tuolumne County, California
Parts of Sections 8, 9, 16, and 17

containing 1003 acres

See Figure 1.

LAND STATUS AND RECORD DATA

The subject parcel is public domain land administered by the Mi-Wok Ranger District of the Stanislaus National Forest. There are no outstanding rights on the parcel and none of the land was acquired.

The Bureau of Land Management (BLM) is responsible for all recordation of mining claims. A compilation of their records is illustrated in the BLM mining claim geographic index. These records were reviewed for mining claim activity in and around WBCRNA and no claims have been filed or are on record as of May 8, 1992, within and near the parcel.

ACCESS

The best access to WBCRNA is via State Highway 108 east from Sonora or west from U.S. Highway 395. Follow highway 108 to Long Barn, turn east on Long Barn Road and immediately turn left on Merrill Springs Road (Forest Service Road 3N01).

Continue about 20 miles on Road 3N01, then turn left (northeast) on Forest Service Road 3N16 and continue about 6 miles to the end of the road. The WBCRNA is reached by continuing cross-country almost 1 mile northeast up the valley of Bourland Creek.

PHYSICAL FEATURES

WBCRNA is a glaciated valley which opens up to the southwest. It includes the uppermost two miles of Bourland Creek, along with its lake source, and a deeper lake lower in the watershed. The elevation ranges from 7240' in the bottom of the Bourland Creek valley up to 7990' on the ridge at the northeast boundary. Annual precipitation is probably about 50 inches. The parcel supports a variety of meadow vegetation. The dominant cover type is Red Fir with Lodgepole Pine, Jeffrey pine, and aspen. Also present are Montane Meadow and Montane Freshwater Marsh (U.S.D.A. Forest Service, in progress).

GENERAL GEOLOGY AND MINERALIZATION

Regional Geology

The subject land lies within the west-central part of the Sierra Nevada geologic province. The Sierra Nevada is a north-trending structural block 400 miles long and 40 to 80 miles wide, having a gentle, steeply-incised western slope and a steep escarpment along its eastern side. The Sierra Nevada consists of multiple intrusions of Mesozoic granitic rocks with roof pendants of upper Paleozoic and lower Mesozoic marine metasedimentary rocks. The intrusion of the granitic batholithic masses caused uplift, deformation, faulting, and erosion. Partially-eroded Tertiary sedimentary and volcanic rocks overlap these older rocks in some localities. Present topography has resulted from continued erosion and glaciation.

Local Geology

Mesozoic granitic rocks crop out in the northeast portion of the parcel. The granites are typical of the Sierra Nevada batholith. Most of the parcel is underlain by Pliocene volcanic rocks of intermediate composition, mostly volcanic breccias and lava flows. Quaternary alluvium underlies the meadow areas, consisting of boulders, gravel, sand, and silt (Koenig, 1963).

Figure 2 is a general geologic map of the area.

There is no recorded economic mineralization in the area. Studies of the mineral potential of the wilderness area immediately adjacent to WBCRNA conclude that no gold or precious-metal vein deposits are associated with the Mesozoic granitic plutons of the area (Tooker, et. al., 1984).

PAST AND PRESENT MINERAL PRODUCTION

WBCRNA is not within a known mining district. No mines or mineral history are recorded in the vicinity of the subject parcel (Clark, 1970; USBOM, 1981; Tooker, et. al., 1984).

KNOWN MINERAL DEPOSITS

There are no known mineral deposits within the subject parcel.

MINERAL LEASES

There are no leases or lease applications covering the subject land, nor are there any mineral material permits.

EVALUATION OF FUTURE MINERAL POTENTIAL

Locatable Minerals: Deposits of locatable minerals are not known to occur within the area of the subject land. Based on the local geologic setting, lack of mining history, review of the literature and lack of mining claims, the area of the subject parcel is considered to have low potential for the occurrence of locatable mineral deposits.

Leasable Minerals: Leasable minerals are not known to occur within the area of the subject parcel and the potential for their occurrence is considered to be low.

Salable Minerals: The subject land is not known to host valuable deposits of salable minerals. The potential for their occurrence is considered to be low.

Critical and Strategic Minerals: The subject parcel is not known to host any of these minerals as defined in the most recent Stockpile Report to the Congress. The potential for their occurrence is considered to be low.

