



United States
Department of
Agriculture

Forest
Service

Pacific
Southwest
Region

Regional Office
630 Sansome Street
San Francisco, CA 94111

Reply To: 4063

Date: MAR 13 1992

Subject: Research Natural Areas

To: Director, Intermountain Forest and Range Experiment Station

Enclosed is a copy of the Establishment Record for Babbitt Peak Research Natural Area (RNA) within the Tahoe and Toiyabe National Forests. This RNA was selected for its unique stands of Washoe Pine in an area largely free from human disturbance.

Designation of the Babbitt Peak RNA by the Chief is in accordance with recommendations made in the Land and Resource Management Plans of both the Tahoe and Toiyabe National Forests. You will note that the Establishment Record designates the Director, Pacific Southwest Forest and Range Experiment Station, as the research coordinator for Babbitt Peak RNA and gives the District Ranger, Sierraville District of the Tahoe National Forest, primary responsibility for its administration and protection. Inquiries regarding this RNA should be directed to Connie Millar, Pacific Southwest Forest and Range Experiment Station.

fn ANDREW A. LEVEN, Director
Range and Watershed Management

Enclosure



Caring for the Land and Serving People

FS-6200-28 (7-82)

Research Natural Area Boundary Description

Babbitt Peak RNA

An area comprised of portions of the Tahoe National Forest and the Toiyabe National Forest, Sierra County, California including all of Section 5 and portions of Sections 4, 7, and 8, T. 20 N., R 17 E., MDM as shown the attached map entitled "Babbitt Peak RNA", said map being made herewith a part of this description, and said area being more particularly bounded and described as follows:

Beginning at the corner of sections 4, 5, 8, and 9, T. 20 N., R. 17 E., MDM; thence northerly along the line common to Sections 4 and 5 to the S1/16 corner common thereto; thence easterly along the south line of the N1/2 SW1/4, section 4 to the CS1/16 corner thereof; thence northerly along the north-south centerline of said section to the C1/4 thereof; thence northeasterly in a straight line to the NE1/16 corner of said section; thence northerly to the E1/16 corner on the north line of said section 4 being a point on the Fourth Standard Parallel; thence westerly along said standard parallel to the corner common to sections 5 and 6, T. 20 N., R. 17 E., MDM; thence southerly along the line common to said sections and continuing southerly along the line common to sections 7 and 8 to the 1/4 corner thereof; thence westerly along the east-west centerline of section 7, T. 20 N., R. 17 E. to the CE1/16 corner of said section; thence southerly along the west line of the E1/2 SE1/4 of said section to the E1/16 on the south line of said section; thence easterly along the line common to sections 7 and 18 to the corner of sections 7, 8, 17, and 18; thence continuing easterly along the line common to sections 8 and 17 approximately 1,100 feet to the crossing of a ridge bearing NE and SW; thence northeasterly and easterly ascending said ridge to the summit thereof on Babbitt Peak; thence northerly descending from said peak along the main dividing ridge to a point on the south line of section 5 from which the corner of sections 4, 5, 8, and 9 bears easterly approximately 600 feet distant; thence easterly to the last said section corner being the point of beginning;

Excepting from the above described area any portion thereof lying within 200 feet of Babbitt Peak Lookout.

Informational distances, corner positions, and references to PLSS locations herein above were obtained by measurements and observations on the referenced map ("Babbitt Peak RNA") being a composite of portions of Forest Service Primary Base Series Maps "Sardine Peak, California, 570-3C, 1986" and "Dog Valley, California/Nevada, 570-4C, 1986" at a scale of 1:24,000 in original.

End of Description

I certify that the above boundary description of the Mount Pleasant Research Natural Area was prepared by me or under my direct




Regional Land Surveyor
Pacific Southwest Region

02/02/91
Date

DECISION NOTICE/DESIGNATION ORDER

Decision Notice Finding of No Significant Impact Designation Order

By virtue of the authority vested in me by the Secretary of Agriculture under regulations 7 CFR 2.42, 36 CFR 251.23, and 36 CFR Part 219, I hereby establish the Babbitt Peak Research Natural Area. It shall be comprised of lands described in the section of the Establishment Record entitled "Location."

The Regional Foresters have recommended the establishment of this Research Natural Area in the Records of Decision for the Land and Resource Management Plans of the Tahoe and Toiyabe National Forests. Those recommendations were the results of analyses of the factors listed in 36 CFR 219.25 and Forest Service Manual 4063.41. Results of the Regional Foresters' Analyses are documented in the Land and Resource Management Plans and Final Environmental Impact Statements of the Tahoe and Toiyabe National Forests which are available to the public.

The Babbitt Peak Research Natural Area will be managed in compliance with all relevant laws, regulations, and Forest Service Manual direction regarding Research Natural Areas. It will be administered in accordance with the management direction/prescription identified in the Establishment Record.

I have reviewed direction for this RNA in the Land and Resource Management Plans (LRMPs) of the Tahoe and Toiyabe National Forests and find that the management direction cited in the previous paragraph is consistent with the LRMPs and that Plan amendments are not required.

The Forest Supervisors of the Tahoe and Toiyabe National Forest shall notify the public of this decision and will mail a copy of the Decision Notice/Designation Order and amended direction to all persons on the Land and Resource Management Plan mailing lists of the Tahoe and Toiyabe National Forests.

Based upon the Environmental Analysis, I find that designation of the Babbitt Peak Research Natural Area is not a major Federal action significantly affecting the quality of the human environment (40 CFR 1508.27).

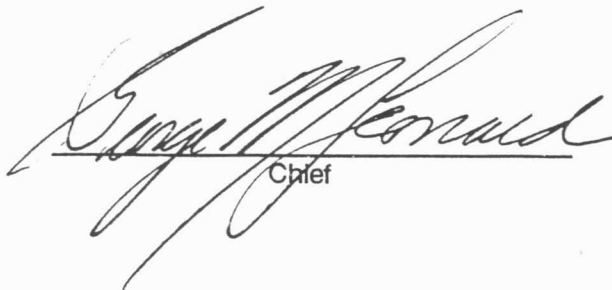
This decision is subject to appeal pursuant to 36 CFR Part 217. A Notice of Appeal must be in writing and submitted to:

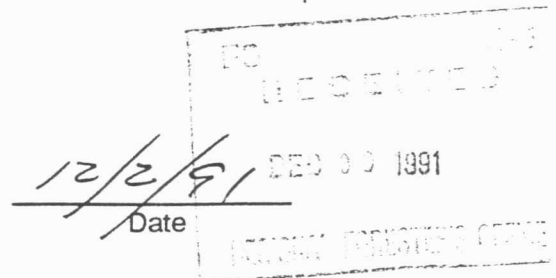
The Secretary of Agriculture
14th & Independence Ave., S.W.
Washington, D.C. 20250

and simultaneously to the Deciding Officer:

Chief (1570)
USDA, Forest Service
P.O. Box 96090
Washington, D.C. 20090-6090

The Notice of Appeal prepared pursuant to 36 CFR 217.9(b) must be submitted within 45 days from the date of legal notice of this decision. Review by the Secretary is wholly discretionary. If the Secretary has not decided within 15 days of receiving the Notice of Appeal to review the Chief's decision, appellants will be notified that the Chief's decision is the final administrative decision of the U.S. Department of Agriculture (36 CFR 217.17(d)).


