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 at 7 CFR 2.42, 36 CFR 251.23, and 36 CFR Part 219, I hereby establish the Afton Front Research Natural Area. It shall be comprised of lands described in the section of the Establishment Record entitled "Location."

The Regional Forester has recommended the establishment of this Research Natural Area in the Record of Decision for the Bridger-Teton National Forest Land and Resource Management Plan. That recommendation was the result of analysis of the factors listed in 36 CFR 219.25 and Forest Service Manual 4063.41. Results of the Regional Forester's analysis are documented in the Bridger-Teton National Forest Land and Resource Management Plan and Final Environmental Impact Statement which are available to the public.

The Afton Front 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 the Bridger-Teton Land and Resource Management Plan (LRMP) direction for this RNA and find that the management direction cited in the previous paragraph is consistent with the LRMP and that a Plan amendment is not required.

The Forest Supervisor of the Bridger-Teton National Forest shall notify the public of this decision and mail a copy of the Decision Notice/Designation Order and amended direction to all persons on the Bridger-Teton National Forest Land and Resource Management Plan mailing list.

Based on the Environmental Analysis, I find that designation of the Afton Front 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 Date

SIGNATURE PAGE

for

RESEARCH NATURAL AREA ESTABLISHMENT RECORD

Afton Front Research Natural Area

Bridger-Teton National Forest

Lincoln County, Wyoming

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_____ Date_____
Walter Fertig, Botanist
Wyoming Natural Diversity Database

Prepared by_____ Date_____
George Jones, Ecologist/Coordinator
Wyoming Natural Diversity Database

Recommended by_____ Date_____

Greys River Ranger District, Bridger-Teton NF

Recommended by_____ Date_____

Bridger-Teton National Forest

Recommended by_____ Date_____

Intermountain Region

Recommended by_____ Date_____

TITLE PAGE

Establishment Record for Afton Front
Research Natural Area within Bridger-Teton
National Forest, Lincoln County, Wyoming

ESTABLISHMENT RECORD FOR
AFTON FRONT RESEARCH NATURAL AREA
BRIDGER-TETON NATIONAL FOREST
LINCOLN COUNTY, WYOMING

INTRODUCTION

The Afton Front Research Natural Area (RNA) is located on the west slope of the Salt River Range, approximately 2.5 air miles northeast of Afton, Wyoming. The RNA contains the upper reaches of Anderson and Blaney Canyons and the crest of the ridge separating the Star Valley and Swift Creek Canyon. Due to their steepness and aspect, Anderson and Blaney canyons contain outstanding examples of contrasting north and south slope plant communities (Tuhy 1987). North-facing slopes are dominated by Douglas-fir (Pseudotsuga menziesii)[1] and subalpine fir (Abies lasiocarpa) forest communities, while south-facing slopes are dominated by a mosaic of forb, grassland, and upland shrub communities (Moseley 1989).

Since settlement times, this area has been used primarily for cattle grazing and recreation. Grazing intensity was heavy in the past, especially in the lower, more accessible areas (USDA Forest Service 1982). In 1921, the Forest Service instituted controls on grazing and the area has subsequently recovered to the point that "no overt evidence of [cattle] presence remains" (USDA Forest Service 1982; Tuhy 1987). Recreation activity in the past has primarily been day-use hunting for mule deer (Tuhy 1987).

The Afton Front RNA was initially recommended as a potential RNA site in an internal memorandum by Youngblood (1981). Joel Tuhy of The Nature Conservancy conducted an Environmental Analysis of the site and recommended it for RNA designation (Tuhy 1987). Tuhy's preferred alternative included the lower reaches of Anderson and Blaney canyons, just to the west of the RNA. A smaller area, conforming to the current boundaries of the RNA, was recommended for designation by the District Ranger of the Greys River Ranger District in 1988 (Newcom 1988).

Land Management Planning

The Afton Front RNA was recommended for designation in the preferred alternative of the Bridger-Teton National Forest Land and Resource Management Plan (USDA Forest Service 1989, p 49) and

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[1]Nomenclature for vascular plants (except trees) follows Dorn (1992) for scientific names and Hitchcock and Cronquist (1973)

for common names. Tree nomenclature follows Little (1979). Nomenclature for vertebrates follows Baxter and Stone (1985), Clark and Stromberg (1987), and Dorn and Dorn (1990). in the Record of Decision for the Forest plan (USDA Forest Service 1990, p 6).

OBJECTIVES

The main objective of the Afton Front RNA is to maintain and preserve several low to mid-elevation grass-shrubland and forest habitat and community types. The RNA provides areas for the study of natural processes, baseline areas for determining long and short-term ecological changes, monitoring comparison areas for assessing effects of resource management techniques and practices applied to similar ecosystems, and protects biological diversity.

JUSTIFICATION

The Afton Front RNA was selected to help fill gaps in the RNA system for the Agropyron spicatum-Balsamorhiza sagittata-Purshia tridentata community on south-facing slopes and the Pseudotsuga menziesii/Physocarpus malvaceus forest habitat type on north-facing slopes (Tuhy 1987). (In this report, Tuhy's Agropyron-Balsamorhiza-Purshia community is considered part of the Elymus spicatus series of Jones 1993.) In addition, the RNA provides known or potential habitat for four US Forest Service (USFS) Region 4 and Bridger-Teton National Forest (BTNF) Sensitive species and US Fish and Wildlife Service (USFWS) candidate species. These are: boreal draba (Draba borealis), Payson's bladderpod (Lesquerella paysonii), North American lynx, and three-toed woodpecker (USDA Forest Service 1991; US Fish and Wildlife Service 1993; Joslin 1994).