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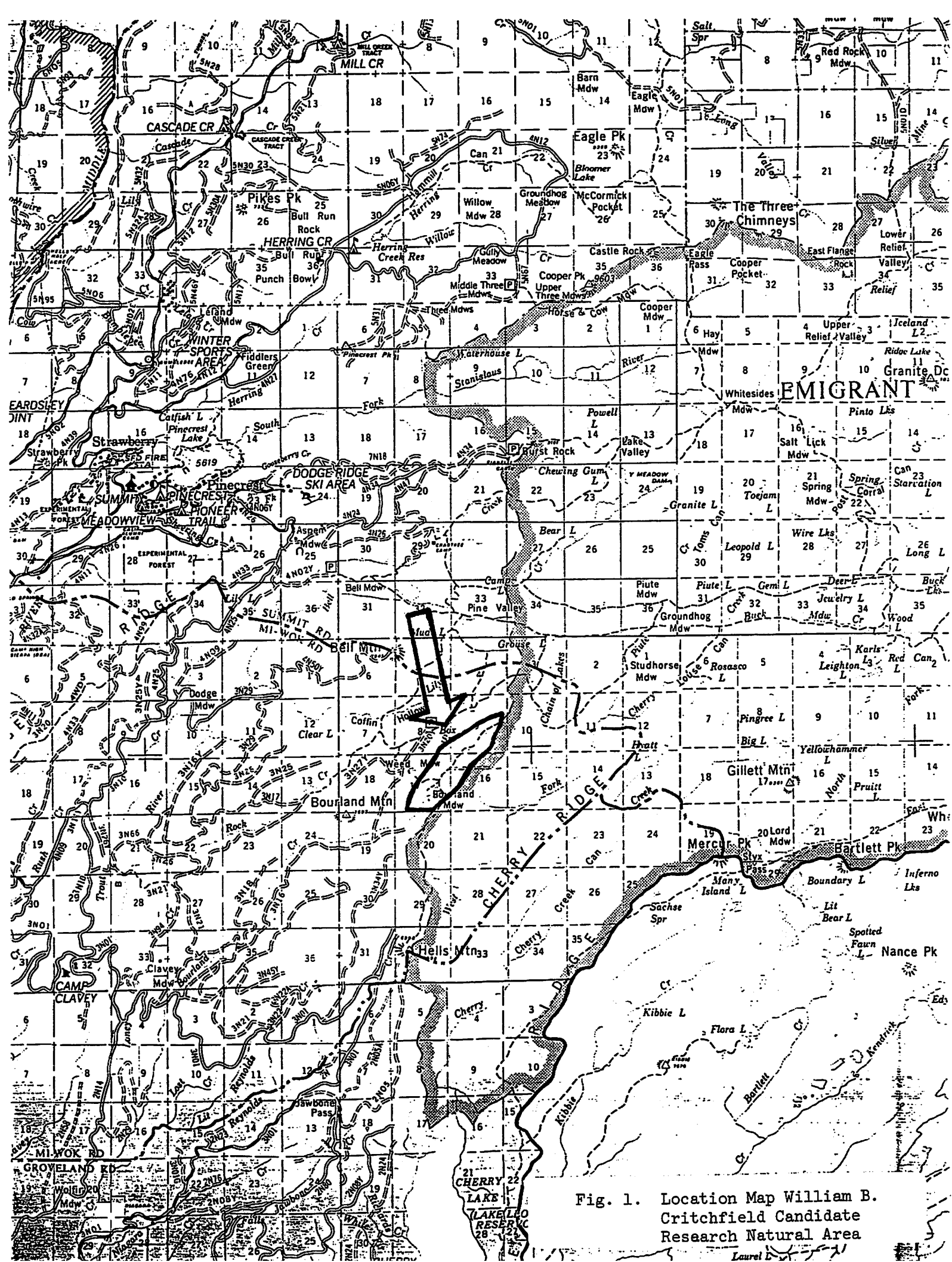