Chief



SIGNATURE PAGE
for
RESEARCH NATURAL AREA ESTABLISHMENT RECORD

Babbitt Peak Research Natural Area

Tahoe National Forest and Toiyabe National Forest

Sierra County, California

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

Prepared by Todd Keeler-Wolf Date August 28, 1989
Todd Keeler-Wolf, Consulting Ecologist to The Nature Conservancy

Recommended by Steve Bishop Date 10/26/89
Steve Bishop, District Ranger, Sierraville District

Recommended by Geri B. Larson Date 1/10/90
Geri B. Larson, Forest Supervisor, Tahoe National Forest

Recommended by Guy W. Pence Date 10/23/89
Guy Pence, District Ranger, Carson District

Recommended by R.M. Nelson Date 10/30/89
R.M. Nelson, Forest Supervisor, Toiyabe National Forest

Recommended by Paul F. Barker Date 7/30/90
Paul F. Barker, Regional Forester, Pacific Southwest Region

Recommended by Robert C. Tixier Date 8/15/90
for R.S. Tixier, Regional Forester, Intermountain Region

Recommended by Ronald Stewart Date 8/3/90
for Ronald Stewart, Station Director, Pacific Southwest Forest and Range Experiment Station

Recommended by Laurence E. Lassen Date 7 Aug 90
for Laurence E. Lassen, Station Director, Intermountain Forest and Range Experiment Station

TITLE PAGE
ESTABLISHMENT RECORD FOR
BABBITT PEAK RESEARCH NATURAL AREA
WITHIN THE TAHOE AND TOIYABE NATIONAL FORESTS
SIERRA COUNTY, CALIFORNIA

A. INTRODUCTION

Research Natural Area candidacy was first proposed for the Babbitt Peak area within the Bald Mountain Range in 1972 by the Tahoe and Toiyabe National Forests in order to preserve and protect the unique stands of Washoe pine. Washoe pine (*Pinus washoensis*)¹ was first described from the Babbitt Peak area by Critchfield and Allenbaugh (1965). The Babbitt Peak Research Natural Area (BPRNA) as described in this report includes portions of both the Tahoe and the Toiyabe National Forests. It is entirely on National Forest System lands, but does not lie within any congressionally designated area. Of the two forests, the Tahoe National Forest will be the primary manager and administrator of this RNA.

(1) Land Management Planning

The Tahoe National Forest final Land and Resource Management Plan recommends establishment of the BPRNA for all alternatives (Appendix 3). The RNA is considered as an individual management area by the Tahoe National Forest (management area 016). The Toiyabe National Forest's land and resource management plan lists establishing and protecting the BPRNA in cooperation with the Tahoe National Forest and withdrawing it from mineral entry as a management activity.

B. OBJECTIVES

The BPRNA will be established to represent the Washoe pine special element as listed in the RNA target elements for the Pacific Southwest Region (Appendix 4). The limited distribution of Washoe pine and the tendency of this species to become genetically indistinct when occurring with ponderosa pine has limited the number of potential sites for its study and protection. The area is also largely free from human disturbance, which affects several other stands of Washoe pine. The BPRNA is thus the best site known for a Washoe pine RNA. In addition, although not listed as a target element, the extensive, pure stands of western white pine (*Pinus monticola*) at BPRNA are also unique to the Pacific Southwest Region.

¹ In this Establishment Record all trees are named following Little, E.L. Jr. 1979. Checklist of United States trees (native and naturalized). Agricultural Handbook No. 541 U.S.D.A. Washington D.C. Other plants follow Munz (1968).

C. JUSTIFICATION STATEMENT FOR ESTABLISHMENT OF AREA

Washoe pine was first described in 1945 (Mason and Stockwell 1945) from Mount Rose, approximately 20 miles (32 km) SE of Babbitt Peak. J.R. Haller (1961) reported stands of this species from the southern Warner Mountains, and Critchfield and Allenbaugh (1965) discussed the stands on Babbitt Peak. In addition to these three main localities, the species is known from isolated localities in Plumas, Lassen and Nevada Counties (Griffin and Critchfield 1976). With respect to all other Washoe pine populations known, those at Babbitt Peak differ by being remote from the closely related ponderosa pine, and thus, are relatively distinct genetically (photo 1). The mature stand in the northeastern portion of the RNA is the largest (about 86 acres or 35 ha) pure stand known in the world (photo 2). The stands at BPRNA also represent the highest known elevation population (up to 8500 ft. or 2591 m). The variation of slope exposure (SE-, W-, E-, NW-, and S-facing slopes) and concomitant associated forest species within the local populations of Washoe pine adds diversity. Thus, for its size, BPRNA represents a larger range of ecological conditions for the species than has been mentioned elsewhere (Griffin and Critchfield 1976).

The pure stands of western white pine cover ca. 170 acres (68 ha) of the area (photo 3). As Talley (1977) has stated, these stands are unique for the Sierra Region and indicate the relatively xeric conditions prevalent on N- and E-facing slopes in the RNA. The typical dominant tree, red fir (*Abies magnifica*), of these exposures and elevations in the Sierra does not fair well here. Western white pine-dominated forests are more typical of colder, interior mountains of the Pacific Northwest (Boyd, in Eyre 1980). The stands of mixed western white pine and red fir represent the most inland location in California (Griffin and Critchfield 1976), lying approximately 182 miles (293 km) from the closest part of the Pacific Ocean.

Viewing the Babbitt Peak area as an ecosystem, it is clearly transitional between the Sierran montane coniferous and Great Basin biomes (photo 4). This situation provides numerous opportunities to analyze the ecological differences between various types of montane coniferous forest and adjacent cold desert shrub-steppe vegetation.

D. PRINCIPAL DISTINGUISHING FEATURES

Babbitt Peak RNA occupies the the highest crests and surrounding slopes of the Bald Mountain Range, one of the most eastward ranges with typical Sierran coniferous vegetation in this part of California. The coniferous vegetation of the RNA not only includes the previously mentioned pure western white pine forest and Washoe pine forest, but also includes extensive stands of white fir-dominated forest and smaller areas of mixed red fir and western white pine forest. Plant communities with Great Basin affinity include several patches of low aspen forest, extensive areas of big sagebrush (*Artemisia tridentata*) scrub, and equally extensive curl-leaf mountain mahogany (*Cercocarpus ledifolus*) scrub.

The primary target element, Washoe Pine, is best represented on the summit and S-facing upper slopes of the NE-trending spur ridge in the NE portion of the RNA, where it occurs in a mature open forest surrounded by patches of curl-leaf mountain mahogany scrub (rocky areas), red fir-western white pine forest (N-facing slopes), white-fir forest (lower elevation S-facing slopes), and sagebrush scrub (exposed W-facing and SW facing slopes). The reproduction of Washoe pine is patchy within the main stand, but is well represented on the W side of the grove, where large numbers of pole-size Washoe pine exist.