PRINCIPAL DISTINGUISHING FEATURES

Important features of the area include:

-- A mosaic of coniferous forest, grassland, and shrubland communities in relatively undisturbed condition. This assortment of communities represents a sample of the community variation in the Salt River Range and serves as an important repository of native biological diversity.

-- Potential habitat for four USFS Region 4 Sensitive plant and animal species. The area also provides habitat for a number

of locally or regionally rare species monitored by The Nature Conservancy's Wyoming Natural Diversity Database (WYNDD).

-- The RNA protects the headwaters of two watersheds in Blaney and Anderson canyons.

LOCATION

The Afton Front RNA is located within the Greys River Ranger District (GRRD) of Bridger-Teton National Forest. Figures 1-2 show the location of the RNA.

Latitude and Longitude

The approximate center of the RNA is at latitude 42° 45' 33" north and longitude 110° 53' 44" west. The geographic center of the RNA is at UTM coordinates 4733878.99753 north and 508613.18376 east (Figure 2).

Boundary

The Afton Front RNA is a parcel of land located in Sections 8 (S2SE4), 9 (SW4), 16 (W2), 17 (E2), 20 (N2NE4), and 21 (NW4NW4) of Township 32 North, Range 118 West of the Sixth Principal Meridian.

The boundary of the RNA (Figure 2) follows topographic features wherever possible. On the west, the boundary is a straight line located 0.5 miles east of the section line between sections 17 and 18. The northern border follows the crest of the divide separating the northern and southern forks of Blaney Canyon. Along the eastern border, the boundary follows the crest of the divide between the Star Valley and Swift Creek. The southern boundary is formed by the crest of the divide separating Anderson Canyon and Lily Hollow.

Area

Total area of the RNA is 765 acres (310 hectares).

Elevation

Elevation ranges from 6920 ft (2110 m) in Blaney and Anderson canyons to 8960 ft (2731) at the northeastern corner of the RNA.

Access

The Afton Front RNA is located approximately 2.5 miles (4.0

km) northeast of Afton, Wyoming. It may be reached only on foot and entails a strenuous climb of between 700 and 2700 feet (213-823 m).

From the west, the RNA is accessible from two roads on private property (landowner permission required) that extend to the bases of Blaney Canyon and Lily Hollow (Figure 1). To reach the Blaney Canyon Road, proceed from the GRRD office in Afton 2.75 miles north on US Highway 89. Turn east, and travel approximately 0.5 miles to the end of the road. Cross the creek at the ranch and proceed southeast, following Blaney Canyon uphill just over 1 mile to the western boundary of the RNA. To reach the Lily Hollow entrance, proceed 1.5 miles north of the GRRD office on US Highway 89. Turn right, and follow the road 0.5 miles east to the ranch. Follow the drainage approximately 0.4 miles north to the mouth of Anderson Canyon and then proceed east through the canyon about 1 mile to the western boundary of the RNA.

The RNA can be reached from the south by proceeding east of the GRRD office approximately 1 mile to the Forest boundary. Park here and follow the foot trail north to the Landmark Star. This trail continues northeast of the Star for about 1 mile along the crest of the north-south trending ridge. When the trail ends, continue to follow the ridgeline for another 0.25-0.5 miles until reaching the southern boundary of the RNA, just south of the head of the south fork of Anderson Canyon.

From the east, the RNA can be reached by hiking west from the Swift Creek Canyon Road (FS Road 10211). Proceed east of the GRRD office to the National Forest boundary, and continue for 3 miles, going past the campground and gaging station. Stop where a tributary drainage of Swift Creek crosses the road and proceed upslope about 1 mile to the northwest. This area is extremely steep, and requires a climb of nearly 1800 feet, but is the shortest route to the eastern portion of the RNA.

AREA BY COVER TYPES

The Vegetation

The vegetation of the Afton Front RNA is a mix of woodlands on north-facing slopes and shrublands, grasslands, and forb stands on south- and west-facing slopes. In the western half of the RNA, the woodlands are dominated by Douglas-fir, which will continue to dominate. In the eastern half of the RNA, the woodlands are a mix of Douglas-fir and subalpine fir. The composition of these woodlands will shift toward subalpine fir in

the absence of disturbance. Small aspen stands grow on north- and west-facing slopes and on one ridgetop. Downed trunks are common in the aspen stands, and the stands may disappear in the absence of fire.

The non-forested vegetation in the western half of the RNA is a mix of stands of the mountain big sagebrush-mountain snowberry/bluebunch wheatgrass community (Bramble-Brodahl 1978) and bluebunch wheatgrass grassland with scattered antelope bitterbrush growing on south-facing slopes and on a few north-facing rock outcrops. The small areas with westerly aspects support stands of bigtooth maple. In the higher, eastern half of the RNA, where the non-forested slopes face mainly west, the vegetation includes stands of the Osterhout big sagebrush/ mountain forb community (Bramble-Brodahl 1978) mixed with the nettleleaf horsemint-viguiera forb community (Gregory 1983).