Fig. 1. Location Map William B. Critchfield Candidate Research Natural Area

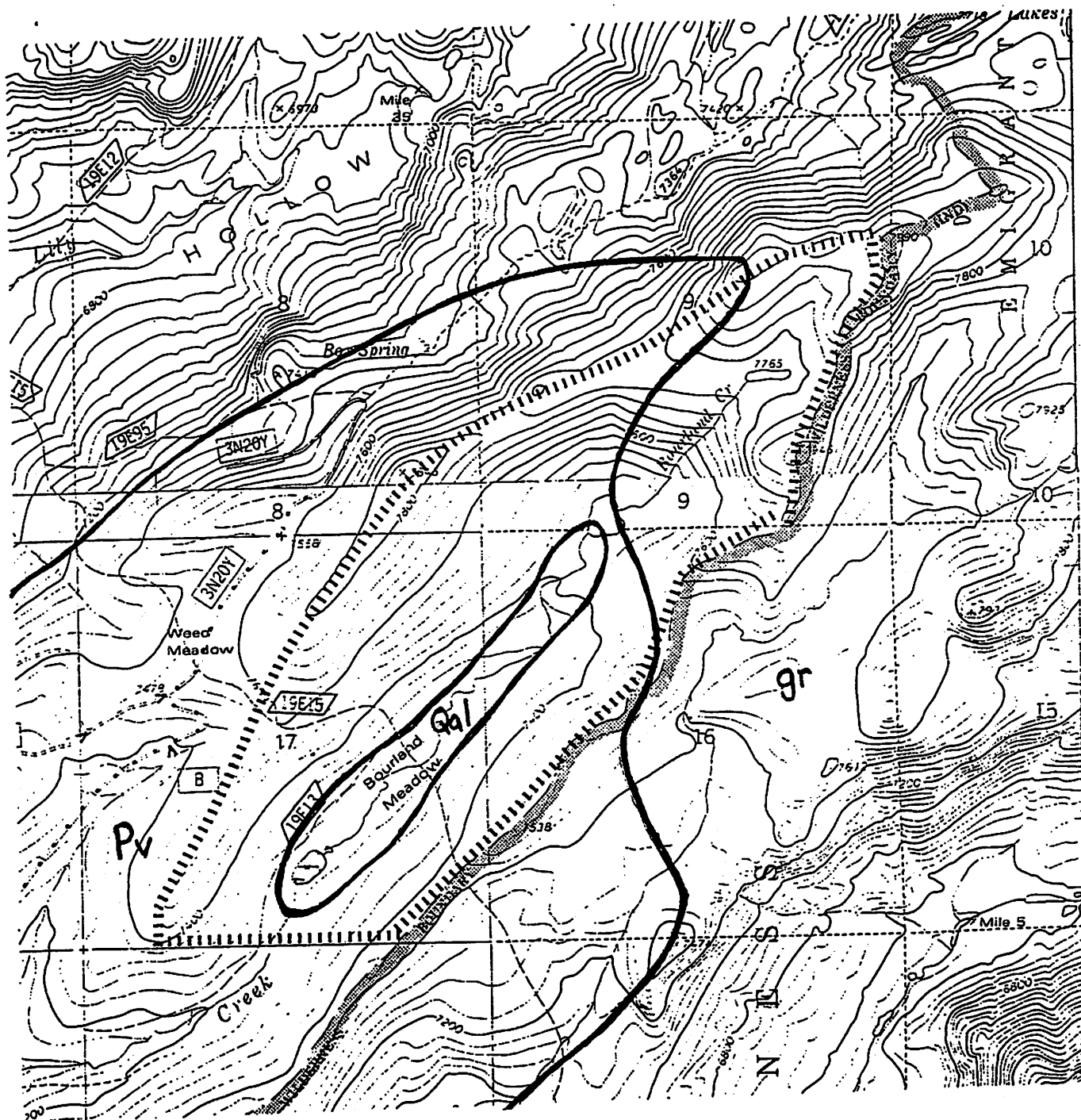
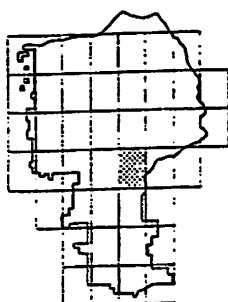


Fig.2. Geologic Map of Study Area
Source: Koenig, 1963



William B. Critchfield
CANDIDATE RESEARCH NATURAL AREA

SCALE: 2.6 INCHES = 1 MILE

T.3N., R.19E.

Legend. Qal Quaternary alluvium
Pv Pliocene volcanics
gr Mesozoic granite rocks,
granodiorite

W.B. Critchfield Research Natural Area

APPENDIX 3

MANAGEMENT DIRECTION

From: Stanislaus National Forest Land and Resource Management Plan and Final Environmental Impact Study, 1991.

NOTE: THE NAME WILLIAM B. CRITCHFIELD RNA WAS ADOPTED FOLLOWING PUBLICATION OF THIS DOCUMENT, REPLACING BOURLAND MEADOW RNA AS THE NAME FOR THIS SITE.

