

# Mason Dam Hydroelectric Project No. P-12686-001

## Study Plan 2

### Plant Association and Noxious Weed Survey

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Baker County Weed Control  
February 13, 2008

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## **Summary**

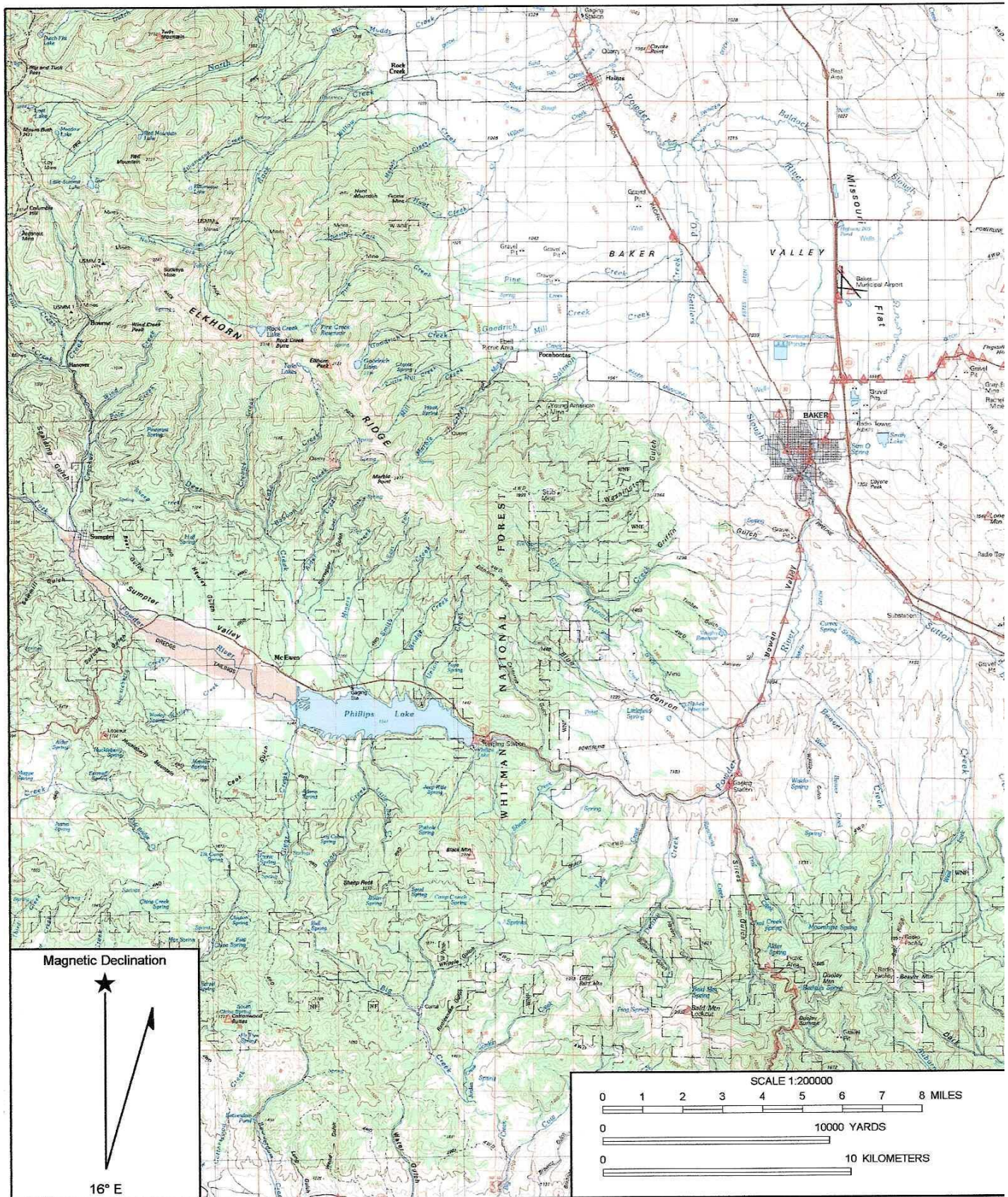
We surveyed for noxious weeds and other plants within the project boundary, consisting of 100 ft beyond the area that contains the powerhouse and tailrace facilities, and the substation to the interconnect with the Idaho Power transmission line. It also includes 50 ft on each side of the underground power line that will be placed in the Black Mountain Road right of way. As a precaution, we extended the survey boundary an additional 50 ft. The primary influence to vegetative change has been the Black Mountain road system that bisects the study area. We anticipate that invasives will continue to play a role in plant communities in the area for the foreseeable future.

We delineated three Plant Associations within the extended boundary. The first, and closest to the Powder River (see map), is the Ponderosa Pine – Snowberry Plant Association. It is approximately the first 800 ft of the proposed line. It is at mid-seral stage, with some increasers present. The only noxious weed invader we found within the survey area was Canada thistle (*Cirsium arvense*), a “B” listed weed in Baker County. The Ponderosa Pine – Idaho Fescue Plant Association is the next Plant Association, consisting of the straight stretch of road paralleling the unnamed Tributary (dewatered all summer) running into Phillips Reservoir. Canada thistle was also found in this Plant Association. The third plant association, consisting of the remainder of the site paralleling the unnamed tributary, on up to the Idaho Power Transmission Line. In addition to Canada thistle, we also found a few Scotch thistle plants, an “A” listed weed in Baker County. Canada thistle, Scotch thistle, and other noxious weeds of concern that may be found in the future will be treated by Baker County Weed Control using site-appropriate herbicides, timing, and rates. Treatment options will be coordinated with the US Forest Service.

