Biological Report

on the Big Fall Creek

Potential Special Management Area

Prepared for the

USDA Forest Service
Bridger-Teton National Forest

by

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TABLE OF CONTENTS

FIGURES AND APPENDICES

INTRODUCTION

Big Fall Creek is located on the east slope of the Wyoming Range in the La Barge Creek watershed, approximately 24 air miles southwest of Big Piney, Wyoming. The creek is named for a series of waterfalls that drop over travertine ledges. A number of thermal springs are found near the headwaters of the creek, accounting for the average 60° degree temperatures of its waters.

In the past, the Big Fall Creek area has experienced high sheep and cattle grazing and logging activity, resulting in changes in the vegetation composition over much of the watershed. A dirt road parallels the creek for most of its lower length and leads to an old clearcut on the slopes above the east side of the valley. This road provides access for a variety of recreational activities including fishing, camping, hiking, and hunting. Threats to the area's unusual geothermal features from extractive uses and unregulated recreational activity prompted the Forest Service to recommend the Big Fall Creek watershed for potential Special Management Area (SMA) status in the early 1990s.

In 1994, Bridger-Teton National Forest (BTNF) contracted with the Wyoming Natural Diversity Database (WYNDD) to conduct a field survey of the area and to prepare a biological report for use in drafting an Establishment Report for a Big Fall Creek SMA. This report includes data on objectives, justification, and boundaries of the SMA, maps of plant communities, and a discussion of the vegetation, flora, fauna, and geology of the area. The report also includes a discussion of the qualifications of the area as a SMA and its management needs.

OBJECTIVES

The main objectives of the Big Fall Creek potential SMA are to maintain and preserve geologic and hydrologic features of the Big Fall Creek watershed. In addition, the SMA will preserve a variety of upland forest, sagebrush, tall forb, and riparian vegetation types and protect the habitat of a wide variety of game and non-game animal and fish species.

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[1]Nomenclature for vertebrates follows Baxter and Stone (1985, 1995), Clark and Stromberg (1987), and Dorn and Dorn (1990). Vascular plant nomenclature follows Dorn (1992) for scientific names and Hitchcock and Cronquist (1973) and Welsh et al. (1993) for common names. Tree nomenclature is based on Little (1979) and rare plant names follow Fertig (1996). Plant community names follow Jones (1992).

JUSTIFICATION

Big Fall Creek qualifies for special management attention due to its unusual geologic, hydrologic, and biologic features. At present, the thermal features, rare species, and plant communities of the watershed are poorly represented in the network of existing protected areas in USFS Region 4 and the Greater Yellowstone area (Moseley 1989). Protection of the area as a potential Wild and Scenic River has been recommended in the past.

SMAs (also called Special Interest Areas) are areas designated administratively or by act of Congress to protect sites with unusual geological, botanical, zoological, or historical features. These areas will usually, but not always, be in near-pristine condition (Andrews 1993). Management emphasis in SMAs is on protecting the natural or cultural features of the area while often enhancing educational values or allowing compatible alternative uses.

PRINCIPAL DISTINGUISHING FEATURES

Important features of the area include:

-- Examples of 9 different wetland and upland plant community types.

-- A small population of Payson's milkvetch (*Astragalus paysonii*) and Colorado River cutthroat trout (*Oncorhynchus clarki pleuriticus*), two USFS Region 4 Sensitive species. Potential habitat also exists for two other regionally Sensitive plant and animal species (Payson's bladderpod and wolverine).

-- Several thermal springs at the head of Big Fall Creek.

-- An unusual population of non-migratory rainbow trout that may be of value for stocking other streams.

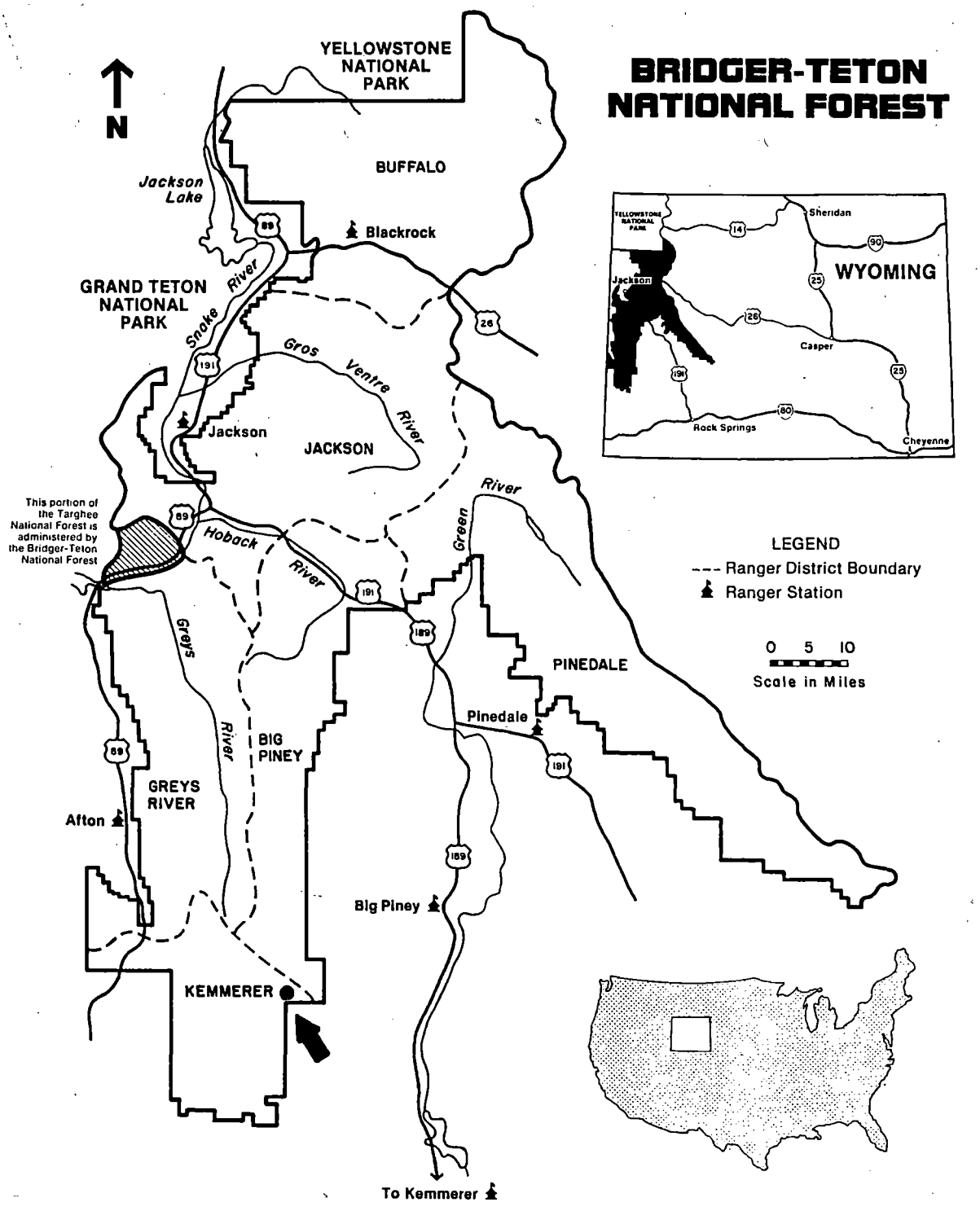
LOCATION

The Big Fall Creek potential SMA is located within the Kemmerer Ranger District of Bridger-Teton National Forest. Figures 1-2 show the location of the potential SMA within the Forest and its recommended boundaries.

Latitude and Longitude

Northern border: latitude 42° 24' 22" north
Southern border: latitude 42° 21' 45" north
Eastern border: longitude 110° 29' 13" west
Western border: longitude 110° 32' 55" west

Figure 1. Location of the Big Fall Creek potential SMA. Map from USDA Forest Service (1989).



Centrum: latitude 42° 23' 00" north
longitude 110° 31' 08" west

Boundary

The Big Fall Creek potential SMA is a parcel of land in Sections 19 (SE4), 20 (S2), 21 (S2NW4 and SW4), 28 (NW4, W2NE4, and N2SW4), 29 (all except S2SE4), 30 (NE4 and S2), 31 (all), and 32 (W2 and W2E2) of Township 28 North, Range 115 West of the Sixth Principal Meridian. A small portion of the SMA is also found in Sections 25 (SE4SE4) and 36 (E4) of Township 28 North, Range 116 West and Section 1 (N2NE4NE4) of Township 27 North, Range 116 West.