STANISLAUS NATIONAL FOREST
LAND AND RESOURCE MANAGEMENT PLAN

USDA, Forest Service
Stanislaus National Forest
19777 Greenley Road
Sonora, CA 95370
(209) 532-3671

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Timber harvest activities, beginning with railroad-based logging shortly after the turn of the century, have significantly compacted soils in large parts of some harvest areas. These areas are scheduled for treatment to reduce soil density, as funds allow.

Some large areas with naturally-occurring soil deficiencies are being tested for effective treatment methods. These fall into two categories: existing conifer plantations on Bandarita soil series which have natural nutrient deficiencies (compounded by harsh site-preparation done in the 1960's); and natural gullies in a large chamise-manzanita ecosystem on Bancas soil series in the south part of the forest. The Bandarita plantations will be managed as funds allow, according to the results of fertilizer trials installed in 1983. The gullied Bancas soils will be treated where possible (treatments are limited by difficult access, steep slopes, visual quality and recreation constraints) and as funds allow.

14. SPECIAL AREAS

Existing and potential special areas on the Forest are described in this section. In most cases special areas are administratively classified (in contrast to legislative designations such as Wilderness or Wild and Scenic Rivers) to be set aside or protected for a specific purpose.

The one special area that has been legislatively created is the Calaveras Big Trees National Forest. This 380 acre Forest was established in 1909 for the protection of virgin stands of mixed conifer forest, including Sierra redwoods (*Sequoiadendron gigantea*) and old-growth sugar pine. It is adjacent to Calaveras Big Tree State Park and is administered by the Calaveras Ranger District. It is also classified as the Calaveras Memorial Scenic Area.

Experimental Forest

Experimental Forests exist throughout the National Forest system for field studies and to demonstrate forest management practices. The Stanislaus-Tuolumne Experimental Forest, located on the Summit Ranger District, was designated in 1943 to represent a central Sierra mixed conifer forest where sugar pine is a predominant species. The Experimental Forest consists of two units totaling 1,687 acres. It is administered by the Pacific Southwest Experiment Station.

Research Natural Areas

Research Natural Areas (RNAs) are areas set aside to preserve representative examples of specific botanic, aquatic, and geological features, primarily for scientific and educational purposes. The Stanislaus currently has no research natural areas.

The Pacific Southwest Region has identified areas throughout the region needed to complete a botanical target system of RNAs. The Stanislaus is located in two physiographic provinces within this system, and has the following potential RNA target ecosystems:

mixed conifer	oak woodland
white fir	red fir
black oak	Jeffrey pine
aspen/montane meadow	chamise/chaparral
mountain hemlock	

Potential research natural areas under consideration are described briefly here. More information, including maps, can be found in the Stanislaus National Forest planning records.

1. Bell Meadow (aspen) - Aspen stands occur in Bell Meadow along with wet mountain meadow and riparian habitat. The potential RNA is 490 acres, with 110 acres of aspens. It includes good examples of an aspen-meadow complex on deep soils.
2. Clark Fork (white fir) - This area of 460 acres is located southeast of Clark Fork Campground. It includes mixtures of white fir and other conifers at a range of elevations. Part of the area is within the Carson-Iceberg recommended Wilderness.
3. Grizzly Mountain (black oak) - This is an area of 500 acres on the northerly slopes of Little Grizzly and Big Grizzly mountains. The black oak stands occupy 465 acres of the area and are interspersed with brush and scattered ponderosa pines.
4. Bourland Meadow - This is an area of 1,003 acres located at the headwaters of Bourland Creek adjacent to the Emigrant Wilderness. It includes a variety of pine, fir, aspen, meadows and bogs.

Special Interest Areas

Special Interest Areas (SIAs) are managed to make educational opportunities available for understanding the earth and its geological, historical, archaeological, botanical and memorial features. The only designated special area on the Forest is the Calaveras Memorial Scenic Area, which is also the Calaveras Big Trees National Forest (discussed above). It was designated in 1955 to preserve the special scenic qualities of that area. Additional areas are being considered for designation as special interest areas. They are described briefly here. Further information, including maps, can be found in the Stanislaus National Forest planning records.

1. Bull Run Geological Area - Located on the Summit District, with access from Herring Creek Road. This area consists of a rugged, lava-capped ridge, of horseshoe shape, enclosing a forested bowl. It contains a variety of unique rock formations formed by volcanic and glacial action. The area is approximately 340 acres.