The Babbitt Peak area is completely underlain by volcanic flow rock described as andesite in Burrett and Jennings (1962). The rocks outcrop occasionally along the main ridge and on the two spur ridges where they are included within the area. The strong westerly winds which sweep over the summit ridges of the area preclude the development of coniferous forest on many of the upper SW-facing slopes. Wind-flagging of western white pines and other trees along the ridges is pronounced. The area is relatively xeric and has no permanent surface moisture, although some aspen clones are clearly tied to underground moisture. Watersheds drain to the W and are a upper tributaries to the Feather River.

The fairly isolated, unaltered condition of the area has made it a refuge for several large vertebrate predators. Prairie falcons

(*Falco mexicanus*²), goshawks (*Accipiter gentilis*), golden eagles (*Aquila chrysaetos*), and mountain lions (*Felis concolor*) have all been recently sighted in the area and these species are supported by numerous small and large game animals such as mountain quail (*Oreortyx pictus*), blue grouse (*Dendragapus obscurus*), deer (*Odocoileus hemionus*), and black-tailed hares (*Lepus californicus*) (personal observation Aug. 1988, Fox 1980).

E. LOCATION

- (1) The BPRNA is located principally (80%) on Tahoe National Forest land. Approximately 20% of the area is on the Toiyabe National Forest.
- (2) The approximate mean latitude and longitude of the area is 39° 36' N, 120° 06' W.
- (3) Boundary Description (see certified description in forward section of this document):

An area comprised of portions of the Tahoe National Forest and the Toiyabe National Forest, Sierra County, California including all of Section 5 and portions of Sections 4, 7, and 8, T. 20 N., R. 17 E., MDM as shown the attached map entitled "Babbitt Peak RNA", said map being made herewith a part of this description, and said area being more particularly bounded and described as follows:

Beginning at the corner of sections 4, 5, 8, and 9, T. 20 N., R. 17 E., MDM; thence northerly along the line common to Sections 4 and 5 to the S1/16 corner common thereto; thence easterly along the south line of the N1/2 SW1/4, section 4 to the CS1/16 corner thereof; thence northerly along the north-south centerline of said section to the C1/4 thereof; thence northeasterly in a straight line to the NE1/16 corner of said section; thence northerly to the E1/16 corner on the north line of said section 4 being a point on the Fourth Standard Parallel; thence westerly along said standard parallel to the corner common to sections 5 and 6, T. 20 N., R. 17 E., MDM; thence southerly along the line common to said sections and continuing southerly along the line common to sections 7 and 8 to the 1/4 corner thereof; thence westerly along the east-west centerline of section 7, T. 20 N., R. 17 E. to the CE1/16 corner of said section; thence southerly along the west line of the E1/2 SE1/4 of said section to the E1/16 on the south line of said section; thence easterly along the line common to sections 7 and 18 to the corner of sections 7, 8, 17, and 18; thence continuing easterly along the line common to sections 8 and 17 approximately 1,100 feet to the crossing of a ridge bearing NE and SW; thence northeasterly and easterly ascending said ridge to the summit thereof on Babbitt Peak; thence northerly descending from said peak along the main dividing ridge to a point on the south line of section 5 from which the corner of sections 4, 5, 8, and 9 bears easterly approximately 600 feet distant; thence easterly to the last said section corner being the point of beginning;

Excepting from the above described area any portion thereof lying within 200 feet of Babbitt Peak Lookout.

² Nomenclature for fauna follows Robbins et al. (1983) for birds, and Ingles (1965) for mammals.

(4) The total area described above is 1416 acres (573 ha.). This may be broken down by sections in the following way:

	Acres	Hectares
Section 4	276	111.7
Section 5	631	255.4
Section 7	94	38.0
Section 8	415	168.0
Total:	1416	573.1

(5) Elevations in the BPRNA range from 7360 to 8760 ft. (2243-2670 m).

(6) The BPRNA is accessible from the south via unpaved Forest Service roads. It is approximately 81 road miles (130 km) from the Tahoe National Forest Supervisors Office in Nevada City via the following Route. Take state highway 20 E from Nevada City to its junction with Interstate 80. From there take Interstate 80 E over Donner Summit and through Truckee, turning N at the Boca offramp approximately 6 miles beyond Truckee. Take the (paved) Stampede Reservoir road for approximately 10 miles to the junction of the Henness Pass Road (dirt). Turn left on this road (Forest Service Road S860) and continue on it for approximately 16 miles to the junction with the Babbitt Peak Road (860-35) in Pats Meadow. From this junction it is approximately 6 miles to the lookout atop Babbitt Peak.

Once within the area there is a low grade jeep trail which leads N from the lookout roughly along the crest of the Bald Mountain Range to near the N boundary of the RNA in the NW 1/4 of Section 5 T20N, R17E. The Badenaugh Trail (17E01) descends the Western slopes of Babbitt Peak through Badenaugh Canyon affording access to the lower western slopes of the RNA. This trail has been recently maintained, but is not heavily traveled within the area. Off the trails cross-country travel is relatively easy as a result of the openness of the vegetation and the gradual slopes, particularly at the upper elevations. The main stand of Washoe pine is easlily accessible, within about 25 minutes of walking from the lookout area.

F. AREA BY COVER TYPES

	Percent	Acres	Hectares
SAF TYPES (EYRE 1980)			
Red Fir (207)	15	208	84
White Fir (211)	30	429	174
Western White Pine (215)	16	232	94
Aspen (217)	5	67	27
unclassified	34	480	194
TOTAL	100	1416	573
KUCHLER TYPES (Kuchler 1966)			
Mixed Conifer Forest (K-5)	30	429	174
Red Fir Forest (K-7)	15	208	84
Mountain Mahogany-Oak Scrub (K-31)	14	193	78
Great Basin Sagebrush (K-32)	13	187	76
unclassified	28	399	161
TOTAL	100	1416	573
HOLLAND TYPES (Holland 1986)			
Big Sagebrush Scrub (35210)	13	187	76
Aspen Forest (81B00)	5	67	27
Sierran White Fir Forest (84240)	30	429	174
Washoe Pine-Fir Forest (85220)	7	102	41
Red Fir Forest (85310)	15	208	84
unclassified	30	423	171
TOTAL	100	1416	573

G. PHYSICAL AND CLIMATIC CONDITIONS

The BPRNA lies along the crest of the Bald Mountain Range. Geologically, this mountain range is part of the Northern Great Basin (Durrell 1987). However, a narrow, bridging lowland area between it and the Sierra Nevada gives it strong floristic and climatic ties to that great mountain range.