The boundary of the Big Fall Creek potential SMA follows topographic, drainage, and political boundaries. The southwestern border of the potential SMA follows the eastern shore of La Barge Creek from a point approximately 1.5 air miles south of the confluence of Turkey Creek south to the Forest boundary. The northern border follows the crest of the divide separating the Big Fall Creek and Turkey Creek drainages. The northeastern boundary follows the 9800-10,000 foot contour line on the slopes of Deadline Ridge. On the eastern border, the boundary continues south along the ridgeline separating the Booth Creek and Sheep Creek drainages to the Forest boundary. The southern border is formed by the Forest boundary line.

Area

Based on maps provided by BTNF, the Big Fall Creek potential SMA is approximately 2688 acres (1075 hectares).

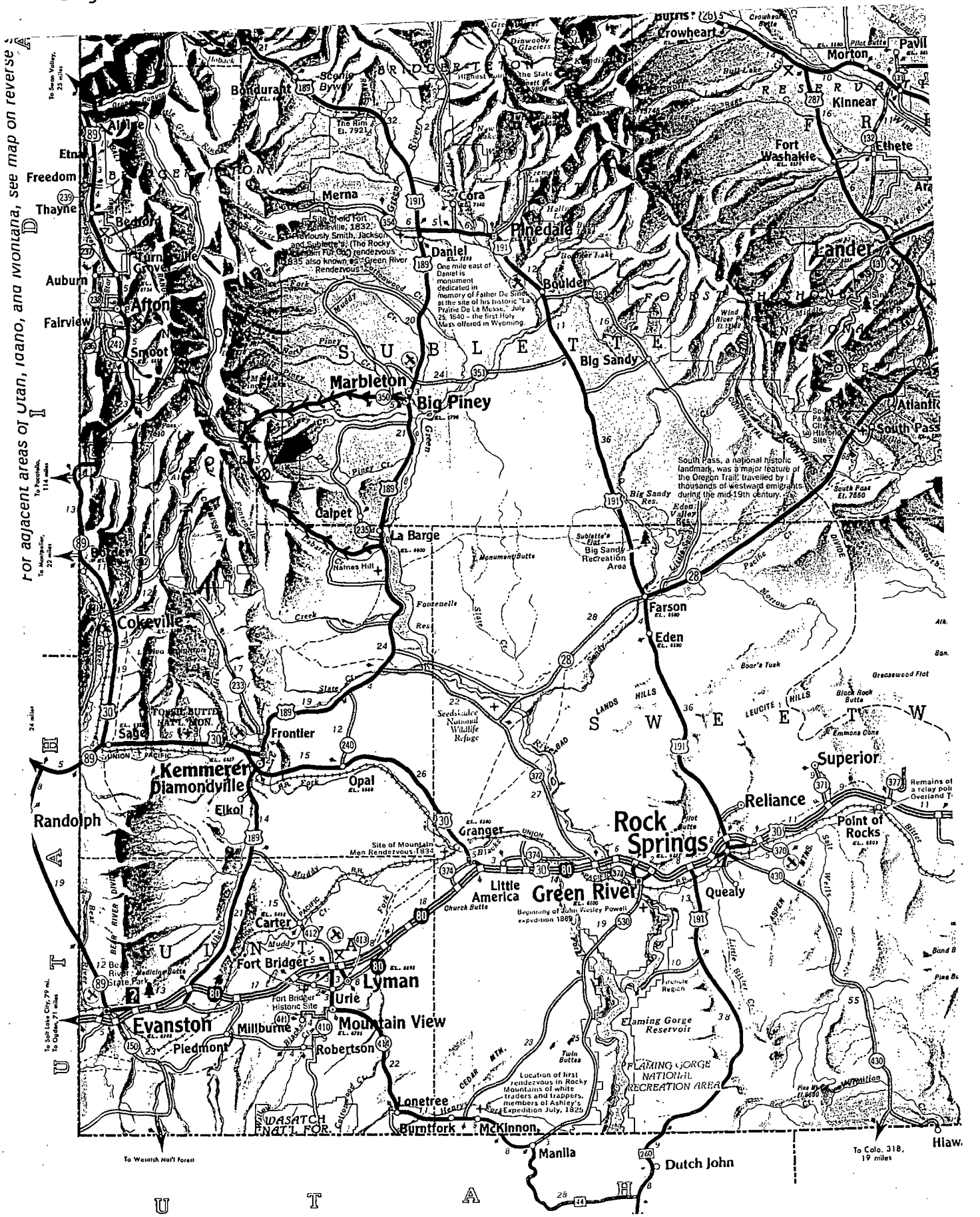
Elevation

Elevations within the potential SMA range from 7700 feet (2350 m) at the confluence of Big Fall Creek and La Barge Creek to 10,000 feet (3050 m) below the ridgeline of Deadline Ridge.

Access

Big Fall Creek potential SMA is located approximately 24 air miles southwest of Big Piney, Wyoming. From Big Piney, proceed west on Wyoming State Highway 350 (County Road 141) approximately 11 miles to the junction of county roads 142 and 111 (Figure 3). County Road 111 continues for about 9 miles to the BTNF Forest boundary. Just after crossing into the Forest, bear south on USFS Road 10046 (Coal Creek Road). Proceed on this road for approximately 9 miles to the junction with USFS Road 10128 at South Piney Creek. Continue west on USFS Road 10128 for about 7.5 miles to the junction with the La Barge Creek Road (USFS Road 10138). Proceed south on the La Barge Creek Road about 8 miles

Figure 3. Access to the Big Fall Creek potential SMA.



to the Big Fall Creek Road (USFS Road 10089), located immediately north of the Forest boundary.

The potential SMA is also accessible from the town of La Barge, Wyoming. From La Barge, proceed south 1.5 miles on US Highway 189 to the junction with the La Barge Creek Road. Continue west on this paved road for approximately 11 miles to the town of Viola. Continue on the gravel road for about 12 miles to the Forest boundary. Big Fall Creek Road is the first road on the east side of the La Barge Creek Road after entering the Forest.

AREA BY COVER TYPES

Cover types were mapped based on 1:24,000 scale topographic maps using aerial photographs and field reconnaissance. The area of each of these types was estimated from the maps. Each of the vegetation types is discussed in the Description of Values section of this report.

SAF Cover Types (Eyre 1980), Figure 4.	Acres	Hectares
206. Engelmann Spruce-Subalpine Fir	1265	506
217. Aspen	68	27

Kuchler Types (Kuchler 1966), Figure 5.	Acres	Hectares
14. Western spruce-fir forest	1333	533
49. Sagebrush steppe	1250	500

Habitat and Community Types (Jones 1992), Figure 6.	Acres	Hectares
1. *Abies lasiocarpa*/*Berberis* [*Mahonia*] *repens* habitat type *Berberis repens* phase (Steele et al. 1983).	1265	506
2. *Populus tremuloides*-*Pseudotsuga menziesii*/ *Symphoricarpos oreophilus* community type (Mueggler 1988). [*P. tremuloides*-*P. menziesii*/*Berberis repens* type (Youngblood and Mueggler 1981).	68	27
3. Mosaic of Mountain big sagebrush-dry tall forb grassland communities:	1250	500
Artemisia tridentata var. *vaseyana*/*Festuca idahoensis* community type (Mueggler and Stewart 1980).		

Habitat and Community Types (continued)	Acres	Hectares
Balsamorhiza sagittata-Helianthella uniflora community type (Gregory 1983).		
4. Mosaic of riparian graminoid and shrub communities:	105	42
Carex rostrata community type (Youngblood et al. 1985; Mutz and Graham 1982).		
Deschampsia cespitosa community type (Youngblood et al. 1985).		
Salix boothii/Poa pratensis community type (Youngblood et al. 1985).		
Salix geyeriana/Poa pratensis community type (Youngblood et al. 1985).		
Artemisia cana [var. *viscidula*]/*Poa pratensis* community type (Youngblood et al. 1985).		

PHYSICAL AND CLIMATIC CONDITIONS

Physical Conditions

The central feature of the potential SMA is Big Fall Creek, a tributary of La Barge Creek derived from a number of thermal springs. A series of waterfalls associated with travertine ledges is present in the midreach of the creek. Big Fall Creek is contained within a V-shaped valley surrounded by steep southwest-northeast trending ridges.