MANAGEMENT AREA 6

RESEARCH NATURAL AREAS

MANAGEMENT EMPHASIS

Research Natural Areas (RNAs) are managed to maintain select vegetative, aquatic, and/or geologic elements in natural conditions. Protection is provided against any activities that directly or indirectly modify ecological processes. (FSM 4063.3)

DESCRIPTION

A Research Natural Area, established for research and study purposes, is a discrete land area large enough to represent a specific natural ecosystem. Suggestions for candidate areas come from interested publics, Forest personnel who are familiar with Forest and RNA network goals, and other interested Forest Service cooperators. The Chief of the Forest Service establishes RNAs recommended in approved National Forest plans.

RNAs are important because they will provide benchmarks for comparison of present and future management of the National Forests and will prove to be an invaluable asset in the future. Research Natural Area Maps are included at the end of this section.

Research Natural Area candidates on the Stanislaus National Forest are:

Bell Meadow Candidate Research Natural Area

Located in the east-central portion of the Forest, this area consists of aspen stands in Bell Meadow along with wet mountain meadow and riparian habitat. The area is approximately 490 acres in size, including 110 acres of aspens. It includes examples of the aspen-meadow complex on deep soils. The purpose of this Research Natural Area is aspen research. A portion of Bell Creek was identified as eligible for Wild and Scenic River status. Its values can be protected as a Research Natural Area.

Grizzly Mountain Candidate Research Natural Area

Located in the southern part of the Forest, this area consists of 500 acres on the northerly slopes of Little Grizzly and Big Grizzly Mountains. Black oak stands occupy most of the area, interspersed with brush and scattered ponderosa pine. The purpose of this Research Natural Area is black oak research. It was burned by wildfire in 1987.

Clark Fork Candidate Research Natural Area

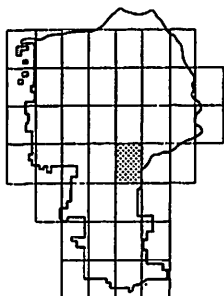
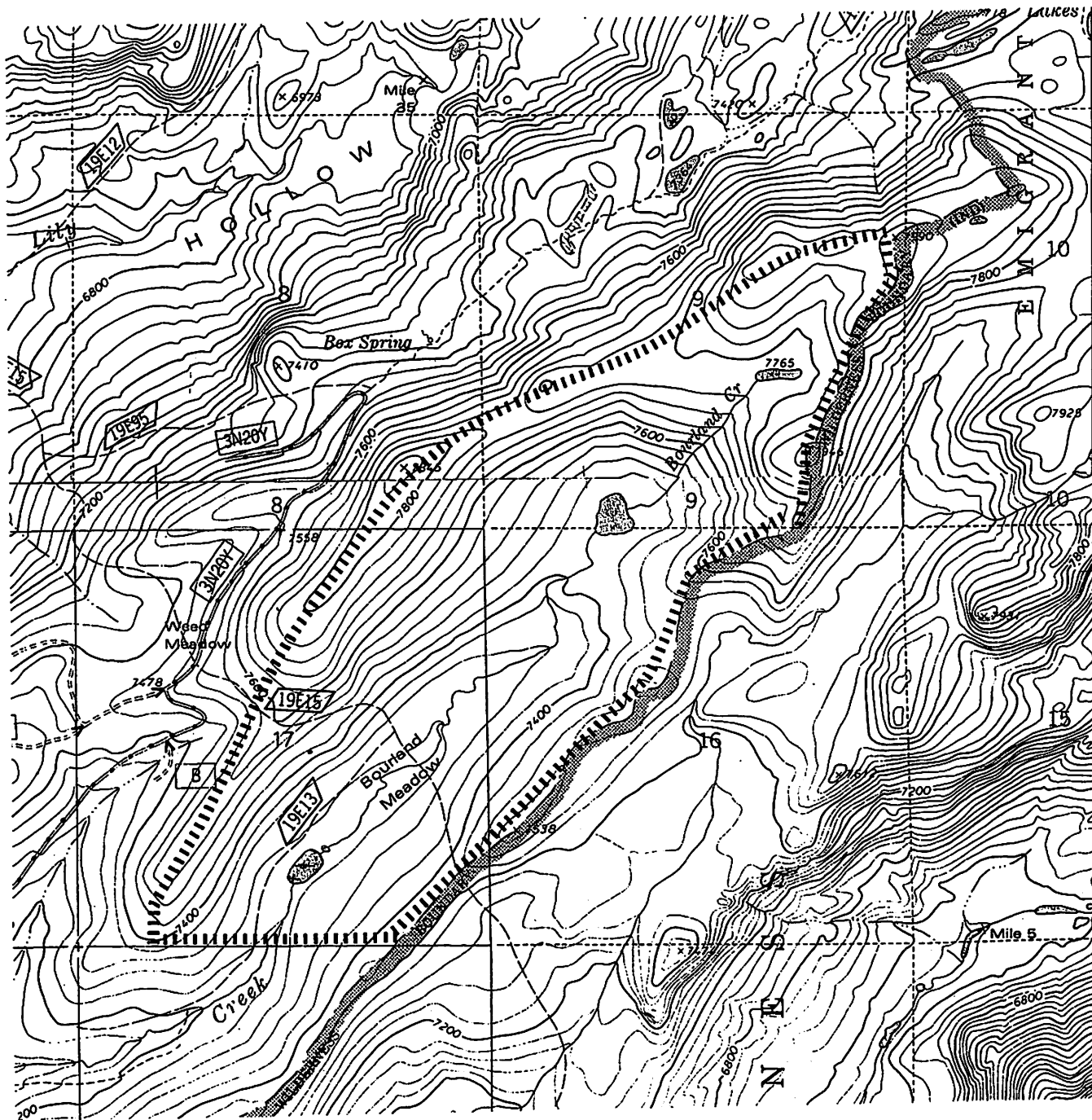
This area is approximately 460 acres and is located in the northeast part of the Forest southeast of Clark Fork Campground. It includes various mixtures of white fir and other conifers at a range of elevations. Part of the area (250 acres) is within the Bald Peak proposed addition to the Carson-Iceberg Wilderness. The remainder is within the Clark Fork proposed Wild and Scenic River. The purpose of this Research Natural Area is white fir research.