The relatively eastward location of the Bald Mountain Range places it in the rain shadow of the 9000+ ft. (2743+ m) peaks of Mt. Lola, Basin Peak, and Castle Peak along the Sierra Crest, and endows it with a somewhat different climate than similar elevations to the west. According to Rantz (1972), average annual precipitation along the Sierra Crest in the vicinity of the aforementioned peaks is

between 70 and 80 inches (1778-2032 mm), while the average for the crest of the Bald Mountain Range, only about 20 miles (32 km) to the northeast is approximately 30 inches (762 mm), or less than half the total of the Sierra Crest areas. In addition to the lower average annual precipitation, the BPRNA probably averages lower winter temperatures than comparable Sierra elevations. Hence, by California montane standards, the BPRNA has a relatively severe climate.

Unfortunately, although weather data is taken for at least part of the summer at the Babbitt Peak Lookout, this has been sporadic and is not compiled into any easily summarized form. Thus, no useful weather data are available for the RNA. Summaries of temperature and precipitation for the town of Boca, about 15 miles (24 km) south and 3000 ft. (914 m) lower than the upper elevations of the RNA, are the closest approximation we can make to the local climate.

Boca is located at an elevation of 5575 ft. (1699 m) at 39° 23' N latitude and 120° 06' W longitude. The station has been taking temperature data for 53 years and precipitation data for 100 years. Tables 1 and 2 summarize the temperature and precipitation data for Boca over a 12 year period.

Table 1: Summary of temperature data (°F) for Boca from 1974 through 1985.

year	ann. mean	highest (w/date)	lowest (w/date)	last spr. frost	first fall frost	#frost- free days
'74	43.7	92 (7/29)	-10 (1/11)	6/27	7/11	14
'75	41.6	94 (7/27)	-13(2/15)	6/30	7/1	1
'76	42.3	93 (9/2)	-14 (3/5)	6/30	7/1	1
'77	42.7	97 (8/2)	-12(3/1)	6/3	7/5	32
'78	43.1	96 (8/5)	-18(12/31)	6/26	7/2	6
'79	42.8	96 (7/19)	-22(1/30)	6/30	7/1	1
'80	44.2	95 (7/28)	-7 (1/29)	6/27	7/5	8
'81	45.6	99 (8/9)	4 (2/1)	6/17	7/8	26
'82	40.8	93 (8/23)	-19(1/7)	6/15	7/3	18
'83	42.4	96 (8/7)	-5 (1/1)	6/30	7/3	3
'84	43.4	95 (8/9)	-8(12/17)	6/30	8/3	34
'85	41.8	96 (6/19)	-19(2/10)	6/30	8/2	33

Table 2: Precipitation summary for Boca 1974-1985.

year	January		July		total	
	inches	mm	inches	mm	inches	mm
1974	3.51	89.2	1.48	37.6	16.93	430.0
1975	1.58	40.1	0.00	0.0	23.32	592.3
1976	0.39	9.9	0.25	6.4	10.14	257.6
1977	1.78	45.2	0.15	3.8	18.84	478.5
1978	6.25	158.8	0.42	10.7	18.69	474.7
1979	3.91	99.3	1.55	39.4	20.59	523.0
1980	7.93	201.4	1.56	39.6	25.31	642.9
1981	3.81	96.8	0.00	0.0	26.71	678.4
1982	5.43	137.9	1.70	43.2	42.80	1087.1
1983	5.31	134.9	0.00	0.0	43.60	1107.4
1984	0.30	7.6	0.77	19.6	15.39	390.9
1985	0.51	13.0	2.26	57.4	18.97	481.8

As can be seen from Table 1 yearly minimum temperatures are relatively low at Boca. This is probably the result of its proximity to the cold Great Basin and also as a result of its valley bottom location. Assuming a lapse rate of 3°F for every 1000 ft. in elevation (1.67° C per 304.8 m), the average annual temperature atop Babbitt Peak would be about 33.5°F (0.8°C). Assuming the same lapse rate, the average winter low would be approximately -21.4° F (-29.7°C). and the average summer maximum would be about 85.6°F (29.8° C). The extrapolated winter figures for Babbitt Peak are probably somewhat misleading because of the cold air drainage Boca receives. However, it is clear that temperatures in the winter are severe in the RNA. The frost dates indicated on Table 1 also suggest that 3000 ft. (914 m) higher in the BPRNA, frosts may occur at virtually any time of the year.

The precipitation pattern at Boca (Table 2), although undoubtedly lower in total amount than at the RNA, is probably similar to that of the RNA. The main precipitation falls in the winter and this is virtually all snow. Snow depths as indicated by *Letharia* lichen growth on tree trunks was (depending on slope exposure) between 2 and 5 ft. (0.61-1.52 m) at the upper elevations of the RNA. Summer

thundershowers are sporadic, but probably contribute on the average about one inch (25 mm) in the month of July alone (Boca average for July over the 1974-1985 period was 0.85 inches or 22 mm).

According to the lookout at Babbitt Peak, between June 5 and August 5, 1988 there were 22 days of thundershower activity. This was about twice the number of days for the same period in 1987.

H. DESCRIPTION OF VALUES

(1) Flora

The flora of the BPRNA is not as well known as many other RNAs in California. This is because there was no systematic search of the area for vascular plants. Talley (1977) did not include a list of vascular plants from the area, although he did include an association table of species encountered in his vegetation sampling work. This list plus a partial list of additional species observed during the field reconnaissance for this Establishment Record is given as Appendix 1. The total number of vascular plant taxa known from the area is 85. The relatively dry forests and scrub associations without the presence of surface moisture is probably the principal reason for the low diversity of species.

No rare or sensitive plant species are known in the area. Washoe pine was considered for listing in the latest California Native Plant Society inventory of rare and endangered plants (Smith and Berg 1988), but was dropped because it is too common. The area is interesting floristically because of the mixture of typically Sierran montane and Great Basin species. At Babbitt Peak, a number of Great Basin species such as *Thelypodium flexuosum*, *Oryzopsis hymenoides*, *Arabis puberula*, and *Purshia tridentata*, are in close proximity to typical Sierran montane species such as *Penstemon heterodoxus*, *Abies magnifica*, *Arctostaphylos nevadensis*, *Ceanothus prostratus*, etc.

The following is a brief account of the major vegetation types occurring at BPRNA. These are depicted on the vegetation map (Map 3). The code numbers in parentheses following the names are keyed to the type descriptions in Eyre (1980), Kuchler (1966), or Holland (1986).

a. Big Sagebrush Scrub (Holland 35210): This type covers even-graded slopes with S to W exposures and steep slopes with eastern exposures. Big sagebrush (*Artemisia tridentata*) is dominant. Other common shrubs include squaw currant (*Ribes cereum*), bitterbrush (*Purshia tridentata*), snowberry (*Symphoricarpos vaccinoides*), Sierra gooseberry (*Ribes roezlii*), sulphur flower (*Eriogonum umbellatum*), and curl-leaf mountain mahogany (*Cercocarpus ledifolius*). Steep E-facing exposures have more mesic taxa such as pinemat manzanita (*Arctostaphylos nevadensis*), squaw carpet (*Ceanothus prostratus*), tobacco brush (*Ceanothus velutinus*), small-leaf rock spiraea (*Holodiscus microphyllus*), and occasional western white pine (*Pinus monticola*). Herbaceous taxa include squirreltail grass (*Sitanion hystrix*), *Bromus marginatus*, *Gayophytum ramosissimum*, *Carex* sp., *Lupinus andersonii*, prickly phlox (*Leptodactylon pungens*), and especially mules ears (*Wyethia mollis*) in formerly overgrazed sections.