Climatic Conditions

No climate stations are located in the immediate vicinity of the Big Fall Creek potential SMA. The nearest stations are located at Big Piney, Border, and La Barge, Wyoming. These stations are located in low elevation desert basin areas with a climate significantly drier and warmer than conditions to be expected at Big Fall Creek. The nearest climate station with a similar climate is located at Merna, approximately 40 air miles to the north. Monthly mean temperature and average precipitation data for the Merna station are given in Table 1.

Based on weather maps in Martner (1986), annual precipitation in the Big Fall Creek area averages 12-14 inches (305-355 mm) with peaks in December, January and June. Mean annual temperature is 32° F (0° C), with mean maximum and minimum temperatures in January of 26° and <2° F (-3.3° and <-16.7° C) and mean maximum and minimum temperatures in July of 80° and 42° F

Table 1.

Summary of Monthly Climate Values, Merna, WY
Elevation 7700 feet (2347 m), 1953-1980
(From Martner 1986)

Month	Mean Temperature °F	Mean Temperature °C	Average Precipitation Inches	Average Precipitation mm
January	14.3	-9.8	1.75	44.5
February	17.0	-8.3	0.97	24.6
March	21.0	-6.1	0.96	24.4
April	30.4	-0.9	0.79	20.1
May	41.3	5.2	1.22	31.0
June	49.2	9.6	1.77	45.0
July	56.5	13.6	1.09	27.7
August	54.4	12.4	1.29	32.8
September	46.7	8.2	1.16	29.5
October	37.9	3.3	0.97	24.6
November	24.5	-4.2	1.09	27.7
December	16.2	-8.8	1.51	38.4
Mean Annual	34.1	1.2	14.57	370.1
Mean April-Sept.	46.4	8.0	7.32	185.9

(26.7° and 5.5° C). Temperatures along the headwaters of Big Fall Creek may be higher than the surrounding areas due to the influence of the thermal waters.

DESCRIPTION OF VALUES

Flora

Plant Communities

The narrow riparian corridor of Big Fall Creek consists of a mosaic of five main vegetation types. These types follow a gradient of soil moisture ranging from permanently saturated to slightly mesic (Figure 7). The riparian communities are abruptly replaced by drier forb, shrub, and conifer forests on the slopes bordering the valley floor.

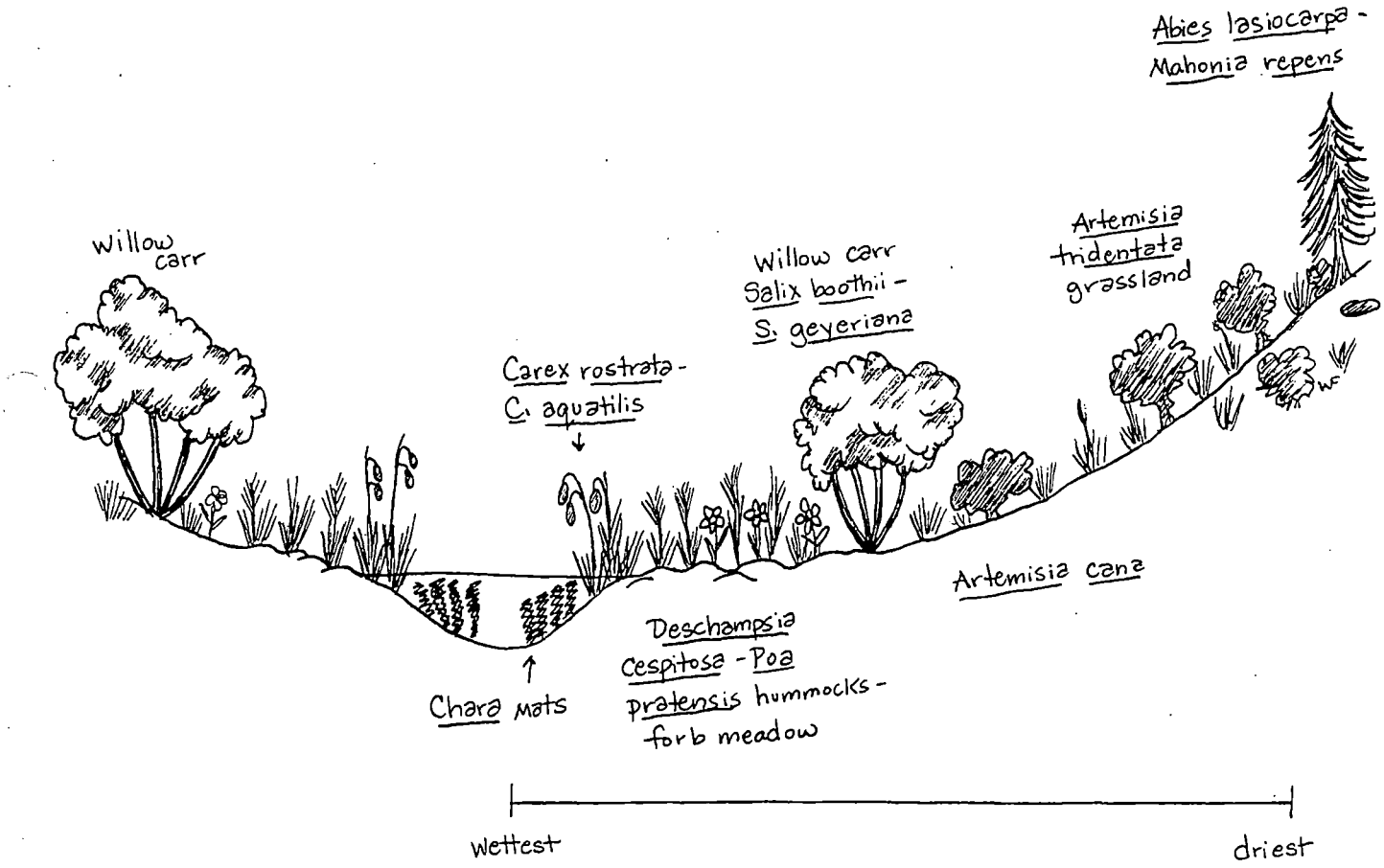
Shallow, braided channels of Big Fall Creek are bordered by a narrow band of vegetation dominated by *Carex rostrata*, *C. aquatilis*, and *C. vesicaria*. The community is found on seasonally flooded sandy-mud overlying travertine deposits and is replaced by *Deschampsia cespitosa* vegetation on slightly drier soils a short distance from the creek channel.

Carex rostrata vegetation is displaced by dense stands of *Veronica anagallis-aquatica*, *V. americana*, and *Mimulus guttatus* along the flooded edge of the thermal pools at the head of Big Fall Creek. Similar forb-rich stands border deep thermal pools near the head of Kendall Warm Springs on BTNF (Fertig 1995).

An extensive area of wet, hummocky meadows in the upper Big Fall Creek valley is dominated by the *Deschampsia cespitosa* community type. These stands contain high cover of *D. cespitosa*, *Poa pratensis*, *Juncus tracyi*, *Carex praegracilis*, and *Glyceria striata*. A rich forb component is also present, including *Aster bracteolatus*, *Saxifraga odontoloma*, *Gentianella amarella*, *Hypericum formosum*, and *Polemonium occidentale*. The abundance of *Poa pratensis* and several forb species indicates that this habitat has received high livestock grazing use in the past. This community is found midway along the moisture gradient between flooded *Carex rostrata* and drier *Salix boothii-S. geyeriana* vegetation types.

Willow communities dominated by *Salix boothii* and *S. geyeriana* are found along the drier edges of broad riparian valleys at the upper end of Big Fall Creek and near the ecotone between riparian meadows and sagebrush grassland slopes at the lower end of the creek. The understory of these stands typically has a high cover of *Poa pratensis*, suggesting some degradation from past grazing. Many of the stands at the lower end of the creek have large numbers of dead stems, indicating that fire frequency has been low in recent years.

Figure 7. Position of major riparian vegetation types along a moisture gradient on Big Fall Creek. Ill. by W. Fertig.



A few Salix boothii stands at the upper end of Big Fall Creek have a rich understory of forbs and approach the S. boothii/Smilacina [Maianthemum] stellata community type of Youngblood et al. (1985). Other stands also differ in having high cover of Salix wolfii. A single stand locally dominated by Salix melanopsis and S. wolfii was observed on slightly elevated islands of travertine deposits in the braided upper channel of Big Fall Creek.