Bourland Meadow Candidate Research Natural Area

Located in the east-central part of the Forest. Vegetation consists of seven major associations. They are red fir, red fir-lodgepole pine, red fir-western white pine-lodgepole pine, red fir-white fir-Jeffrey pine, red fir-white fir, and red fir-aspen. Wet and dry meadows are also present and the area is noted for aquatic bog values. Stages of succession are present in several stands, including meadows. The site is 1,003 acres located near the headwaters of Bourland Creek. The Emigrant Wilderness area borders the southeast boundary. Plant diversity in the wet and dry meadows is considered high. A portion of Bourland Creek was identified as eligible for Wild and Scenic River status. Its values can be protected as a Research Natural Area.

MANAGEMENT PRACTICES	GENERAL DIRECTION	STANDARDS AND GUIDELINES
<u>RANGE</u>		
Allotment Management - Extensive or Maintenance (9-A-2&3)	Grazing is not permitted in the upper part of the Bell Meadow Candidate Research Natural Area the Clark Fork Candidate RNA or the Bourland Meadow Candidate RNA If grazing occurs in other RNAs, its management will be specified in management plans for the areas and the surrounding allotments. Management is designed to protect the areas' special characteristics.	
<u>RECREATION</u>		
ROS - Semiprimitive Nonmotorized (SPNM) *(10-B-2)	Close RNAs to all mechanized use, except wheelchairs needed for barrier free access. Provide for low interaction between visitors with a range of SPNM recreation experiences. Evidence of other uses is unobtrusive.	Manage to ROS class of SPNM. This is the adopted ROS level for RNAs, as shown on the ROS Map (I-5).
Dispersed Recreation Management (10-F)	Protect against activities that modify the environment.	Discourage recreation uses such as picknicking, camping, hunting, and fishing, which contribute to modification of the RNA. Expressly prohibit such uses if they threaten serious impairment of research or education values. Exception may be made where threat to life or property dictates otherwise.
Closed OHV Management *(10-G-2)	Close RNAs to all motorized use.	
Closed Mountain Bicycle Management *(10-H-2)	Prohibit all mechanized use except wheelchairs needed for barrier-free access.	
Interpretive Services Planning *(10-L)	Develop and update Interpretive Services plans for RNAs.	Identify and give priority to projects based on RNA evaluations and nominations for establishment. Identify objective audiences, interpretive messages, communication methods and facility requirements.