Area by Types

Cover types were mapped on 1:24,000 scale topographic maps using aerial photos and field reconnaissance. The area of each cover type was estimated from the maps.

SAF Cover Type (Eyre 1980), Figure 3.	Acres	Hectares
210 Interior Douglas-Fir	348	139
217 Aspen	23	9

Kuchler Types (Kuchler 1966), Figure 4.	Acres	Hectares
11 Douglas-fir forest		
with aspen[2]	191	76
without aspen	168	67
14 Western spruce-fir forest	222	89
31 Mountain mahogany-oak scrub	84	34
49 Sagebrush steppe	260	104

Habitat Types & Community Types, Figure 5.	Acres	Hectares
Abies lasiocarpa/Physocarpus malvaceus habitat type (Steele et al. 1983)	155	62
Pseudotsuga menziesii/Physocarpus malvaceus habitat type, *Pachistima myrsinites* phase (Steele et al. 1983)	175	70

Populus tremuloides series (Mueggler 1988)	23	9
Mosaic of Artemisia tridentata ssp. vaseyana f. spiciformis/Mountain Forb habitat type (Bramble-Brodahl 1978) and Agastache urticifolia-Viguiera multiflora community type (Gregory 1983)	202	81

[2]Kuchler (1966) does not describe an aspen type from the Rocky Mountains, but he does list aspen as a component of Douglas fir forests. Hence two measurements of the area covered by Douglas-fir forest are given, one excluding the aspen stands and one including aspen stands as components of the Douglas-fir forests.

Mosaic of Artemisia tridentata ssp. vaseyana-Symphoricarpos oreophilus/ Agropyron spicatum habitat type (Bramble-Brodahl 1978) and Agropyron spicatum series (Jones 1993) (Agropyron-Balsamorhiza-Purshia community of Tuhy 1987)	150	60
Acer grandidentatum series (Jones 1993)	40	16
Rock outcrop or talus slope	20	8

PHYSICAL AND CLIMATIC CONDITIONS

Physical Conditions

Afton Front RNA is located on the west flank of the Salt River Range and contains the upper reaches of Anderson and Blaney canyons. These extremely steep-sided, V-shaped canyons drain westward into the Star Valley from the crest of a high, north-south trending ridge. Slope aspects are predominantly north, south, and west (Tuhy 1987).

Climatic Conditions

The Salt River Range is included in the western Wyoming climate region by Baker (1944). This area, which includes the Wyoming Range, Tetons, and Yellowstone Plateau, is characterized by uniform, moderately high monthly precipitation. The climate of this region contrasts sharply with mountainous areas to the east which have drier, more continental climatic conditions.

No climate stations are maintained in the Salt River Range. The nearest station is located approximately 5 miles to the west in Afton, Wyoming, at the eastern edge of the Star Valley. This station is at a lower elevation than the upper slopes of the Afton Front, and thus provides only a rough approximation of climate conditions in the upper reaches of the RNA.

In Afton, peak precipitation occurs in May and June and drops to a minimum from July to September (Alyea 1969). The growing season in Afton averages 62 days, but temperatures below freezing may occur on any day of the summer. Winds are generally light, but during thunderstorms may gust to 80-100 mph. Relative humidity is low in the summer, but can average 80% in winter (Alyea 1969).

Summary of Monthly Climate Values, Afton, Wyoming
Elevation 6210 feet (1892 m), 1951-1980
(From Martner, 1986)

Month	Mean Temperature		Average Precipitation	
	°F	°C	Inches	mm
January	16.2	- 8.8	1.71	43.4
February	20.4	- 6.4	1.35	34.3
March	25.8	- 3.4	1.30	33.0
April	36.8	2.7	1.67	42.4
May	47.5	8.6	1.94	49.3
June	54.1	12.3	1.98	50.3
July	61.4	16.3	1.00	25.4
August	59.7	15.4	1.28	32.5
September	52.3	11.3	1.38	35.1
October	42.3	5.7	1.34	34.0
November	28.3	- 2.1	1.42	36.1
December	18.1	- 7.7	1.66	42.2

Mean Annual	38.6	3.7	18.03	458.0
Mean April-Sept.	52.0	11.1	9.25	235.0

DESCRIPTION OF VALUES

Flora

On south-facing slopes in the western (lower-elevation) part of the RNA, climax vegetation is primarily bluebunch wheatgrass-arrowleaf balsamroot (*Agropyron spicatum*-*Balsamorhiza sagittata*) grassland and mountain big sagebrush-mountain snowberry/bluebunch wheatgrass (*Artemisia tridentata* ssp. *vaseyana* f. *vaseyana* - *Symphoricarpos oreophilus*/*Agropyron spicatum*) vegetation. At higher elevations in the eastern part of the area, south-facing and west-facing slopes support climax vegetation primarily of the Osterhout big sagebrush (*Artemisia tridentata* ssp. *vaseyana* f. *spiciformis*)/mountain forb community and the nettleleaf horsemint-viguiera community. The current vegetation on the south-facing slopes is near its climax condition.

North-facing slopes, and a small area of west-facing slopes at higher elevation, support climax forests. In the western part of the RNA, the climax forests are Douglas-fir forests with sparse understories. The forests on those sites are now dominated by Douglas-fir. In the eastern, higher-elevation, part of the area, the climax forests are subalpine fir, and the current vegetation is mostly a mixed forest of Douglas-fir (the major seral species) and subalpine fir. Small aspen stands represent seral forest vegetation in the RNA, and the abundance of downed trunks in those stands suggests that they will disappear in the absence of fire.