b. Mountain Mahogany Woodland (Kuchler 31): This type occurs on the upper S-, SW-, and SE-facing slopes, but is best developed on steep convex S and SE-facing slopes above 8000 ft. (2438 m). On gentle SW and SE aspects this type overlaps with sagebrush scrub, aspen groves, and coniferous forest species. In order for this type to occur on gentle slopes the soil must be rocky and/or there must be strong exposures to SW winds (photo 5). Stands may be monospecific or have occasional Washoe or western white pines. Typical mountain mahogany crown and basal area cover is high. The average on three 0.07 ha plots was 34% crown cover and 179 ft.²/acre (41 m²/ha) basal area. Herbaceous species such as mountain pride (*Penstemon newberryi*), *Cryptantha microstachys*, and golden aster (*Chrysopsis breweri*) are common in the open understory along with other species spilling over from adjacent coniferous (*Silene lemmonii*, *Pedicularis semibarbata*, *Poa* sp.) and sagebrush (*Artemisia tridentata*, *Wyethia mollis*) vegetation types.

c. Aspen Forest (Holland 81B00): Nine groves of aspen (*Populus tremuloides*) occur scattered within sagebrush scrub. They occur on gentle S- to W-facing slopes and range from scrubby ridgetop thickets to thick clusters of small trees with verdant understories, adjacent to coniferous forest. Associated taxa vary depending upon location of the grove, but typically do not have meadow species.

d. Washoe Pine-Fir Forest (Holland 85220): This forest prevails on gentle to moderate upland slopes and benches with S, and less importantly W and E aspects at elevations between 7600 and 8500 ft. (2316-2590 m). Approximately 86 acres (35 ha) of nearly pure *Pinus washoensis* is located on the spur ridge extending NE from Bald Mountain (photos 2, 6, and 7). Here, Washoe pine accounts for 90% density, cover and basal area. On the W slope of Bald Mountain, only a small grove exists. However, it contains large specimens up to 34 m high and 4.6 ft. (1.4 m) diameter breast height (dbh). Mixed Washoe pine, white fir (*Abies concolor*), and western white pine forest occurs in the NE corner of the RNA. Here Washoe pine accounts for 50% basal area, but only 30% relative density. White fir has recently increased densities accounting for lower relative density for the pines. Washoe pine also occurs as a subordinate member within the Jeffrey pine (*Pinus jeffreyi*), white fir, and western white pine forest and within 20 acres (8 ha) of white fir and Jeffrey pine forest, and marginal red fir (*Abies magnifica*) forest.

d. Western White Pine Forest (SAF 215): This forest type bears little resemblance to the true SAF type 215 except for the dominance by *Pinus monticola* (photos 3 and 8). However, no other classification system considered describes a forest dominated by this species. Locally this type covers 232 acres (94 ha) between 7600 and 8694 ft. (2316-2590 m) elevation. It occurs on gentle NW to NE-facing exposures near the top of ridges. Two sampled essentially pure western white pine stands averaged 162 stems per acre (400 stems per ha) for 57% cover and 340 ft.²/acre (78 m²/ha) basal area. On steep concave N-facing slopes or below ridge crests white fir and

red fir may co-dominate. Lodgepole pine (*Pinus contorta* ssp. *murrayana*) may also co-dominate on high NE-facing slopes. Ecotones between western white pine forest and sagebrush scrub are typically sharp (photo 9).

e. White Fir Forest (Eyre 211, Holland 84240): This type is the most widespread in the area. It varies from nearly pure dense 100 year old stands to more mature forest co-dominated with white fir and western white pine. Young forest has densities of over 405 stems/acre (1000 stems/ha) with canopy cover of 90% and basal area of 305 ft.²/acre (70 m²/ha). Mature white fir forests have lower density, cover and greater basal area. White fir-western white pine forest varies in dominance with white fir dominating at lower elevations, a broad mixing zone at mid-elevations, and to western white pine dominating at higher elevations. Average density is 133 stems/acre (329 stems/ha), percent cover 64, and basal area cover 357 ft.²/acre (82 m²/ha). Jeffrey pine also is important in some white fir forest on S-and W-facing slopes. Although Jeffrey pine individuals are few, they are large and contribute about 20% each to basal area and canopy cover figures. Low relative density of Jeffrey pine is a result of prolific regeneration by white fir. There is a trend toward total dominance by white fir in these forests, the dense, young white fir creating a severe fire hazard. Burned forest similar to this just N of the RNA results in dominance by tobacco brush (*Ceanothus velutinus*).

f. Red Fir Forest (Eyre 207, Kuchler 7, Holland 85310): This type is restricted to concave N-facing slopes between 7800 and 8400 ft (2377-2560 m). Largest stands occur at the far northern end of the RNA in a selectively logged area. Here, there were once stems of red fir up to 7 ft (2.1 m) dbh, but now most trees are young or moderately sized. This forest is co-dominated by western white pine. A smaller grove of old growth red fir occurs on NW-facing slopes of the spur ridge running SW from Babbitt Peak. Here red fir, western white pine, and to a lesser extent, white fir form mixed stands with red fir dominant. There are complex boundary relationships

with vegetation adjacent to this old growth stand. Atop ridges this may grade into a mixed community with red fir, western white pine, Jeffrey pine, lodgepole pine, western juniper (*Juniperus occidentalis*), and white fir occurring among curl-leaf mountain mahogany, tobacco brush, and other sagebrush scrub species. Other bordering associations are white fir forest (W and E) and a mixed white fir, Jeffrey pine, and Washoe pine forest (NE boundary). A few old Washoe pines still occur within the WNW aspect red fir forest, suggesting that this area was once more open.

Annual and perennial understory species are similar among all of the coniferous forests of the area and include: *Pyrola picta* ssp. *dentata*, *P. picta*, *Kelloggia galioides*, *Penstemon heterodoxus*, *Poa* sp., and *Paeonia browni*. Within the RNA, pinedrops (*Pterospora andromedea*) and white-flowered hawkweed (*Hieracium albiflorum*) are largely confined to Washoe pine and white fir forest, respectively, and *Chimaphila menziesii* only occurs in western white pine and red fir forest. Widespread subordinate species in several coniferous types include: *Viola purpurea*, *Symphoricarpos vaccinoides*, *Bromus marginatus*, *Sitanion hystrix*, *Monardella odoratissima* ssp. *pallida*, *Lupinus andersonii*, *Gayophytum ramossissimum*, *Haplopappus suffruticosus*, *Osmorhiza occidentalis*, *Penstemon speciosus*, *Ribes roezlii*, *Phacelia* sp., and *Ceanothus velutinus*.