MANAGEMENT PRACTICES	GENERAL DIRECTION	STANDARDS AND GUIDELINES
Interpretive Services Management *(10-M)	Interpret unique features of RNAs.	Prepare maps, brochures, signs and other interpretive devices that explain unique features.
Installation or Construction of Interpretive Services Facilities not on Interpretive Services Sites (10-N)	Provide information and education material at trailheads outside of RNAs.	Stress minimum impact and leave-no-trace ethics.
<u>SPECIAL AREAS</u>		
Research Natural Area (RNA) Management (14-B)	Protect identified RNAs as undisturbed ecosystems for future research.	Coordinate activities with the PSW/R5 RNA Committee.
<u>VISUAL RESOURCE</u>		
VQO - Preservation (P) *(17-B-1)	Allow only ecological changes.	Manage to a VQO of Preservation. This is adopted VQO level for RNAs, as shown on the VQO Map (1-8)
<u>WILD AND SCENIC RIVERS</u>		
Wild and Scenic River Management (19-B)	Manage RNAs within Wild and Scenic Rivers under dual designation.	Manage to be consistent with application of guidelines for Management Area 2 (Wild and Scenic Rivers).
Alternate Management (19-D)	Protect Wild and Scenic River values of eligible river segments proposed for RNA Alternate Management (See Appendix E (EIS) Wild and Scenic River Study).	Manage to RNA guidelines, portions of the following segments that are within RNAs: Bell Creek and Bourland Creek.
<u>WILDERNESS</u>		
Wilderness Management (20-B)	Manage RNAs within Wilderness under dual designation	Manage to be consistent with application of guidelines for Management Area 1 (Wilderness and Proposed Wilderness).



**BOURLAND MEADOW
CANDIDATE RESEARCH NATURAL AREA**

SCALE: 2.6 INCHES = 1 MILE

T.3N., R.19E.

Study River: BOURLAND CREEK
Headwater - Reed Creek (11 miles)

Land Status: 10.75 miles National Forest; 0.25 miles other.
Location: east portion of the Forest; Mi-Wok District. Portions extensively accessed by low standard roads.
Cultural Resources: last standing railroad logging trestle on Forest.
Fish and Wildlife: travel corridor and core zone for fisher, pine marten and wolverine.
Mineral Potential: moderate; no known occurrences.
Recreation: OHV use, hiking and fishing.
Timber: 2,710 acres suitable; 54.2 mmbf standing volume with a potential yield of 1.1 mmbf/year.
Vegetation: mixed conifer and true fir; bogs at Bourland Meadow.
Water: small perennial, good quality.
Geology: glacial tills at Bourland Meadow; volcanics and granitics in upper reaches; and, lower reach is river-cut through granite.
Scenic: Bourland Meadow has a variety of vegetation; completely standing railroad trestle is a scenic attraction.
Management Considerations: Wild and Scenic River designation would result in suitable timber tradeoffs. River values can be protected under other management: the railroad trestle as a Special Interest Area; and, Bourland Meadow as a Research Natural Area. Additional costs would be incurred by managing the entire creek as a Wild and Scenic River.

Study River: PACIFIC CREEK
Headwaters - North Fork Mokelumne (6 miles)

Land Status: 6 miles National Forest.
Location: northeast corner of the Forest; Calaveras District. State Highway 4 and a forest road access the lower portion. Upper portion is within the Pacific Valley Further Planning Area.
Facilities: one campground and a Wilderness trailhead.
Recreation: hiking, scenic viewing, hunting and camping.
Timber: 1280 acres suitable; 25.6 mmbf standing volume with a potential yield of .2 mmbf/year within the Further Planning Area and .3 mmbf/year outside of it.
Vegetation: true fir and lodgepole pine.
Water: small perennial, high quality.
Geology: glaciated granitics.
Scenic: crest zone with high peaks of volcanic origin; broad valley with meadows; granite domes, cirques and a cascading stream.
Other: considered sensitive because they are fragile or nonrenewable.
Information can be found in the Planning Records, on file at the Stanislaus National Forest Supervisor's Office in Sonora, CA.