Isolated stands of the Artemisia cana [var. viscidula]/Poa pratensis community type are found on travertine outcrops in abandoned stream channels and at the edge of Artemisia tridentata var. vaseyana grassland slopes. These stands probably represent a degraded version of the Artemisia cana/Festuca idahoensis community (Youngblood et al. 1985). A. cana stands occupy the driest wetland sites in the Big Fall Creek riparian zone.

South-facing slopes and disturbed upland sites within the Big Fall Creek valley are dominated by a mosaic of mountain big sagebrush grassland and dry, tall forb vegetation types. The Artemisia tridentata var. vaseyana/Festuca idahoensis community is the dominant type over most of the higher slopes in the valley. In many areas, however, A. tridentata var. vaseyana shares dominance with Symphoricarpos oreophilus var. utahensis, Purshia tridentata, or Chrysothamnus viscidiflorus. Most stands are found on sandy gravel soils derived from sandstone, limestone, or shale outcrops. Important graminoid species in this vegetation type in the potential SMA include Poa secunda, Leucopoa kingii, Festuca idahoensis, Elymus trachycaulus, and Stipa nelsonii. Forbs are most abundant in ecotonal areas grading into tall forb or semi-open aspen or conifer forests. Common forbs include Lupinus argenteus, Sedum lanceolatum, Delphinium bicolor, Phacelia sericea, Eriogonum umbellatum, Antennaria microphylla, and Arenaria congesta.

Along toe slope areas, sagebrush grassland vegetation is largely replaced by the Balsamorhiza sagittata-Helianthella uniflora tall forb community type. These stands are found on relatively dry, gentle to steep, south-facing slopes. Although vegetative cover is usually high, bare soil and rock are often present, especially on steeper slopes. Balsamorhiza sagittata is locally abundant at these sites, although Geranium viscosissimum may be codominant. Other common associates include Lupinus argenteus, Osmorhiza occidentalis, Senecio serra, Melica bulbosa, Leucopoa kingii, and Prunus virginiana.

Open talus slopes and cliffs are scattered throughout the Big Fall Creek valley and support a sparse flora of forbs and bunchgrasses. Common species in these areas include Senecio multilobatus, Eriogonum brevicaule, Erigeron compositus, Ribes cereum, Potentilla concinna, and Leucopoa kingii.

Small stands of Populus tremuloides are found on ridgelines and toe slopes in the potential SMA. These stands are typically dominated by P. tremuloides and Pseudotsuga menziesii and contain a shrubby understory largely lacking in tall forbs. Although included in the P. tremuloides-P. menziesii/ Symphoricarpos oreophilus community type, S. oreophilus is a relatively minor component of the understory, perhaps due to past heavy grazing (Mueggler 1988). Common understory species include Rosa sayi, Prunus virginiana, Ribes inerme, R. oxyacanthoides, Shepherdia canadensis, Juniperus communis, Mahonia repens, Paxistima myrsinites, Potentilla arguta, Poa pratensis, and Poa nervosa. This community is considered to be seral to other Pseudotsuga types (Mueggler 1988), although in the Big Fall Creek area it is probably seral to Abies lasiocarpa communities.

The most extensive upland community in the potential SMA is the Abies lasiocarpa/Berberis [Mahonia] repens community (Berberis phase). Over much of the Big Fall Creek area, A. lasiocarpa is codominant with Pinus contorta and Picea engelmannii. The understory shrub layer is composed primarily of Paxistima myrsinites and Mahonia repens, although Shepherdia canadensis, Juniperus communis, Ribes montigenum, and Symphoricarpos oreophilus may also be present. Forb density and diversity is low except for ecotonal areas. The most abundant forbs and graminoids are Arnica cordifolia, Geranium viscosissimum, Orthilia secunda, and Oryzopsis exigua. Pseudotsuga menziesii is largely absent from the interior of the Abies lasiocarpa forests, although it may be common at the edge of forested areas along roads and bordering old clearcuts.

Rare Plants

No federally listed Threatened or Endangered plant species are found in the potential Fall Creek SMA. Payson's milkvetch (Astragalus paysonii) is the only USFS Region 4 Sensitive plant species known to occur in the area (Joslin 1994). Potential habitat may also exist for Payson's bladderpod (Lesquerella paysonii), another Region 4 Sensitive species, but no colonies could be located during surveys in 1995. Additional occurrence information and location maps for these species are in Appendix A and Figure 8.

Astragalus paysonii (Payson's milkvetch)
Heritage Rank: G3/S2 (WYNDD limited distribution list).[2]
Federal Status: USFS R4: Sensitive; USFWS: none (formerly C2).
Geographic Range: Regional endemic of Western Wyoming and north-central Idaho. In Wyoming, it is known from the Salt River, Wyoming, and southern Gros Ventre ranges in Lincoln,

[2]Heritage Ranks are explained in Appendix B.

Sublette, and Teton counties (Fertig and Marriott 1993; Hartman 1995).

Habitat: Occurs in disturbed areas, recovering burn sites, clear cuts, and road cuts on sandy soils within lodgepole pine forests. Typically found on sites with low cover of forbs and graminoids (Fertig et al. 1994).

Comments: A small population of Payson's milkvetch was discovered along an old logging road on the slopes immediately east of the upper valley of Big Fall Creek during surveys in 1995. A total of 25 flowering and fruiting plants was observed in a linear band of disturbed roadbank. No plants were found in the adjacent clearcut or in sites with high vegetative cover. This population represents the only Wyoming occurrence of this species currently known from an existing or proposed special management area. Rangewide, *A. paysonii* is threatened by habitat loss due to plant succession and the suppression of natural disturbances needed for colony establishment (Fertig and Marriott 1993).

Lesquerella paysonii (Payson's bladderpod)

Heritage Rank: G3/S3 (WYNDD limited distribution list).

Federal Status: USFS R4: Sensitive; USFWS: none (formerly C2).

Geographic Range: Regional endemic of eastern Idaho, western Wyoming and southwestern Montana (Fertig et al. 1994). In Wyoming, it is known from the Wyoming, Salt River, Teton, Gros Ventre and western Wind River ranges in Lincoln, Sublette, and Teton counties.

Habitat: Rocky, sparsely vegetated slopes, ridgetops, and gravel bars, often on calcareous substrates (Fertig et al. 1994).

Comments: Payson's bladderpod is known to occur along Deadline Ridge, within one mile of the northeast boundary of the proposed SMA (Hartman and Nelson 1994). Potential habitat on dry travertine ledges in the Big Fall Creek Valley was intensively surveyed in 1995, but no flowering, fruiting, or vegetative individuals of this species could be located. This species is now known to be more widespread in western Wyoming than originally suspected and has recently been downgraded from G2 to G3 status by WYNDD (Fertig 1996).

Vascular Plants of Big Fall Creek Potential SMA

The following species checklist is based on field work conducted by the author in early July and mid August 1995 (unpublished records). For more information on the vascular flora of the Wyoming Range consult Hartman and Nelson (1993, 1994).

Scientific Name	Common Name	Family[3]
	Trees	
Abies lasiocarpa	Subalpine fir	PIN
Picea engelmannii	Engelmann spruce	PIN
Pinus contorta var. latifolia	Lodgepole pine	PIN
Pinus flexilis	Limber pine	PIN
Populus tremuloides	Quaking aspen	SAL
Pseudotsuga menziesii	Douglas-fir	PIN
	Shrubs	
Amelanchier alnifolia var. alnifolia	Western serviceberry	ROS
Arctostaphylos uva-ursi	Bearberry	ERI
Artemisia cana var. viscidula	Silver sagebrush	AST
Artemisia tridentata var. vaseyana	Mountain big sagebrush	AST
Betula glandulosa	Bog birch	BET
Ceanothus velutinus	Buckbrush	RHA
Chrysothamnus nauseosus var. nauseosus	Rubber rabbitbrush	AST
Chrysothamnus viscidiflorus var. viscidiflorus	Douglas rabbitbrush	AST
Juniperus communis var. depressa	Common juniper	CUP
Mahonia repens	Oregon grape	BER
Paxistima myrsinites	Mountain lover	CEL
Prunus virginiana var. melanocarpa	Common chokecherry	ROS
Purshia tridentata	Bitterbrush	ROS
Ribes cereum var. pedicellare	Wax currant	GRS
Ribes inerme	Whitestem gooseberry	GRS
Ribes montigenum	Mountain gooseberry	GRS
Ribes viscosissimum	Sticky currant	GRS
Rosa sayi	Prickly rose	ROS
Rosa woodsii	Woods rose	ROS
Rubus idaeus var. aculeatissimus	Red raspberry	ROS
Rubus parviflorus	Thimbleberry	ROS
Salix boothii	Booth willow	SAL
Salix eastwoodiae	Eastwood willow	SAL
Salix geyeriana	Geyer willow	SAL
Salix melanopsis	Dusky willow	SAL
Salix scouleriana	Scouler willow	SAL
Salix wolfii	Wolf's willow	SAL
Sambucus racemosa	Black elderberry	CPR
Shepherdia canadensis	Canada buffaloberry	ELE