No federally listed Threatened or Endangered plant species are found in the Afton Front RNA. Two USFS Region 4 Sensitive species and three state rare species (monitored by WYNDD) are known or suspected to occur in the RNA. These species include:

Species	Comments
Artemisia tridentata var. *vaseyana* f. *spiciformis* [syn. = *A. spiciformis*]	A regional endemic taxon known from fewer than 10 occurrences in Wyoming. Locally common on steep, upper south-facing slopes in the RNA.

Cercocarpus ledifolius var. intercedens [syn. = C. l. var. intermontanus]	This variety is of limited distribution in Wyoming, being restricted to Lincoln and Teton Counties. Relatively uncommon on steep, open slopes along the crest of the eastern boundary ridge of the RNA.
Draba borealis	A BTNF Sensitive species. Known from an historical collection by Payson and Armstrong from the "hills east of Afton" (Fertig and Marriott 1993), but not located during field surveys in the RNA in 1993. Potential habitat may exist in cool forested areas on limestone substrates.
Lesquerella paysonii	A USFS Region 4 Sensitive species and USFWS C2 candidate. Known from one small population on the rocky limestone ridge of the eastern boundary of the RNA.
Phacelia heterophylla var. virgata	A species of limited distribution in Wyoming, known only from Lincoln and Teton Counties. Relatively common on open slopes at the edge of wooded areas in the RNA.

A brief and incomplete floristic survey was conducted in the Afton Front RNA in July, 1993. The following species checklist is based on field studies by Tuhy (1987) and Fertig (unpublished records 1993). For additional information on the vascular flora of the Salt River Range, consult Hartman and Nelson (1993, 1994).

Common Vascular Plants of Afton Front RNA
(* indicates taxa suspected to occur in the RNA)

Scientific Name	Common Name
Trees	
Abies lasiocarpa	Subalpine fir
Acer glabrum	Rocky Mountain maple
Cercocarpus ledifolius var. intercedens	Intermountain curl-leaf mountain-mahogany
Juniperus scopulorum	Rocky Mountain juniper
Picea engelmannii	Engelmann spruce
Pinus contorta	Lodgepole pine

var. latifolia
Pinus flexilis Limber pine
Populus tremuloides Quaking aspen
Prunus virginiana Common chokecherry
Pseudotsuga menziesii Douglas-fir
Salix scouleriana Scouler willow

Shrubs

Amelanchier alnifolia Western serviceberry
var. alnifolia
var. pumila
Artemisia tridentata
var. vaseyana
f. vaseyana Mountain big sagebrush
f. spiciformis Osterhout sagebrush
Ceanothus velutinus Mountain balm
Chrysothamnus viscidiflorus Douglas rabbitbrush
Lonicera utahensis Utah honeysuckle
Mahonia repens Oregon grape
Paxistima myrsinites Mountain lover
Physocarpus malvaceus Mallow ninebark
Purshia tridentata Bitterbrush
Ribes lacustre Swamp gooseberry
Ribes montigenum Mountain gooseberry
Ribes viscosissimum Sticky currant
Rosa nutkana Nootka rose
Rosa sayi Prickly rose
Rosa woodsii Woods rose
Rubus parviflorus Thimbleberry
Sambucus racemosa Elderberry
Shepherdia canadensis Soapberry
Sorbus scopulina Mountain-ash
Symphoricarpos oreophilus Mountain snowberry
var. utahensis
Vaccinium globulare Blue huckleberry
Vaccinium scoparium Grouse whortleberry

Forbs

Achillea millefolium Common yarrow
var. lanulosa
Agastache urticifolia Nettle-leaf horse-mint
Agoseris glauca Pale agoseris
var. dasycephala
Antennaria rosea Rosy pussy-toes
Aquilegia coerulea Colorado columbine
Arabis holboellii Holboell's rockcress
Arenaria congesta Ballhead sandwort

Arnica cordifolia Heart-leaf arnica
Aster engelmannii Engelmann's aster
Aster perelegans Elegant aster
Balsamorhiza sagittata Arrowleaf balsamroot
Castilleja flava Yellow paintbrush
Castilleja linearifolia Wyoming paintbrush
Castilleja miniata Scarlet paintbrush
Castilleja sulphurea Sulfur paintbrush
Chimaphila umbellata Prince's-pine
Cirsium eatonii Tweedy's thistle
Claytonia lanceolata Spring-beauty
Clematis occidentalis Rock columbine
var. grosseserrata
Collomia linearis Narrow-leaved collomia
Collinsia parviflora Small-flowered blue-eyed Mary
Comandra umbellata Bastard toad-flax
var. pallida
Crepis acuminata Tapertip hawksbeard
Crepis atribarba Slender hawksbeard
Crepis modocensis Siskiyou hawksbeard
Cryptantha affinis Slender cryptantha
Cymopterus longipes Long-stalked spring parsley
Cymopterus terebinthinus Turpentine cymopterus
var. albiflorus
Delphinium bicolor Little larkspur
Dicentra uniflora Steers-head
Disporum trachycarpum Wartberry
* Draba borealis Boreal draba
Epilobium angustifolium Fireweed
var. angustifolium
Epilobium brachycarpum Tall annual willow-herb
Eriogonum umbellatum Sulfur buckwheat
var. majus
Erysimum asperum Prairie rocket
var. arkansanum
Fragaria vesca Woods strawberry
Fragaria virginiana Virginia strawberry
Fritillaria atropurpurea Checker lily
Galium aparine Cleavers
Galium bifolium Thinleaf bedstraw
Galium triflorum Sweetscented bedstraw
Gayophytum diffusum Spreading groundsmoke
var. strictipes
Geranium viscosissimum Sticky geranium
Geum triflorum Prairie-smoke
Gilia tenerrima Delicate gilia
Goodyera oblongifolia Western rattlesnake plantain
Hackelia floribunda Many-flowered stickseed
Hackelia patens Spreading stickseed