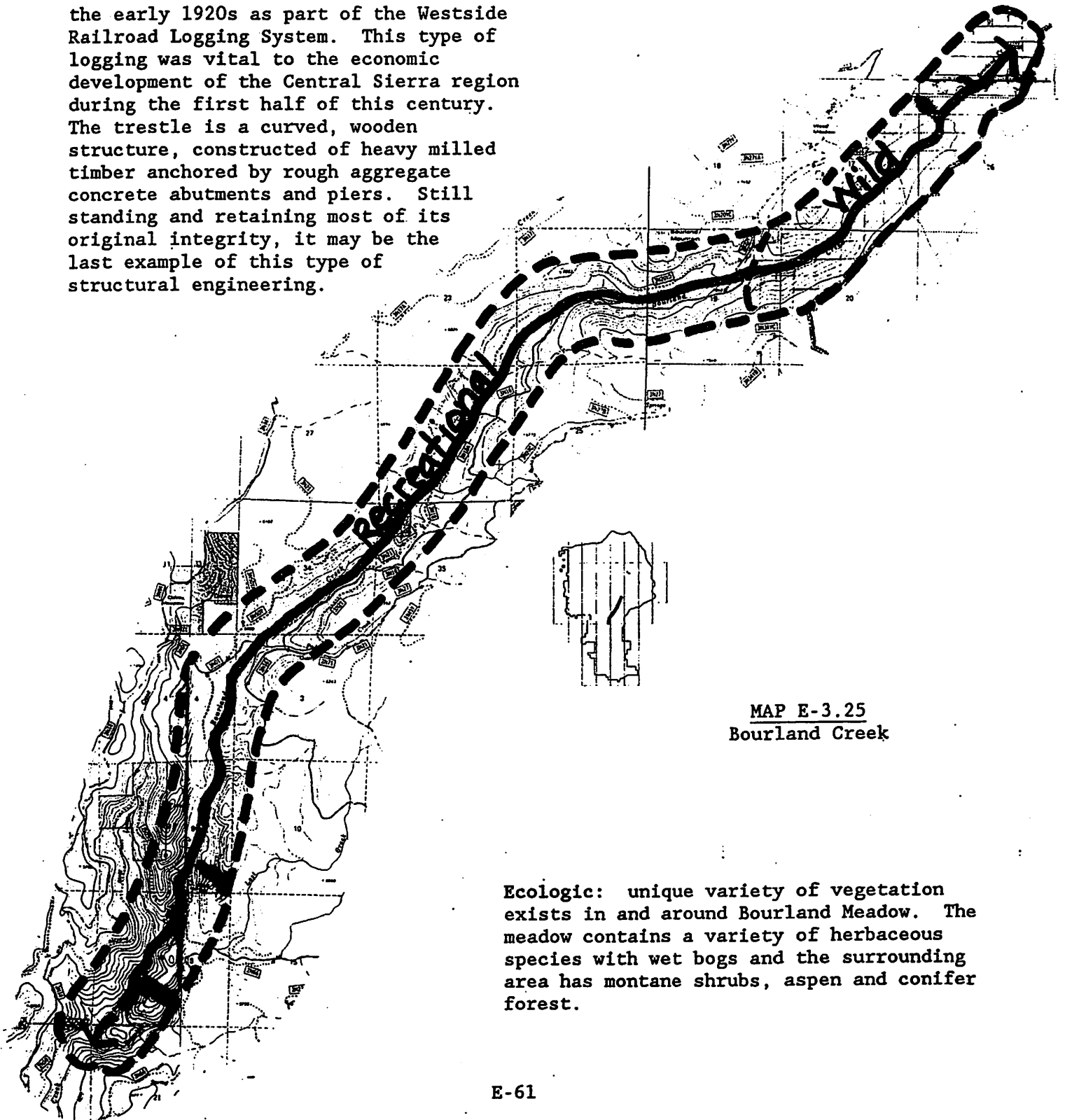
River: BOURLAND CREEK

Segment: Headwater - Reed Creek Confluence (11 miles)

Outstandingly Remarkable Values: Historic/Cultural Ecologic

Classification: 2 WILD and 9 RECREATIONAL

Historic/Cultural: a narrow gauge railroad logging trestle spans Bourland Creek. Bourland Trestle was built in the early 1920s as part of the Westside Railroad Logging System. This type of logging was vital to the economic development of the Central Sierra region during the first half of this century. The trestle is a curved, wooden structure, constructed of heavy milled timber anchored by rough aggregate concrete abutments and piers. Still standing and retaining most of its original integrity, it may be the last example of this type of structural engineering.



MAP E-3.25
Bourland Creek

Ecologic: unique variety of vegetation exists in and around Bourland Meadow. The meadow contains a variety of herbaceous species with wet bogs and the surrounding area has montane shrubs, aspen and conifer forest.