(2) Fauna

No thorough survey of the fauna of the area has been made. However, at least three Tahoe National Forest sensitive species have been seen in the area. These are prairie falcon, golden eagle, and northern goshawk. The first two species have been seen on several occasions by wildlife biologists of the Sierraville Ranger District (Fox 1980). The latter species was seen hunting in the pure Washoe pine forest during the reconnaissance for this report (August 1988). In addition, tracks of a mountain lion were seen crossing the Badenaugh trail in August 1988. According to the lookout at Babbitt Peak (personal communication August 1988), mountain lions are relatively common in the RNA and local hunters and State Fish and Game personnel have encountered

several in the area in the recent past. Mule deer are common in the area. Several blue grouse were also seen in the area during the reconnaissance for this report. The latter two species are important prey items for the mountain lion and the goshawk, respectively.

A list of vertebrate species detected during the reconnaissance for this report is presented in Appendix 2 of this report.

(3) Geology

The Bald Mountain Range is volcanic in origin and is described as volcanic flow rock. A concealed fault runs parallel to the eastern boundary of the area and an inferred fault line lies on the western edge of the area (Burrett and Jenkins 1962). These rocks are largely andesitic and represent part of the so-called superjacent series of rocks of Cretaceous and Tertiary ages (Durrell 1987). The andesitic lavas and mudflow breccias are probably best considered part of the Bonta or Penman formations of upper Miocene and lower and middle Pliocene age (Durrell 1987).

No special interest areas related to geology occur in the RNA. However, approximately 1.5 miles (2.4 km) E of Babbitt Peak is the Crystal Peak quartz crystal mine, which operated in World War II as a source of radio crystals. This area is along the margin of a granitic exposure which is not represented within the RNA (Jones 1980).

(4) Soils

The soils within the RNA are relatively complex, having been divided into 11 mapping units in the draft order three soil survey of the area (Tahoe National Forest 1981). The following soil map unit descriptions are keyed to the accompanying soil map (map 4) of the BPRNA indicated by the abbreviation following the unit name.

- a. Aldi-Kyburz complex 2-30% slopes (ARE): This soil unit consists of 55% Aldi and 30% Kyburz soils with small areas of Franktown and Trojan soils, and rock outcrop. The Aldi soils have a surface layer from 0-8 inches (0-20 cm) that is brown

loam, with weak granular structure, and is slightly acid. The subsoil is 8-18 inches (20-46 cm) brown clay loam, with moderately angular, blocky structure and is neutral. The substratum is at about 18 inches (46 cm) and is weathered andesite.

The Kyburz soils are deeper than Aldi with a surface layer ranging from 0-6 inches (0-15 cm) that is brown gravelly sandy loam, moderately granular in structure and is slightly acid. The Kyburz subsoil ranges from 6-34 inches (15-86 cm) is reddish brown gravelly clay loam, with moderate subangular blocky structure, and is very strongly acid. The substratum at 34 inches (86 cm) is weathered andesitic rock.

This unit occurs along the ridgetops at the N end of the RNA and is typically underlain by sagebrush and to a lesser extent mountain mahogany scrub.

b. Fugawee-Rock outcrop-Tahoma complex, 30-50% slopes (FRF): This soil unit consists of about 50% Fugawee, 25% rock outcrop, and 15% Tahoma soils with an additional 10% of included areas (primarily Jorge soils and shallow soils with fine loamy or clayey argellic horizons). The Fugawee soils have a surface layer from 0-7 inches (0-18 cm) that is dark brown sandy loam with moderately granular structure and is slightly acid. The subsoil is 7-35 inches (18-89 cm), light reddish brown gravelly clay loam, moderately subangular blocky structure, and is strongly acid. The substratum is reached at 35 inches (89 cm) and is weathered andesite. The rock outcrop portion of this mapping unit is represented by exposed volcanic rock. The Tahoma soil in this unit has a surface layer from 0-8 inches (0-20 cm) that is brown gravelly loam with a moderately granular structure and is slightly acid. The subsoil is from 8-41 inches (20-104 cm) and is strong brown gravelly clay loam with weak subangular blocky structure and a neutral pH. The substratum is reached in 41 inches (104 cm) and is typically highly weathered andesitic tuff.

Much of the soil underlying the white fir forest on the SE side of the area consists of this unit.

c. Fugawee-Tahoma complex, 30-50% slopes (FTF): This unit contains 50% Fugawee soils and 40% Tahoma soils, both described above. Included in this unit are small areas of Jorge, Kyburz, and Waca soils totaling about 10% of the unit. This unit underlies a large portion of the pure western white pine forest in the S portion of the area.

d. Kyburz-Trojan complex, 9-30% slopes (FUE): Sixty percent of this soil unit is made up of the previously described Kyburz soils. Twenty-five percent of the unit is Trojan soils and 15% of the unit is composed of small units of Aldi and Sierraville soils. The Trojan soils have a surface layer from 0-10 inches (0-25 cm) that is dark brown gravelly sandy loam with weak platy structure and is slightly acid. The subsoil is 10-67 inches (25-170 cm). It is brown and light brown clay loam, which is moderately angular and blocky and is medium acid. The substratum is at 67 inches (170 cm) and is slightly fractured andesite.

This unit occupies a small area on the S-facing slope at lower elevations and is vegetated with white fir and Jeffrey pine.

e. Kyburz-Trojan complex, 30-50% slopes (FUF): This unit contains 65% Kyburz and 20% Trojan soils with 15% inclusions (mostly Aldi and Sattley soils). It underlies the mixed red fir and western white pine forest at the N end of the RNA and also much of the pure Washoe pine forest.

f. Kyburz-Rock outcrop-Trojan complex, 2-30% slopes (KRE): This unit contains 55% Kyburz, 20% rock outcrop, and 15% Trojan soils, with 10% inclusions of shallow soils with fine-loamy or clayey argillic horizons. It occupies a small area in the NW portion of the RNA and is vegetated with sagebrush and white fir forest.

fl. Kyburz-Rock outcrop-Trojan complex, 30-50% slopes (KRF): This unit contains 50% kyburz, 25% rock outcrop, and 15% Trojan soils with inclusions of Sattley soils and shallow soils with fine-loamy argillic horizons. It occurs in a small area in the NW corner of the RNA underlying white fir forest.

f2. Fugawee sandy loam, 30-50% slopes (FMF): This unit contains 90% Fugawee soils described above with 10% inclusions (mostly Tahoma soils). It underlies white fir forest in the central part of the RNA and in a small area at the NW boundary.

f3. Kyburz-Aldi complex, 30-50% slopes (KMF): This unit is comprised of 65% Kyburz soils and 25% Aldi with 10% inclusions of mostly Franktown and Trojan soils. This unit is present in the NW part of the RNA underlying mountain mahogany, sagebrush, and conifer forest.

g. Aldi-Kyburz- Rock outcrop complex, 30-75% slopes (KRG): This unit is composed of 30% Aldi, 20% Kyburz, 15% rock outcrop and about 35% inclusions of Franktown, Sattley, and Trojan soils. This unit occupies several small areas or relatively steep land on typically S-facing slopes. It is vegetated with a mixture of mountain mahogany, sagebrush and open conifer forest.

h. Meiss-Waca-Cryumbrepts, wet complex, 2-30% slopes (MLE): This unit is made up of 50% Meiss, 20% Waca, 15% Cryumbrepts, wet, and 15% inclusions of Windy soils and rock outcrop. Meiss soils have a surface layer from 0-19 inches (0-49 cm) which is brown sandy loam, moderately granular and neutral. There is no subsoil as the substratum is reached in 19 inches (49cm). The substratum is hard volcanic rock.