Scientific Name	Common Name	Family[3]
Sorbus scopulina	Cascade mountain-ash	ROS
Symphoricarpos oreophilus var. utahensis	Mountain snowberry	CPR
	Forbs	
Achillea millefolium var. lanulosa	Common yarrow	AST
Actaea rubra	Baneberry	RAN
Agastache urticifolia	Nettleleaf horsemint	LAM
Agoseris glauca var. laciniata	Cutleaf agoseris	AST
Allium brevistylum	Short-style onion	LIL
Androsace septentrionalis var. subulifera	N. fairy-candelabra	PRM
Angelica arguta	Sharptooth angelica	API
Antennaria microphylla	Small-leaved pussy-toes	AST
Antennaria rosea	Rosy pussy-toes	AST
Antennaria umbrinella	Umber pussy-toes	AST
Aquilegia coerulea	Colorado columbine	RAN
Arabis confinis [A. divaricarpa]	Spreadingpod rockcress	BRA
Arabis drummondii	Drummond's rockcress	BRA
Arabis hirsuta var. pycnocarpa	Hairy rockcress	BRA
Arabis holboellii	Holboell's rockcress	BRA
Arceuthobium americanum	American dwarf mistletoe	VIS
Arenaria congesta	Ballhead sandwort	CRY
Arnica cordifolia	Heart-leaf arnica	AST
Arnica longifolia	Seep-spring arnica	AST
Artemisia dracunculus	Tarragon	AST
Aster ascendens	Long-leaved aster	AST
Aster bracteolatus	Eaton's aster	AST
Aster glaucodes	Blueleaf aster	AST
Aster occidentalis	Western mountain aster	AST
Aster perelegans	Elegant aster	AST
Astragalus agrestis	Field milkvetch	FAB
Astragalus diversifolius var. campestris [A. convallarius]	Lesser rushy milkvetch	FAB
Astragalus miser var. decumbens	Weedy milkvetch	FAB
Astragalus paysonii	Payson's milkvetch	FAB
Balsamorhiza sagittata	Arrowleaf balsamroot	AST
Capsella bursa-pastoris	Shepherd's purse	BRA
Cardamine breweri	Brewer's bittercress	BRA
Carduus nutans	Musk-thistle	AST
Castilleja angustifolia var. dubia	Desert paintbrush	SCR
Castilleja flava	Yellow paintbrush	SCR

Scientific Name	Common Name	Family[3]
Castilleja linariifolia	Wyoming paintbrush	SCR
Castilleja miniata	Scarlet paintbrush	SCR
Castilleja sulphurea	Sulfur paintbrush	SCR
Cerastium arvense	Field chickweed	CRY
Cerastium fontanum	Mouse-ear chickweed	CRY
Chaenactis douglasii	Hoary false-yarrow	AST
Chenopodium capitatum var. parvicapitatum [C. overi]	Smallhead chenopod	CHN
Chenopodium pratericola	Desert goosefoot	CHN
Chimaphila umbellata var. occidentalis	Common pipsissewa	ERI
Chorispora tenella	Blue mustard	BRA
Cicuta maculata	Western water-hemlock	API
Cirsium arvense	Canada thistle	AST
Cirsium eatonii	Eaton's thistle	AST
Cirsium pulcherrimum	Beautiful thistle	AST
Cirsium scariosum	Elk thistle	AST
Cirsium vulgare	Bull thistle	AST
Claytonia lanceolata var. lanceolata	Spring-beauty	POR
Collinsia parviflora	Small-flowered blue-eyed Mary	SCR
Collomia linearis	Narrow-leaved collomia	PLM
Crepis acuminata	Tapertip hawksbeard	AST
Cryptantha affinis	Slender cryptantha	BOR
Cymopterus longipes	Long-stalk spring parsley	API
Delphinium bicolor	Little larkspur	RAN
Delphinium occidentale	Western larkspur	RAN
Descurainia incana var. macrosperma	Mountain tansymustard	BRA
Descurainia pinnata var. nelsonii	Nelson's western tansymustard	BRA
Descurainia sophia	Flixweed	BRA
Draba albertina	Slender draba	BRA
Epilobium angustifolium	Fireweed	ONA
Epilobium brachycarpum	Autumn willowherb	ONA
Epilobium ciliatum var. ciliatum	Northern willowherb	ONA
Epilobium hornemannii	Hornemann's willowherb	ONA
Erigeron compositus var. discoideus	Cut-leaved daisy	AST
Erigeron eatonii	Eaton's daisy	AST
Erigeron glabellus	Smooth daisy	AST
Erigeron lonchophyllus	Short-rayed daisy	AST
Erigeron speciosus	Showy fleabane	AST
Eriogonum brevicaule	Shortstem buckwheat	PLG
Eriogonum umbellatum var. majus	Sulfur buckwheat	PLG
Erysimum inconspicuum	Smallflowered wallflower	BRA

Scientific Name	Common Name	Family[3]
Fragaria vesca	Woods strawberry	ROS
Fragaria virginiana	Virginia strawberry	ROS
Fritillaria atropurpurea	Checker lily	LIL
Galium aparine	Cleavers	RUB
Galium bifolium	Thinleaf bedstraw	RUB
Galium trifidum	Small bedstraw	RUB
Gayophytum diffusum var. strictipes	Spreading groundsmoke	ONA
Gentianella amarella var. amarella	Northern gentian	GEN
Gentianella detonsa var. elegans [Gentianopsis d. var. e.]	Smaller fringed gentian	GEN
Geranium richardsonii	White geranium	GER
Geranium viscosissimum var. viscosissimum	Sticky geranium	GER
Geum macrophyllum var. perincisum	Large-leaved avens	ROS
Geum triflorum	Prairie-smoke	ROS
Habenaria dilatata [Platanthera d.]	White bog-orchid	ORC
Habenaria hyperborea [Platanthera h.]	Northern green bog-orchid	ORC
Hackelia floribunda	Many-flowered stickseed	BOR
Hackelia micrantha	Blue stickseed	BOR
Hackelia patens	Spreading stickseed	BOR
Helenium hoopesii [Dugaldia h.]	Orange sneezeweed	AST
Helianthella uniflora	Rocky Mountain helianthella	AST
Heracleum sphondylium var. lanatum	Cow-parsnip	API
Heuchera parvifolia	Small-leaved alumroot	SAX
Hieracium albiflorum	White-flowered hawkweed	AST
Hieracium cynoglossoides	Hounds-tongue hawkweed	AST
Hydrophyllum capitatum	Ballhead waterleaf	HYD
Hypericum formosum var. scouleri	Western St. John's-wort	HYP
Illiamna rivularis	Streambank globemallow	MLV
Ipomopsis aggregata	Scarlet gilia	PLM
Lepidium densiflorum	Prairie peppergrass	BRA
Ligusticum filicinum	Fern-leaf lovage	API
Linanthus septentrionalis	Northern linanthus	PLM
Lithophragma glabrum var. ramulosum	Bulbiferous fringecup	SAX
Lithospermum ruderale	Western gromwell	BOR
Lomatium dissectum var. multifidum	Fern-leaved biscuitroot	API
Lupinus argenteus	Silvery lupine	FAB