Hedysarum occidentale Western sweetvetch
Helianthella uniflora Rocky Mountain little-sunflower
Heuchera parvifolia Small-leaved alumroot
Hieracium cynoglossoides Houndstongue hawkweed
Hydrophyllum capitatum Ballhead waterleaf
Iliamna rivularis Streambank globemallow
Ipomopsis aggregata Scarlet gilia
Lesquerella paysonii Payson's bladderpod
Linanthus nuttallii Nuttall linanthus
Linanthus septentrionalis Northern linanthus
Linum lewisii Wild blue flax
Lithophragma glabrum Bulbiferous fringecup
var. ramulosum
Lithophragma parviflorum Smallflowered fringecup
Lithospermum ruderale Western gromwell
Lomatium dissectum Fern-leaved biscuitroot
Lomatium grayi Gray's biscuitroot
Lomatium triternatum Nineleaf biscuitroot
var. platycarpum
Lupinus argenteus Silvery lupine
Machaeranthera canescens
Maianthemum racemosum False spikenard
var. amplexicaule
Microseris nutans Nodding microseris
Mitella stauropetala Sideflowered mitella
Nemophila breviflora Great Basin nemophila
Orthilia secunda Sidebells pyrola
Orthocarpus tolmiei Tolmie's owl-clover
Osmorhiza depauperata Blunt-fruit sweetroot
Osmorhiza occidentalis Western sweetroot
Pedicularis bracteosa Bracted lousewort
Pedicularis racemosa Sickletop lousewort
var. alba
Penstemon humilis Lowly penstemon
Penstemon subglaber
Phacelia hastata Silverleaf phacelia
Phacelia heterophylla Virgate phacelia
var. virgata
Phlox longifolia Long-leaf phlox
Polygonum douglasii Douglas knotweed
Polygonum minimum Leafy dwarf knotweed
Potentilla glandulosa Glandular cinquefoil
Potentilla gracilis Showy cinquefoil
var. pulcherrima
Rudbeckia occidentalis Black head
Scrophularia lanceolata Lanceleaf figwort
Sedum debile Weak-stemmed stonecrop
Sedum lanceolatum Lanceleaved stonecrop

Senecio integerrimus Western groundsel
var. exaltatus
Senecio serra Butterweed groundsel
var. serra
Senecio streptanthifolius Cleft-leaf groundsel
var. rubricaulis
Solidago multiradiata Northern goldenrod
Stellaria jamesiana Sticky starwort
Taraxacum officinale Common dandelion
Thalictrum occidentale Western meadowrue
Valeriana occidentale Western valerian
Viguiera multiflora Viguiera
Viola adunca Early blue violet
Viola praemorsa Upland yellow violet
var. altior
Viola purpurea Goosefoot violet
var. venosa
Zigadenus venenosus Meadow death-camas
var. gramineus

Graminoids

Bromus carinatus California brome
Carex hoodii Hood's sedge
Carex rossii Ross sedge
Elymus lanceolatus Thickspike wheatgrass
var. griffithsii
Elymus spicatus Bluebunch wheatgrass
Eymus trachycaulus Slender wheatgrass
var. trachycaulus
Festuca saximontana Mountain sheep fescue
Leucopoa kingii Spike-fescue
Melica bulbosa Oniongrass
Poa curta Short bluegrass
Poa fendleriana Muttongrass
Poa nervosa Wheeler's bluegrass
var. wheeleri
Poa pratensis Kentucky bluegrass
Stipa nelsonii Nelson's needlegrass
Trisetum spicatum Spike trisetum

Ferns

Cystopteris fragilis Brittle bladder-fern

Fauna

No federally listed Threatened or Endangered vertebrate species are currently known to occur in the Afton Front RNA.

Potential habitat may exist for nine USFS Region 4 Sensitive species and WYNDD "rare, uncommon or imperiled" species in the vicinity of the RNA (Garber 1991 a; USDA Forest Service 1991). These species include:

Species	Comments
	Mammals
Hoary bat	Listed by WYNDD as rare or uncommon. Reported for the general area by Garber (1991 b).
Montane vole	Listed by WYNDD as rare or uncommon. Reported from the vicinity of the RNA by Clark and Stromberg (1987).
Mountain lion	Listed by WYNDD as rare or uncommon. May be an occasional visitor to the RNA. In 1993, a lion was reported in the Swift Creek Campground, approximately 2 miles south of the RNA (Game Warden's personal comm. to W. Fertig, camper).
Lynx	A USFS Region 4 Sensitive species and USFWS C2 candidate. Three historical records are known from the mountains south of the RNA (WYNDD records).
	Birds
Sharp-shinned hawk	Listed by WYNDD as rare or uncommon. Conifer forests in the vicinity may contain some potential habitat (C. Garber, personal comm.).
Cooper's hawk	Listed by WYNDD as rare or uncommon. Conifer forests in the vicinity may contain some potential breeding habitat (C. Garber, personal comm.).
Northern saw-whet owl	Listed by WYNDD as rare or uncommon. Breeding records are known from the general vicinity of the RNA (Dorn and Dorn 1990).