The Waca soils are characterized by a surface layer from 0-12 inches (0-30 cm) that is grayish brown gravelly sandy loam with a moderately granular structure and is medium acid in reaction. The subsoil is 12-32 inches (30-81 cm) and is yellowish brown very gravelly sandy loam with a massive structure and a medium acid reaction. The substratum is reached in 31 inches (81 cm) and is weathered andesitic tuff breccia.

The Cryumbrepts wet soils are thick and dark colored at the surface. They are stratified sandy loam, silt loam, and clay loam with a gravelly, cobbly, or stony texture. The substratum is also stratified loam to clay loam with dark colored mottles and is gravelly, cobbly, or stony.

Locally, the cryumbrepts, wet are not represented with Meiss soils predominating in an area along the gentle south-facing slopes of the spur ridge on the NE side of the RNA. This unit is largely vegetated by Washoe pine and mixed western white and Washoe pine forests.

i. Franktown-Aldi-Rock outcrop complex, 30-75% slopes (MOG): This unit consists of 50% Franktown soils, 20% Aldi, and 15% Rock outcrop. With 15% inclusions of Kyburz soils. The Franktown soils are characterized by a surface layer from 0-15 inches (0-38 cm) which is brown gravelly loam, moderately granular in structure and is slightly acid. There is no subsoil as the substratum is reached in 15 inches and is comprised of weathered volcanic rock. This unit occupies a fairly large area of the W-facing slopes near the areas of the Bald Mountain Range. It is vegetated largely by mountain mahogany scrub.

j. Rock outcrop, volcanic (VRG): This unit is defined by exposures of tuff-breccia, andesite or basalt. It is most prominent in the RNA along the NE side of the area above the bench which forms the NE boundary.

k. Waca-Windy Complex, 2-30% slopes (WAE): This unit is composed of 60% Waca soils and 30% Windy soils with 10% inclusions. The windy soils are characterized as having a surface layer from 0-6 inches (0-15 cm) which is dark brown gravelly sandy loam, has a weak granular structure and a slightly acid reaction. The subsoils is 6-46 inches (15-117 cm) and is brown gravelly sandy loam with weak subangular blocky structure and a slightly acid reaction. The substratum is reached in 46 inches (117 cm) and is weathered andesitic tuff breccia. This area occupies a small portion of the Washoe pine grove on the NE spur ridge and also an adjacent small area of white fir forest.

(5) Lands

All land within the boundaries of the BPRNA are publicly owned under either the jurisdiction of the Tahoe or Toiyabe National Forests. No lands are reserved, have been acquired, or have any outstanding rights.

(6) Cultural

The area is within the former territory of the Washo tribe (Kroeber 1925). However, the high elevation and the lack of

surface water in the area probably precluded anything but occasional use. No evidence of occupation or use has been discovered by Tahoe National Forest Archaeologists (personal communication, Don Behrens, Range Ecologist, Tahoe National Forest, and Fox 1980).

(7) Other

No other natural features of local importance are present.

I. IMPACTS AND POSSIBLE CONFLICTS

(1) Mineral Resources

A mineral survey of the proposed BPRNA was conducted in 1979 (Jones 1980). The area is easily accessible, with prospecting having been conducted in the vicinity for many years. The intense activity in and around the area failed to disclose mineralization of any nature. Mineralization is not suspected in the area. The report (Jones 1980) recommends that upon establishment of the RNA, the area be withdrawn from mineral entry. Thus, the area will be closed to mineral entry following designation.

(2) Grazing

The study area lies within two grazing allotments. The Smithneck Cattle Allotment on the Tahoe National Forest includes the majority of the area. At present cattle occasionally travel up the Badenaugh Trail and rarely enter the southern part of the RNA. No evidence of recent cattle use was observed in the area in August 1988. The Dog Valley S. & G. Allotment on the Toiyabe National Forest has been closed since 1972. There are no plans to reopen this allotment.

Because of the light and incidental use by cattle, there is no need to erect fences at any point around the RNA at this time. However, should livestock start to use this area in the future, fencing may be necessary. Periodic monitoring of the area's use by cattle will be made to identify if fencing is needed.

Settlements regarding the impact of withdrawal of the RNA from

grazing have already been made with permittees on the Smithneck allotment (Don Behrens, personal communication August 1988). The present deliniation of the RNA boundary was agreed upon by the permittees. Thus, there will be no conflict when grazing rights are formally curtailed in the area, following establishment.

(3) Timber

The following account of the history of timber harvesting and estimated timber values of the BPRNA is excerpted from Fox (1980).

Limited timber harvesting activity has occurred within and adjacent to the BPRNA. Harvesting within the area generally occurred prior to 1930 in Sections 6, 7, NW 1/4 NW1/4 of Section 8 and 17 T20N, R17E MDBM. Sometime around 1960, fire salvage logging activities occurred in the N 1/2 NE1/4 of Section 5, and the NW 1/4 of Section 4 T20N, R17E MDBM in conjunction with private land logging in sections 31, and 32 T21N, R17E. Another encroachment occurred in the extreme southern boundary of the study area in Section 17 T20N, R17E MDBM during the Badenaugh Sale in 1977, due to the poorly defined boundary of the Washoe Pine Management Unit (GF-2) in the District's Multiple Use Plan. The Dog Creek Sale administered by the Toiyabe National Forest, adjoins the study area in sections 4 and 9, T20N, R17E MDBM. It was completed in 1980.

The main portion of the Washoe pine and western white pine forests have never been logged. The impact of logging is greatest in the NE1/4 Section 5 and the NW 1/4 Section 4 T20N, R17E MDBM. This corresponds to the mixed red fir and western white pine forest, salvage logged ca. 1960. As this area has the best reproduction of red fir in the RNA and these stands are at the most inland portion of its distribution at this RNA in California (Griffin and Critchfield 1976), they are scientifically significant and should be included for study. At present, the appearance is reasonably natural because of the past harvesting methods and the long period since harvesting.

According to timber stratum averages compiled for the Tahoe National Forest (presented in Fox 1980), there are 308 acres (125 ha) of standard component within the BPRNA. This adds up to an estimated total volume of 3854.5 MBF. In addition to the standard component, a special component includes an additional 602 acres (244 ha) which accounts for 6940 MBF.

(4) Watershed Values

Watersheds within this area that drain to the west are part of the uppermost tributaries of the Feather River. Those that drain to the east are part of the uppermost tributaries of Long Valley Creek, which flows north towards Honey Lake. There are no wetlands or floodplains in or near the area.