Scientific Name	Common Name	Family[3]
Lupinus lepidus var. utahensis	Prairie lupine	FAB
Lupinus sericeus	Silky lupine	FAB
Machaeranthera canescens	Hoary aster	AST
Maianthemum stellatum	Starry false-Solomon's seal	LIL
Matricaria matricarioides	Pineapple weed	AST
Mentzelia montana	Mountain blazingstar	LOA
Mertensia ciliata	Ciliate bluebells	BOR
Microseris nutans	Nodding microseris	AST
Microsteris gracilis	Microsteris	PLM
Mimulus guttatus	Yellow monkeyflower	SCR
Mitella stauropetala	Side-flowered mitrewort	SAX
Monolepis nuttalliana	Nuttall's povertyweed	CHN
Nemophila breviflora	Great Basin nemophila	HYD
Orthilia secunda	Sidebells pyrola	ERI
Orthocarpus tolmiei	Tolmie's owl-clover	SCR
Osmorhiza depauperata	Blunt-fruit sweetroot	API
Osmorhiza occidentalis	Western sweet-cicely	API
Oxytropis deflexa var. sericea	Pendent-pod crazyweed	FAB
Parnassia palustris var. montanensis	Northern grass-of-parnassus	SAX
Pedicularis groenlandica	Elephant's-head	SCR
Penstemon humilis	Lowly penstemon	SCR
Penstemon rydbergii var. rydbergii	Rydberg's penstemon	SCR
Penstemon subglaber	Glabrous penstemon	SCR
Phacelia hastata	Silverleaf phacelia	HYD
Phacelia heterophylla var. virgata	Virgate phacelia	HYD
Phacelia sericea	Silky phacelia	HYD
Phlox longifolia	Long-leaf phlox	PLM
Phlox multiflora	Many-flowered phlox	PLM
Polemonium occidentale	Western Jacob's ladder	PLM
Polygonum aviculare	Prostrate knotweed	PLG
Polygonum douglasii var. douglasii	Douglas knotweed	PLG
Potamogeton foliosus	Close-leaved pondweed	POT
Potentilla anserina	Common silverweed	ROS
Potentilla arguta	Tall cinquefoil	ROS
Potentilla concinna	Early cinquefoil	ROS
Potentilla gracilis var. brunnescens var. pulcherrima	Showy cinquefoil	ROS
Potentilla norvegica	Norwegian cinquefoil	ROS
Prunella vulgaris	Self-heal	LAM
Ranunculus acriformis var. montanensis	Sharp buttercup	RAN

Scientific Name	Common Name	Family[3]
Ranunculus alismifolius var. montanus	Water-plantain buttercup	RAN
Ranunculus aquatilis var. capillaceus	White water buttercup	RAN
Ranunculus cymbalaria var. cymbalaria	Shore buttercup	RAN
Ranunculus glaberrimus var. ellipticus	Sagebrush buttercup	RAN
Ranunculus inamoenus var. inamoenus	Unlovely buttercup	RAN
Ranunculus macounii	Macoun's buttercup	RAN
Ranunculus natans var. intertextus	Floating water-buttercup	RAN
Rudbeckia occidentalis	Black head	AST
Rumex salicifolius var. triangulivalvis	Willow dock	PLG
Sagina saginoides	Alpine pearlwort	CRY
Saxifraga odontoloma	Brook saxifrage	SAX
Scrophularia lanceolata	Lance-leaf figwort	SCR
Sedum debile	Weakstemmed stonecrop	CRS
Sedum lanceolatum	Lance-leaved stonecrop	CRS
Senecio integerrimus var. exaltatus	Western groundsel	AST
Senecio multilobatus	Basin butterweed	AST
Senecio serra var. serra	Butterweed groundsel	AST
Senecio sphaerocephalus	Mountain-marsh butterweed	AST
Senecio streptanthifolius var. rubricaulis	Cleft-leaf groundsel	AST
Senecio triangularis	Arrowleaf groundsel	AST
Sidalcea oregana	Oregon checker-mallow	MLV
Silene menziesii	Menzies' silene	CRY
Sisyrinchium idahoense var. occidentale	Idaho blue-eyed grass	IRI
Sium suave	Hemlock water-parsnip	API
Solidago canadensis var. salebrosa	Canada goldenrod	AST
Solidago multiradiata var. scopulorum	Northern goldenrod	AST
Solidago sparsiflora	Alcove goldenrod	AST
Stellaria longipes	Longstalk starwort	CRY
Stellaria umbellata	Umbellate starwort	CRY
Swertia perennis	Swertia	GEN
Swertia radiata [Frasera speciosa]	Green gentian	GEN
Taraxacum laevigatum	Red-seed dandelion	AST
Taraxacum officinale	Common dandelion	AST
Thalictrum fendleri	Fendler's meadowrue	RAN
Thlaspi arvense	Field pennycress	BRA
Townsendia alpigena	Mountain Easter-daisy	AST

Scientific Name	Common Name	Family[3]
Tragopogon dubius	Yellow salsify	AST
Trifolium gymnocarpon	Hollyleaf clover	FAB
Trifolium hybridum	Alsike clover	FAB
Trifolium repens	White clover	FAB
Urtica dioca var. procera	Stinging nettle	URT
Valeriana occidentalis	Western valerian	VAL
Veronica americana	American brooklime	SCR
Veronica anagallis-aquatica	Water pimpernel	SCR
Veronica biloba	Bilobed speedwell	SCR
Veronica serpyllifolia	Thyme-leaved speedwell	SCR
Viola adunca	Early blue violet	VIO
Viola praemorsa	Upland yellow violet	VIO
Viola purpurea var. venosa	Goosefoot violet	VIO
Viola vallicola	Valley yellow violet	VIO
Zizia aptera	Heart-leaved Alexanders	API

Graminoids

Agrostis scabra	Winter bentgrass	POA
Agrostis stolonifera	Redtop	POA
Alopecurus arundinaceus	Meadow foxtail	POA
Alopecurus aequalis	Shortawn foxtail	POA
Bromus carinatus	California brome	POA
Bromus ciliatus	Fringed brome	POA
Bromus inermis var. inermis	Smooth brome	POA
Bromus tectorum	Cheatgrass	POA
Calamagrostis inexpansa	Narrow-spiked reedgrass	POA
Carex aquatilis	Water sedge	CYP
Carex aurea	Golden sedge	CYP
Carex douglasii	Douglas' sedge	CYP
Carex hoodii	Hood's sedge	CYP
Carex lanuginosa	Woolly sedge	CYP
Carex microptera	Small-winged sedge	CYP
Carex praegracilis	Clustered field sedge	CYP
Carex rossii	Ross sedge	CYP
Carex rostrata	Beaked sedge	CYP
Carex vallicola	Valley sedge	CYP
Carex vesicaria	Inflated sedge	CYP
Dactylis glomerata	Orchard grass	POA
Deschampsia cespitosa	Tufted hairgrass	POA
Elymus cinereus	Great Basin wildrye	POA
Elymus elymoides [Sitanion hystrix]	Bottlebrush squirrel-tail	POA
Elymus smithii [Agropyron smithii]	Western wheatgrass	POA

Scientific Name	Common Name	Family[3]
Elymus trachycaulus var. trachycaulus [Agropyron caninum]	Bearded wheatgrass	POA
Festuca idahoensis	Idaho fescue	POA
Glyceria striata	Fowl mannagrass	POA
Hordeum brachyantherum	Meadow barley	POA
Juncus balticus var. montanus	Baltic rush	JUN
Juncus tracyi	Tracy's rush	JUN
Leucopoa kingii	Spike-fescue	POA
Melica bulbosa	Oniongrass	POA
Muhlenbergia andina	Foxtail muhly	POA
Oryzopsis exigua	Little ricegrass	POA
Oryzopsis hymenoides	Indian ricegrass	POA
Phalaris arundinacea	Reed canarygrass	POA
Phleum alpinum	Alpine timothy	POA
Phleum pratense	Common timothy	POA
Poa fendleriana	Muttongrass	POA
Poa interior	Inland bluegrass	POA
Poa nervosa var. wheeleri	Wheeler's bluegrass	POA
Poa palustris	Fowl bluegrass	POA
Poa pratensis	Kentucky bluegrass	POA
Poa secunda		
var. elongata	Canby bluegrass	POA
var. secunda	Sandberg bluegrass	POA
Sphenopholis obtusata var. major	Wedgegrass	POA
Stipa nelsonii var. dorei	Nelson's needlegrass	POA
Trisetum spicatum	Spike trisetum	POA
Ferns and Fern Allies		
Cystopteris fragilis	Brittle bladder-fern	ASL
Equisetum laevigatum	Smooth scouring-rush	EQU
Equisetum variegatum	Northern scouring-rush	EQU

[3]Family acronyms are based on Weber (1982). Family taxonomy follows Dorn (1992).

Fauna

Rare Vertebrates

No federally listed Threatened or Endangered vertebrate species are known to occur in the Big Fall Creek potential SMA (WYNDD records; Garber 1995). Two USFS Region 4 Sensitive species are known from the potential SMA or from just outside its

boundaries. A small population of Colorado River cutthroat trout (Oncorhynchus clarki pleuriticus) is known from the lower reaches of Big Fall Creek. There is also one recent observation record of wolverine (Gulo gulo) from just east of the Big Fall Creek area (Figure 8). No other Sensitive animals are known from the immediate vicinity, although potential habitat may exist for North American lynx (Felis lynx canadensis).