Three-toed woodpecker	A USFS Region 4 Sensitive species. Potential habitat present in the coniferous forests of the RNA (C. Garber, personal comm.).

Amphibians and Reptiles

Rubber boa	Listed by WYNDD as imperiled. One museum record is known from Afton (Baxter and Stone 1985). Potential habitat may exist in the RNA.

Vertebrate species have not been systematically inventoried in the Afton Front RNA. The following tentative species list is derived from literature sources (Baxter and Stone 1985; Clark and Stromberg 1987; Dorn and Dorn 1990; Oakleaf et al. 1992). Species for which suitable habitat is lacking in the RNA have been excluded from this list.

Common Name	Scientific Name
Mammals	
Masked shrew	Sorex cinereus cinereus
Dusky shrew	Sorex vagrans obscurus
Water shrew	Sorex palustris navigator
Little brown myotis	Myotis lucifugus carissima
Long-legged myotis	Myotis volans interior
Long-eared myotis	Myotis evotis evotis
Big brown bat	Eptesicus fuscus pallidus
Hoary bat	Lasiurus cinereus cinereus
Nuttall's cottontail	Sylvilagus nuttallii grangeri
Least chipmunk	Tamias minimus consobrinus
Yellow pine chipmunk	Tamias amoenus luteiventris
Uinta chipmunk	Tamias umbrinus fremontii
Uinta ground squirrel	Spermophilus armatus
Red squirrel	Tamiasciurus hudsonicus
Northern flying squirrel	Glaucomys sabrinus bangsii
Northern pocket gopher	Thomomys talpoides bridgeri
Deer mouse	Peromyscus maniculatus
Bushy-tailed woodrat	Neotoma cinerea
Southern red-backed vole	Clethrionomys gapperi idahoensis
Montane vole	Microtus montanus
Long-tailed vole	Microtus longicaudus longicaudus
Western jumping mouse	Zapus princeps utahensis
Porcupine	Erethizon dorsatum
Coyote	Canis latrans
Red fox	Vulpes vulpes macroura

Black bear Ursus americanus cinnamomum
Raccoon Procyon lotor hirtus
Long-tailed weasel Mustela frenata
Striped skunk Mephitis mephitis hudsonica
Mountain lion Felis concolor
Lynx Felis lynx canadensis
Bobcat Felis rufus pallescens
ElkCervus elaphus nelsoni
Mule deer Odocoileus hemionus hemionus
Moose Alces alces shirasi

Birds

Sharp-shinned hawk Accipiter striatus
Cooper's hawk Accipiter cooperi
Red-tailed hawk Buteo jamaicensis
Golden eagle Aquila chrysaetos
American kestrel Falco sparverius
Blue grouse Dendragapus obscurus
Ruffed grouse Bonasa umbellus
Mourning dove Zenaida macroura
Great horned owl Bubo virginianus
Northern saw-whet owl Aegolius acadicus
Common nighthawk Chordeiles minor
Rufous hummingbird Selasphorus rufus
Red-naped sapsucker Sphyrapicus nuchalis
Downy woodpecker Picoides pubescens
Three-toed woodpecker Picoides tridactylus
Red-shafted flicker Colaptes auratus cafer
Dusky flycatcher Empidonax oberholseri
Tree swallow Tachycineta bicolor
Cliff swallow Hirundo pyrrhonota
Barn swallow Hirundo rustica
Gray jay Perisoreus canadensis
Steller's jay Cyanocitta stelleri
Black-billed magpie Pica pica
Common raven Corvus corvax
Mountain chickadee Parus gambeli
Red-breasted nuthatch Sitta canadensis
White-breasted nuthatch Sitta carolinensis
House wren Troglodytes aedon
Ruby-crowned kinglet Regulus calendula
Mountain bluebird Sialia currucoides
Townsend's solitaire Myadestes townsendi
Hermit thrush Catharus guttatus
American robin Turdus migratorius
Cedar waxwing Bombycilla cedorum
Audubon's warbler Dendroica coronata auduboni
Western tanager Piranga ludoviciana

Green-tailed towhee Pipilo chlorurus
Chipping sparrow Spizella passerina
Brewer's sparrow Spizella breweri
Vesper sparrow Pooectes gramineus
White-crowned sparrow Zonotricha leucophrys
Dark-eyed junco Junco hyemalis
Western meadowlark Sturnella neglecta
Cassin's finch Carpodacus cassinii
Pine siskin Carduelis pinus

Amphibians and Reptiles

Tiger salamander Ambystoma tigrinum
Rubber boa Charina bottae
Wandering garter snake Thamnophis elegans vagrans

Geology

The Afton Front RNA is on the western edge of the Salt River Range, one of a series of north-south trending mountain ranges (overthrust belt) on the Idaho/Wyoming border. These mountains are composed of overlapping folds and sheets of crust moved eastward by horizontal compression and contraction forces during the Sevier orogeny, 150 to 55 million years ago (Lageson and Spearing 1988; Blackstone 1988).