(5) Recreation Values

The area receives light-to-moderate recreation use. Babbitt Peak Lookout at the end of road 20N01 is the focal point of recreation in the area. Visitors coming to the lookout numbered less than 50 in the period between June 5 and August 5, 1988. Most visitors are local residents from the Sierraville, Loyalton, Truckee, and Reno areas. The jeep road which bisects the area is used primarily during hunting season as evidenced by 3 or 4 unimproved campsites along its length within the RNA. These campsites have small fire rings and the occasional board or spike nailed into adjacent trees. They are lightly used every fall according to the lookout at Babbitt Peak. According to Fox (1980) the area receives relatively heavy hunting use (mostly along the road 20N01 where it forms the SE boundary of the RNA). The lookout also mentioned that all-terrain vehicles are frequent visitors to the area in the summer months. However, little evidence of their use within the actual RNA was noticed, aside from a few recent tracks on the aforementioned jeep road.

Litter associated with recreational use is correspondingly light. A few beer cans and other containers were found along the jeep road. An arrow was seen imbedded in a tree along the jeep road.

Light woodcutting has been continual in the area for several years. Evidence of recent cutting of standing and down dead wood was present at several locations along the jeep road. A

woodcutter was present in the area during the reconnaissance for this report in August 1988. This same woodcutter, a local resident, has cut in the area for several years, according to the lookout.

Apparently OHV use along the Badenaugh Trail has occurred (Fox 1980), but no evidence of it within the RNA was present in early August 1988. Snowmobile users occasionally enter the area with most of their activities limited to road 20N01. Hiking and riding use of the Badenaugh Trail is apparently light with no recent foot- or hoofprints noted in August 1988.

Upon designation, the jeep road will be blocked (including access to it from the east via old temporary timber sale roads in sections 4 and 9 T20N, R17E MDBM). Woodcutting and camping within the area will also not be allowed. The fire rings and boards nailed to trees at the unimproved campsights will be removed and an educational effort will be made to enlist the cooperation of hunters and campers to camp outside of the area.

(6) Wildlife and Plant Values

The relatively large and varied area will be suitable for continual growth and reproduction of the target element, Washoe pine. Prescribed fire will be necessary to reduce the risk of destruction of the largest groves of Washoe pine (see vegetation management section).

The habitat for the Forest-sensitive golden eagle, goshawk, and prairie falcon should remain unchanged following establishment of the RNA.

(7) Special Management Area Values

Currently, the area does not lie within any congressionally designated wilderness or recreation area. The area was formerly within the Bald Mountain RARE II Inventoried Roadless Area No. 05981, identified in September 1977. The area has subsequently been allocated to non-wilderness status.

(8) Transportation Plans

There are no plans to construct roads within the area.

J. MANAGEMENT PRESCRIPTION

Management of RNAs on the Tahoe and Toiyabe National Forests emphasizes the preservation of natural ecosystems for research and ecological study. Appendix 3 contains management direction for the BPRNA included in the Tahoe and Toiyabe National Forest Land and Resources Management Plans.

1) RNA Management Plan

Following direction in FSM 4063, a RNA Management Plan will be developed jointly by the Tahoe and Toiyabe National Forests in consultation with the Pacific Southwest Forest and Range Experiment Station. The plan will outline specific management practices, project prescriptions, use and monitoring activities to achieve specific objectives for the BPRNA.

K. ADMINISTRATION RECORDS AND PROTECTION

The official responsibility for administration and protection of the Babbitt Peak RNA is with the District Ranger, Sierraville Ranger District, P.O. Box 95, Highway 89, Sierraville, California 96126. Attention will be given to the writing and carrying out of fire prescriptions to preserve and protect the Washoe pine forest and associated mixed white fir-western white pine forests.

Unauthorized entry by woodcutters and OHV enthusiasts will also be halted by effective blockade of the jeep road entering the area from the south and the east. During the summer months, all use should be monitored. It is suggested that the person manning the Babbitt Peak Lookout do this monitoring in order that the unauthorized entry can be reported immediately to the Ranger District.

L. ARCHIVING

The research coordinator is the Director, Pacific Southwest Forest and Range Experiment Station, 1960 Addison St., Box 245, Berkeley, California 94701. This person is responsible for coordinating research in the area, maintaining a file of research data collected in the area. This information will be made accessible to all interested

scientists and stations. Plant specimens will be stored primarily at the Jepson Herbarium, University of California, Berkeley.

M. REFERENCES

- Burrett, J.L. and C.W. Jennings. 1962. Geologic map of California - Chico sheet. 1:250,000. State of California Div. Mines and Geol.
- Critchfield, W.B. and G.L. Allenbaugh. 1965. Washoe pine on the Bald Mountain Range, California. *Madrono* 18:63-64.
- Durrell, C. 1987. Geologic history of the Feather River Country, California. University of California Press, Berkeley and Los Angeles.
- Eyre, F.H. (ed.) 1980. Forest cover types of the United States and Canada. Society of American Foresters, Washington D.C.
- Fox, P.J. 1980. Environmental assessment and establishment report for the proposed Babbitt Peak Research Natural Area Toiyabe and Tahoe National Forests, Sierra County, California. Unpublished draft on file at the Supervisor's Office, Tahoe National Forest, Nevada City.
- Griffin, J. and W.B. Critchfield. 1976. The distribution of forest trees in California. U.S.D.A. Forest Service Research Paper PSW-82.
- Haller, J.R. 1961. Some recent observations on ponderosa, Jeffrey, and Washoe pines in northeastern California. *Madrono* 16:126-132.
- Holland, R. 1986. Preliminary descriptions of the terrestrial natural communities of California. Unpublished mimeo available from Calif. Dept. Fish and Game, Sacramento.
- Ingles, L.G. 1965. Mammals of the Pacific States. Stanford University Press, Stanford, California.
- Kroeber, A.L. 1925. Handbook of the Indians of California. Bureau of American Ethnology Bull. 78. Washington.
- Kuchler, A.W. 1966. Potential natural vegetation. U.S. Dept. of Interior, Geologic Survey. 1969.
- Mason, H.L. and W.P. Stockwell. 1945. A new pine from Mt. Rose, Nevada. *Madrono* 8:61-63.
- Munz, P.A. 1968. A California flora and supplement. University of California Press, Berkeley and Los Angeles.

- Rantz, S.E. 1972. Mean annual precipitation in the California region. U.S.G.S. Map. Menlo Park, California.
- Robbins, C.S., B. Brun, and H. Zim. 1983. Birds of North America, a guide to field identification. Golden Press, New York.
- Smith, J.P. and K. Berg. 1988. Inventory of rare and endangered vascular plants of California (fourth edition). California Native Plant Society, Sacramento.
- Tahoe National Forest. 1981. Draft order 3 soil resource inventory. Unpublished report and accompanying maps on file at Supervisor's Office Tahoe National Forest, Nevada City.
- Talley, S. N. 1977. An ecological survey of the Babbitt Peak Candidate Research Natural Area on the Tahoe National Forest. Unpublished report in PSW library, Berkeley and on file at Supervisor's Office Tahoe National Forest, Nevada City.