Colorado River cutthroat trout (Oncorhynchus clarki pleuriticus)
Heritage Rank: G4T2T3/S2
Federal Status: USFS Region 4: Sensitive; USFS Region 2: Sensitive; USFWS: none (formerly C2).
Geographic Range: Historically, this subspecies was restricted to the Colorado River drainage from western Wyoming to New Mexico and Arizona (Behnke 1992). Native, pure-strain populations are currently restricted to scattered headwater streams of the upper Colorado and Green River drainages in Wyoming, Utah, and Colorado (Spahr et al. 1991; Baxter and Stone 1995).
Habitat: High elevation, cool, clear streams with stable, well-vegetated streambanks and a rubble-boulder substrate (Spahr et al. 1991; Baxter and Stone 1995).
Comments: Colorado River cutthroat trout were sampled in a recent fish survey between the confluence of Big Fall Creek and La Barge Creek and the La Barge Creek road crossing. No studies have been done to determine the genetic purity of cutthroats in the Big Fall Creek drainage (George Walker, BTNF, personal communication), although the taxon is known to co-occur with two introduced salmonids in the drainage.

Wolverine (Gulo gulo)
Heritage Rank: G4/S1
Federal Status: USFS Region 4: Sensitive; USFS Region 2: Sensitive; USFWS: none (formerly C2).
Geographic Range: Circumboreal, south in North America to Alaska, Canada, Oregon, California, central Idaho, northwestern Wyoming, and Colorado (Spahr et al. 1991).
Habitat: Prefers dense, high elevation coniferous forests, mostly in remote areas (Oakleaf et al. 1992). Individuals occupy large home ranges and may utilize low elevation riparian habitats in winter (Spahr et al. 1991).
Comments: Known from a 1978 observation record on Deadline Ridge, less than 2 miles from the northeast boundary of the potential SMA (Hoak et al. 1982).

Vertebrates of the Big Fall Creek Potential SMA

Vertebrate species have not been systematically inventoried in the Big Fall Creek Potential SMA. The following tentative species list is derived from literature sources (Baxter and Stone 1985, 1995; Clark and Stromberg 1987; Dorn and Dorn 1990; Oakleaf et al. 1992). Species for which suitable habitat is not present

in the potential SMA have been excluded from this list. Species indicated by "*" are known to occur within the proposed SMA based on observations by the author and reports on file at the Kemmerer Ranger District office.

Common Name	Scientific Name
Mammals	
Masked shrew	*Sorex cinereus*
Water shrew	*Sorex palustris*
Little brown myotis	*Myotis lucifugus*
Big brown bat	*Eptesicus fuscus*
* Pika	*Ochotona princeps*
Nuttall's cottontail	*Sylvilagus nuttallii*
Snowshoe hare	*Lepus americanus*
Least chipmunk	*Tamias minimus*
* Yellow-bellied marmot	*Marmota flaviventris*
Uinta ground squirrel	*Spermophilus armatus*
Golden-mantled ground squirrel	*Spermophilus lateralis*
* Red squirrel	*Tamiasciurus hudsonicus*
Northern pocket gopher	*Thomomys talpoides*
* Beaver	*Castor canadensis*
Deer mouse	*Peromyscus maniculatus*
Bushy-tailed woodrat	*Neotoma cinerea*
Southern red-backed vole	*Clethrionomys gapperi*
Heather vole	*Phenacomys intermedius*
Montane vole	*Microtus montanus*
Muskrat	*Ondatra zibethicus*
Western jumping mouse	*Zapus princeps*
* Porcupine	*Erethizon dorsatum*
* Coyote	*Canis latrans*
Red fox	*Vulpes vulpes*
Black bear	*Ursus americanus*
Long-tailed weasel	*Mustela frenata*
Mink	*Mustela vison*
Wolverine	*Gulo gulo*
Striped skunk	*Mephitis mephitis*
River otter	*Lutra canadensis*
Mountain lion	*Felis concolor*
Bobcat	*Felis rufus*
* Elk	*Cervus elaphus*
* Mule deer	*Odocoileus hemionus*
* Moose	*Alces alces*
Birds	
Canada goose	*Branta canadensis*
Green-winged teal	*Anas crecca*
* Mallard	*Anas platyrhynchos*
Blue-winged teal	*Anas discors*
Lesser scaup	*Aythya affinis*

Common Name	Scientific Name
Northern harrier	Circus cyaneus
* Red-tailed hawk	Buteo jamaicensis
Golden eagle	Aquila chrysaetos
American kestrel	Falco sparverius
Blue grouse	Dendragapus obscurus
Sora	Porzana carolina
Sandhill crane	Grus canadensis
* Killdeer	Charadrius vociferus
Willet	Catoptrophorus semipalmatus
* Spotted sandpiper	Actitis macularia
* Common snipe	Gallinago gallinago
Wilson's phalarope	Phalaropus tricolor
Mourning dove	Zenaida macroura
Northern saw-whet owl	Aegolius acadicus
Common nighthawk	Chordeiles minor
Broad-tailed hummingbird	Selasphorus platycercus
* Belted kingfisher	Ceryle alcyon
Red-naped sapsucker	Sphyrapicus nuchalis
Hairy woodpecker	Picoides villosus
Northern flicker	Colaptes auratus
Western wood-pewee	Contopus sordidulus
Willow flycatcher	Empidonax trailii
Cordilleran flycatcher	Empidonax occidentalis
Violet-green swallow	Tachycineta thalassina
Gray jay	Perisoreus canadensis
* Steller's jay	Cyanocitta stelleri
* Clark's nutcracker	Nucifraga columbiana
Black-billed magpie	Pica pica
* Common raven	Corvus corax
Mountain chickadee	Parus gambeli
Red-breasted nuthatch	Sitta canadensis
House wren	Troglodytes aedon
Marsh wren	Cistothorus palustris
* American dipper	Cinclus mexicanus
* Mountain bluebird	Sialia currucoides
Swainson's thrush	Catharus ustulatus
* American robin	Turdus migratorius
Yellow warbler	Dendroica petechia
Yellow-rumped warbler	Dendroica coronata
MacGillivray's warbler	Oporornis tolmiei
Common yellowthroat	Geothlypis trichas
Wilson's warbler	Wilsonia pusilla
Western tanager	Piranga ludoviciana
Lazuli bunting	Passerina amoena
Green-tailed towhee	Pipilo chlorurus
Chipping sparrow	Spizella passerina
Song sparrow	Melospiza melodia
Lincoln's sparrow	Melospiza lincolnii
White-crowned sparrow	Zonotrichia leucophrys

Common Name	Scientific Name
Dark-eyed junco	Junco hyemalis
Yellow-headed blackbird	Xanthocephalus xanthocephalus
Brewer's blackbird	Euphagus cyanocephalus
Cassin's finch	Carpodacus cassinii
Red crossbill	Loxia curvirostra
Pine siskin	Carduelis pinus

Reptiles and Amphibians

Boreal chorus frog	Pseudacris triseriata maculata
Wandering garter snake	Thamnophis elegans vagrans

Fish

* Colorado River cutthroat trout	Oncorhynchus clarki pleuriticus
* Rainbow trout (Genetic analysis at Univ. of Montana indicates that Rainbows at Big Fall Creek are hybrids involving Yellowstone cutthroat trout)	Oncorhynchus mykiss
Mountain whitefish	Prosopium williamsoni
* Brook trout	Salvelinus fontinalis

Geology and Soils

Big Fall Creek Springs is located at the head of Big Fall Creek and consists of at least eight separate thermal springs along a reach of approximately 200 feet (Breckinridge and Hinckley 1978). Waters issuing from these springs are 16° C (60.8° F) and contain 0.524 mg/L of total dissolved solids (Heasler 1983). These flows are accompanied by constant bubbling and a sulfurous odor (Breckinridge and Hinckley 1978). Additional springs on tributary branches of Big Fall Creek have cooler waters in the 8-9° C (46-48° F) range.

Extensive travertine terraces and low cliffs are present along a two mile stretch of Big Fall Creek below the springs. There is no evidence of current deposition of travertine in the watershed and many existing deposits appear to be deteriorating (Breckinridge and Hinckley 1978). The waterfalls for which Big Fall Creek is named are a result of the great number of travertine cliffs in the stream channel.