The thrust faults of the Salt River Range are relatively shallow and flat, and do not expose Precambrian basement rocks (Lageson and Spearing 1988). Surface rocks in the Afton Front RNA are of sedimentary origin, dating primarily from the Mesozoic (Love and Christiansen 1985). The RNA contains outcroppings of the Nugget Sandstone, Stump Formation, Preuss Sandstone or Redbeds, and the Twin Creek Limestone (Love and Christiansen 1985). These formations are composed of limestone, sandstone, siltstone, and shale.

For additional information on the geology of the Salt River Range and the Afton Front RNA, consult Knapp (1976), Pacht (1976), Gentry (1983), and Yonkee (1983).

Soils

Information on soils was provided by Randy Davis of the BTNF Supervisor's Office.

The Midfork-Mulgon-Woodhurst Families complex, 40 to 90 percent slopes, occupies the steep, mostly west-facing slopes in the eastern two-thirds of the RNA. These soils are very deep and well drained to excessively drained. They have moderately slow

to moderate permeability, a high potential for surface runoff, and very low to moderate water availability. Surface layers are commonly loam or gravelly loam, and subsurface layers are mostly cobbly sandy loam, gravelly loamy sand, sandy loam, or gravelly clay loam. Vegetation is primarily Abies lasiocarpa or Pseudotsuga menziesii forest on slopes with a northerly aspect, and a mosaic of Artemisia tridentata ssp. vaseyana shrub stands, Agastache urticifolia-Viguiera multiflora forb stands, and Agropyron spicatum grass stands.

In the western third of the Afton Front RNA, the Tica-Greyback Families complex, 40 to 90 percent slopes, covers the south-facing valley walls. Tica Family soils are shallow, well-drained soils of limestone dipslopes with very gravelly sandy clay loam horizons in the surface soil and upper subsoil, and stony clay in the lower subsoil. Permeability is moderate in the upper soil and slow in the lower soil, potential for runoff is high, and available water capacity is low. Vegetation is usually Artemisia tridentata ssp. vaseyana shrubland and Agropyron spicatum grassland. Greyback Family soils are moderately deep and well drained soils with gravelly loam and sandy loam horizons. Permeability is moderate, the potential for surface runoff is high, and available water capacity is low. These soils support shrublands and grasslands, and may support small stands of Populus tremuloides.

Soils on north-facing valley walls in the western third of the RNA belong to the Chubbs-Herd-Frisco Families complex, 20 to 60 percent slopes. These soils are deep to very deep, well drained to excessively well drained, and have horizons of various clay and loam textures. Permeability is slow to moderate, and the potential for surface runoff is high. Vegetation is Pseudotsuga menziesii woodlands.

Lands

The Afton Front RNA is all reserved Forest Service land with no encumbrances (Tuhy 1987). The eastern edge of the RNA (Sections 9, 16, and 21 of T32N R118W 6PM) lies within Phosphate Reservoir # 4, Wyo. # 1, established in 1908 (Tuhy 1987).

Cultural

There are no known historical or cultural sites within the RNA.

IMPACTS AND POSSIBLE CONFLICTS

Mineral Resources

The Afton Front RNA has few known mineral resources. At present, there are no active oil, gas, or phosphate leases and no mining claims within the boundaries of the RNA (Tuhy 1987). The Afton area is ranked as having only moderate potential for economic accumulations of oil and gas by Holm (1987), based on the lack of significant reported shows from wells in the area. Phosphates are known to occur in the Afton Front, and the eastern boundary ridge of the RNA is contained within Phosphate Reserve # 4, Wyo. # 1 (Tuhy 1987).

In the BTNF Forest Plan (USDA Forest Service 1989), the Afton Front RNA is to be managed under prescription DFC4. Under the plan, new oil and gas leasing is allowed, but all new leases will be issued with a No-Surface-Occupancy stipulation. All of the area is withdrawn from locatable mineral entry and phosphate leasing.

Grazing

The upper reaches of Blaney and Anderson Canyons are within the Blaney Unit of the Grover-Blaney C & H allotment. The current permit for Blaney Canyon is six cattle in a cow-calf operation (1993 Annual Operating Plan, Grover-Blaney C & H allotment). Non-use has been taken for the last two years (Toni Strauss, GRRD Range Conservationist, personal comm.) and for at least 7 of the last 12 years (Tuhy 1987). Due to the rugged terrain of the allotment, cattle use is restricted primarily to the lower reaches of the canyons, outside of the boundary of the RNA. No fencing is currently present to prevent stray cattle from entering the RNA from downslope.

In most cases, livestock grazing is not allowed in RNAs, unless grazing is needed to establish or maintain vegetative communities (Forest Service Manual 4063.3). However, low levels of casual or incidental livestock grazing can be tolerated in RNAs if such use is confined to communities that are not the principal features of the RNA or does not interfere with management prescriptions (Tuhy 1987; USDA Forest Service 1987). The current low level of grazing in the Blaney Canyon Unit does not have an adverse impact on the values being protected in the Afton Front RNA and should be allowed to continue. The current grazing level should be designated as the level of acceptable casual or incidental livestock use by the Regional Forester (Forest Service Manual 4063.3). If continued non-use of the allotment results in loss of the present permittee's grazing rights, the GRRD should consider the option of cancelling the permit (Tuhy 1987).

Timber

Under management prescription DFC4, timber in the Afton Front RNA is to be managed to emphasize protecting and improving soil and water values (USDA Forest Service 1989). Although the RNA contains approximately 350 acres (140 hectares) of forest land (all considered to be of commercial quality), the steep slopes and unstable soils make the area unsuitable for commercial harvest (Tuhy 1987). At present, no timber harvest is scheduled (USDA Forest Service 1989). As an RNA, the Afton Front is exempted from logging and wood gathering activities (including firewood gathering) (Forest Service Manual 4063.3). In addition, timber stands in the RNA will not be brought under management for wildlife enhancement, beetle control, or other activities (Tuhy 1987).

Watershed Values

Withdrawal of the RNA from phosphate, oil, and gas leasing and from timber harvesting will eliminate a major potential source of erosion and protect watershed values in the Afton Front and downstream.

Recreation Values

Recreational use of the Afton Front RNA consists almost entirely of day-use hunting for mule deer in the late summer and fall (Tuhy 1987). There are no outfitter camps or maintained trails in the area. The current low recreational use of the Afton Front area does not threaten or interfere with the objectives and purposes for which the RNA has been designated. As such, no special orders from the Forest Supervisor are needed at present to limit, restrict, or control recreational activities (Forest Service Manual 4063.3).

Wildlife and Plant Values

Afton Front contains known or potential habitat for several USFS Region 4 and BTNF Sensitive species. Most of these species are dependent on shady coniferous forests for survival. The lone exception is Payson's bladderpod which requires semi-open calcareous ridges with minimal disturbance. Maintaining these habitats is in keeping with the objectives for the establishment of the RNA and the direction of FSM 2670, which calls for the Region to "provide special management emphasis that will ensure [the] viability [of Sensitive species] and will preclude trends toward endangerment that would result in the need for Federal listing" (USDA Forest Service 1988).

The RNA also provides critical winter habitat for mule deer. Most of this habitat is located in the lower reaches of Anderson and Blaney canyons, just outside the boundaries of the RNA. Approximately 20 acres, however, is included within the middle reaches of Blaney Canyon (Tuhy 1987). Habitat improvement projects, including aspen treatment recommended in the Allotment Management Plan for the Grover-Blaney C & H allotment, are prohibited in these 20 acres. Such management is in accord with the objective of using RNAs as "laboratories" for comparative applied resource management research.

Special Management Area Values

There are no congressionally designated special management areas within the RNA.

Transportation Plans

There are currently no roads or established, maintained trails in the Afton Front RNA. Roads and trails do not contribute to the protection of the RNA and are not permitted (FSM 4063.3).

MANAGEMENT PRESCRIPTION

The Afton Front RNA lies within Community Interest Area 6 (Afton Front) and Management Area 33 (Star Valley North) as defined by the BTNF Management Plan (USDA Forest Service 1989). The RNA is managed under prescription DFC4 which emphasizes the protection or improvement of municipal water quality and supply. Under this prescription, recreation is limited to existing facilities, range is managed to maintain and enhance range and watershed conditions, timber is managed to protect and improve soil and water values, locatable minerals and phosphates are withdrawn from leasing, and oil and gas leases are issued with No-Surface-Occupancy stipulations (USDA Forest Service 1989).

Vegetation Management

Range is managed to maintain and enhance range and watershed conditions, and livestock may be removed or numbers reduced if they threaten municipal water supplies. Timber harvest is not scheduled in the area. Wildfires will be suppressed. During the normal fire season, the primary suppression strategy will be containment and control. Before and after the fire season, the suppression strategies may include containment, confinement, and surveillance.

The combination of timber and fire management prescriptions probably will result in the Douglas-fir forests growing on the subalpine fir habitat type being slowly replaced first by a mixed forest of Douglas-fir and subalpine fir, and eventually by subalpine fir forests.

ADMINISTRATION RECORDS AND PROTECTION

Administration and protection of the Afton Front RNA will be the responsibility of Bridger-Teton National Forest. The District Ranger, Greys River Ranger District, has direct responsibility.

The Director of the Intermountain Research Station, Ogden, Utah, will be responsible for any research projects conducted in the RNA. Requests to conduct research in the Afton Front should be referred to the Director, who will evaluate research proposals and coordinate all studies and projects in the area with the District Ranger.

All plant and animal specimens collected in the course of research conducted in the RNA will be properly preserved and maintained within university or federal agency herbaria and museums approved by the Intermountain Research Station Director.

Records for the RNA will be maintained in the following offices:

Regional Forester, Intermountain Region, Ogden, UT
Supervisor, Bridger-Teton National Forest, Jackson, WY
District Ranger, Greys River Ranger District, Afton, WY
Director, Intermountain Research Station, Ogden, UT

ARCHIVING

Designated personnel at the Intermountain Research Station will be responsible for maintaining data and reports from Afton Front RNA. Descriptive data on the RNA will also be stored in the computerized RNA database maintained at the office of the Northern Region, Missoula, Montana.

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