The thermal springs of Big Fall Creek issue from well indurated, medium-grained sandstones of the lower Triassic

Dinwoody Formation, stratigraphically located just above the contact with the Permian Phosphoria Formation (Hauf 1963; Breckinridge and Hinckley 1978). There are no obvious faults at the surface near the springs, suggesting that these thermal features are an example of a folded-controlled geothermal system (Roberts 1989).

Seven different geologic formations are exposed in the potential SMA, the result of thrust faulting typical of the Wyoming Range (Love and Christiansen 1985). The oldest formations are found along the slopes of Deadline Ridge and consist of black shales, dolomites, and grey limestones of the Permian Phosphoria, Wells, and Amsden formations. Progressively lower ridges and slopes have outcrops of dolomitic siltstones (Dinwoody Formation), quartz sandstones (Nugget Formation), siltstones and sandstones (Stump Formation), red sandy mudstones, sandstones, and chert-pebble conglomerates (Gannett Group) and black shales and fine-grained brown sandstones (Bear River Formation) (Love and Christiansen 1985).

For information on soil types in the potential SMA, consult Winthers and Davis (1993).

Cultural

Remnants of building foundations from an abandoned Civilian Conservation Corps camp are present between the La Barge Creek Road and the confluence of Big Fall Creek and La Barge Creek. No other historical or cultural sites are known within the potential SMA.

IMPACTS AND POSSIBLE CONFLICTS

The management emphasis in Special Management/Interest Areas is on protecting or enhancing the special interest values of the area (Andrews 1993). Other uses, including recreation and commodity development, are allowed when they do not conflict with these special interest values.

Mineral Resources

Most of the potential SMA is currently available for oil and gas leasing with standard stipulations. Two small areas at the upper and lower ends of Big Fall Creek are managed under no surface occupancy (NSO) restrictions to protect developed recreational sites. Many of the steep slopes bordering the watershed are also designated as "technical no surface occupancy" sites due to their unsuitable or unstable soils (USDA Forest Service 1989). Areas within the potential SMA identified as important elk calving areas have seasonal restrictions on mineral development activities (USDA Forest Service and USDI Bureau of Land Management 1988).

Under current management guidelines, areas designated DFC 10 (including most of the Big Fall Creek watershed) are available for the location, sale, and leasing of minerals and energy sources. New leases can be issued with appropriate stipulations for compatibility with other special values. If management of the entire potential SMA is changed to DFC 9A, minerals will still be available for new leasing but not for other mineral entry (USDA Forest Service 1989, p 223). Exploration and development would still be possible under existing leases with no surface occupancy requirements, provided that development activity is compatible with other values. If designated as a SMA, the Big Fall Creek area could be withdrawn from mineral entry in conjunction with Section 204 of the Federal Land Policy and Management Act of 1976 (PL 94-579) when withdrawal is necessary to protect the special values of the SMA (Andrews 1993).

Grazing

The Big Fall Creek watershed was managed as a sheep allotment until the late 1980s, when cattle grazing was established (G. Walker, personal communication). Due to siltation problems and trampling damage along the creek, the watershed was closed to grazing in 1992. A fence was installed at the lower end of Big Fall Creek (near the La Barge Creek Road) and several gap fences in the lower creek valley were built to prevent livestock from entering the mid to upper reaches of the creek. A rider is also employed in the summer to remove any stray livestock. Range condition, especially in wet meadow habitats, has improved greatly since livestock were excluded (G. Walker, personal communication), although evidence of past heavy grazing remains in the Kentucky bluegrass-dominated understory of most riparian community types.

Timber

Portions of several large clearcuts are present within the boundaries of the potential SMA. Nearly half of the area (approximately 1265 acres) is still forested, primarily by commercially valuable stands of subalpine fir, Engelmann spruce, and lodgepole pine. Under current management prescriptions, most of the potential SMA is available for timber harvest with an emphasis on enhancement of wildlife habitat and under conditions of favorable cost-benefit analysis (USDA Forest Service 1989). Small areas under DFC 9A management guidelines would largely be excluded from timber harvest. Standards for the management of SMAs allow for "vegetation manipulation" when necessary for the management of special values, but would require the withdrawal of forested stands from the BTNF suitable timber base (Andrews 1993).

Watershed Values

The potential SMA contains most of the Big Fall Creek drainage and the headwaters of Booth Creek. The Big Fall Creek watershed is of high value for its geothermal features and as habitat for wildlife and fish. Management to protect and enhance these watershed attributes should take precedence over other activities, including grazing, timber, and mineral development, in the potential SMA.

Recreation Values

The potential SMA is currently a popular area for car camping, hiking, fishing, and hunting. Under current management guidelines, the upper and lower ends of Big Fall Creek are managed with an emphasis on enhancing recreational values (USDA Forest Service 1989). Other parts of the potential SMA are currently managed to enhance wildlife populations while allowing multiple uses. Recreational activities are still allowed under SMA prescriptions, provided that such activities do not threaten the special values of the area.

In order to enhance recreational use while minimizing associated impacts, the Forest Service has constructed or plans to build picnic tables, fire pits and a parking area at the lower end of the Big Fall Creek watershed. Plans are also being made to establish dispersed campsites at the upper end of the creek and to improve the access road so as to reduce impacts from erosion and trampling in these high use areas (G. Walker, personal communication).

Wildlife and Plant Values

The Big Fall Creek potential SMA contains habitat for Payson's milkvetch (*Astragalus paysonii*) and Colorado River cutthroat trout (*Oncorhynchus clarki pleuriticus*), two USFS Region 4 Sensitive species. Potential habitat is also present for two other regionally sensitive species. Maintaining the habitat for these plants and animals is in keeping with the objectives for the establishment of the SMA and the direction of Forest Service Manual 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).

In addition to rare species, the potential SMA is also of significance for its fish resources. With 3000-5000 fish per mile, Big Fall Creek is one of the most productive streams on BTNF (G. Walker, personal communication). Much of the stream's fishery is based on exotic rainbow trout, first planted in 1954. The Big Fall Creek stock of rainbow trout is of particular

interest to fish managers because of the unusual propensity of adults to remain in the creek, rather than migrating downstream to larger water bodies. The Wyoming Game and Fish Department has expressed interest in using these fish to augment brood stock in other areas of the state (Laub 1991). Several improvements, including timber plunges, have been established at the lower end of Big Fall Creek to enhance the area as habitat for rainbow and cutthroat trout (G. Walker, personal communication).

The Big Fall Creek valley is considered to be important winter range for wildlife because the creek remains open year-round. The watershed is also known to be an important elk calving area (USDA Forest Service and USDI Bureau of Land Management 1988).

Special Management Area Values

Big Fall Creek was recommended for potential Wild and Scenic River designation based on its scenic values (Marsh 1991). No action has been taken on officially designating the creek as a Scenic River due to its small size and its better suitability for special management area designation.

Transportation Values

A dirt road parallels the east bank of Big Fall Creek for most of its length and leads to an old clear cut. This road is in poor condition in several areas, but is still passable to most high clearance vehicles. The road is valuable in providing access to the potential SMA, but is a significant source of erosion. Current management plans for the area call for upgrading this road to bring it up to current BTNF travel standards.

Closure of the road to automobile traffic (while keeping it available for foot, bicycle, or motorized non-automobile use) would better protect the resources of the potential SMA, but would restrict much of the recreational access encouraged by the area's DFC 9A management prescription.

The culvert on the La Barge Creek Road was damaged during the winter of 1994-95 and replaced with a concrete bridge in 1995. As a result, Big Fall Creek was returned to its original channel. This action is expected to improve the lower reach of the creek for fish (G. Walker, personal communication).

MANAGEMENT PRESCRIPTION

The Big Fall Creek potential SMA is located within Management Area 12 (La Barge Creek) of Bridger-Teton National Forest (USDA Forest Service 1989). The area is currently managed under specifications for Desired Future Conditions 9A and 10,

with focus on recreational site development and simultaneous development of resources, recreation, and support for wildlife species (USDA Forest Service 1989, pp. 221, 233, 317).

The management prescription for the area may need to be modified if a SMA is designated. Recreational activities and commodity uses currently allowed by DFC 9A or DFC 10 status may need to be controlled or modified in order to protect the geological, watershed, and biological values of the area. If an emphasis on recreation is to be maintained in the area, the management prescriptions under DFC class 2A (emphasizing non-motorized recreation) may be more compatible with the special values of the potential SMA.

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