## **Methods of Work**

Our objective was to measure the density and presence of individuals within a given area. Line transects provide the most efficient, cost-effective method to quantify this measurement. In June through August of 2007, we established 3 linear transects measuring 300 ft paralleling the Black Mountain County Road. We visited the site at two different dates (June and again in August) to better quantify all existing vegetation present. Intervals every 3 ft (100 total) were assessed for closest annual and perennial grasses/sedges, noxious weeds, annual and perennial forbs, shrubs, and trees present. Estimates of percent cover of each species were noted at each interval. The means of each species percent cover estimates were compiled and noted on the Plant Association lists. Noxious weeds are defined as any plants listed on Baker County's noxious weed list. Identification references for existing vegetation are listed in the bibliography.





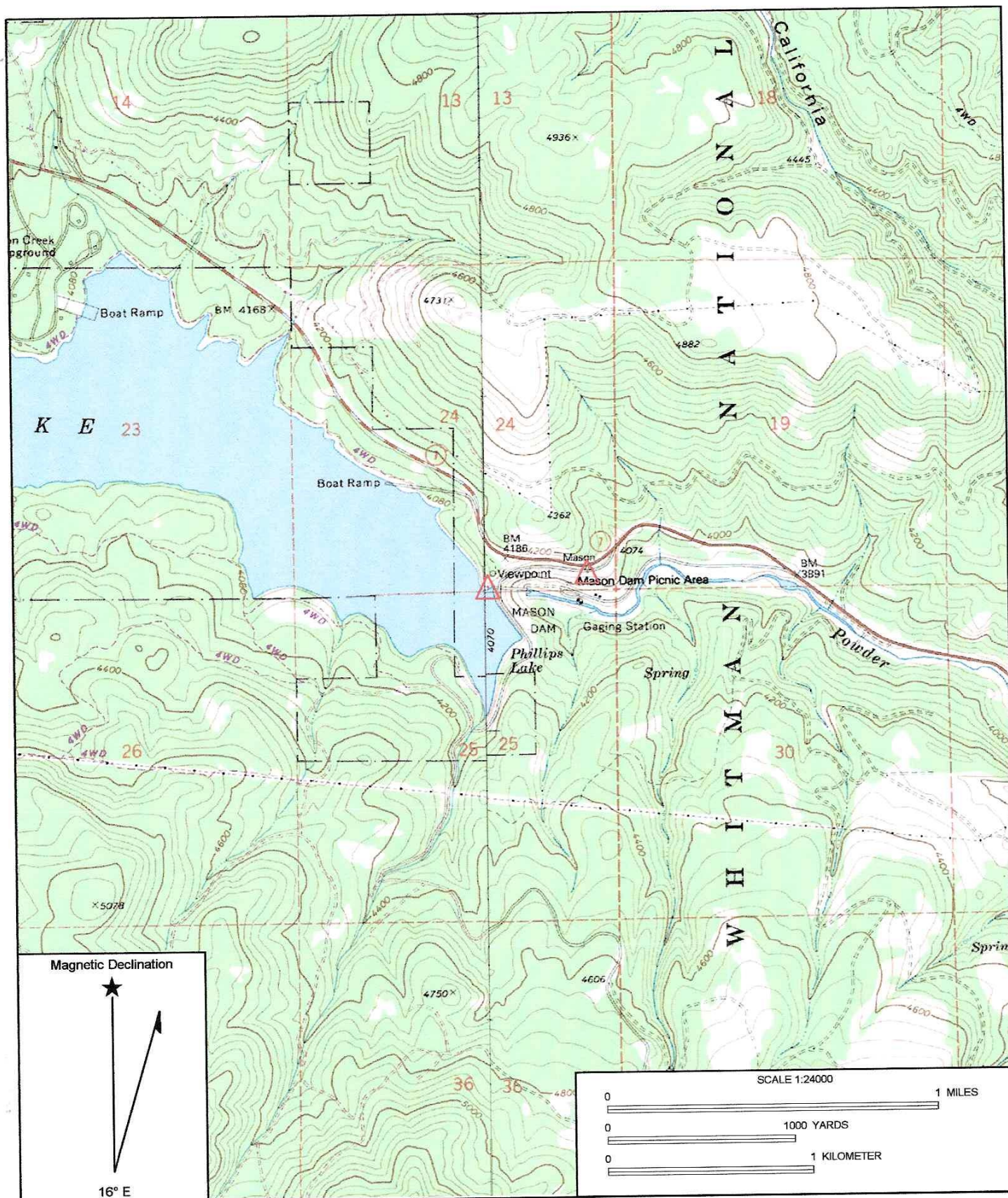
Name: BAKER  
 Date: 1/22/2008  
 Scale: 1 inch equals 3.157 miles

Location: 044° 43' 23.05" N 117° 58' 55.56" W NAD 27  
 Caption: Mason Dam Location

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Map showing relationship of Phillips Lake/Mason Dam area  
 to Baker City





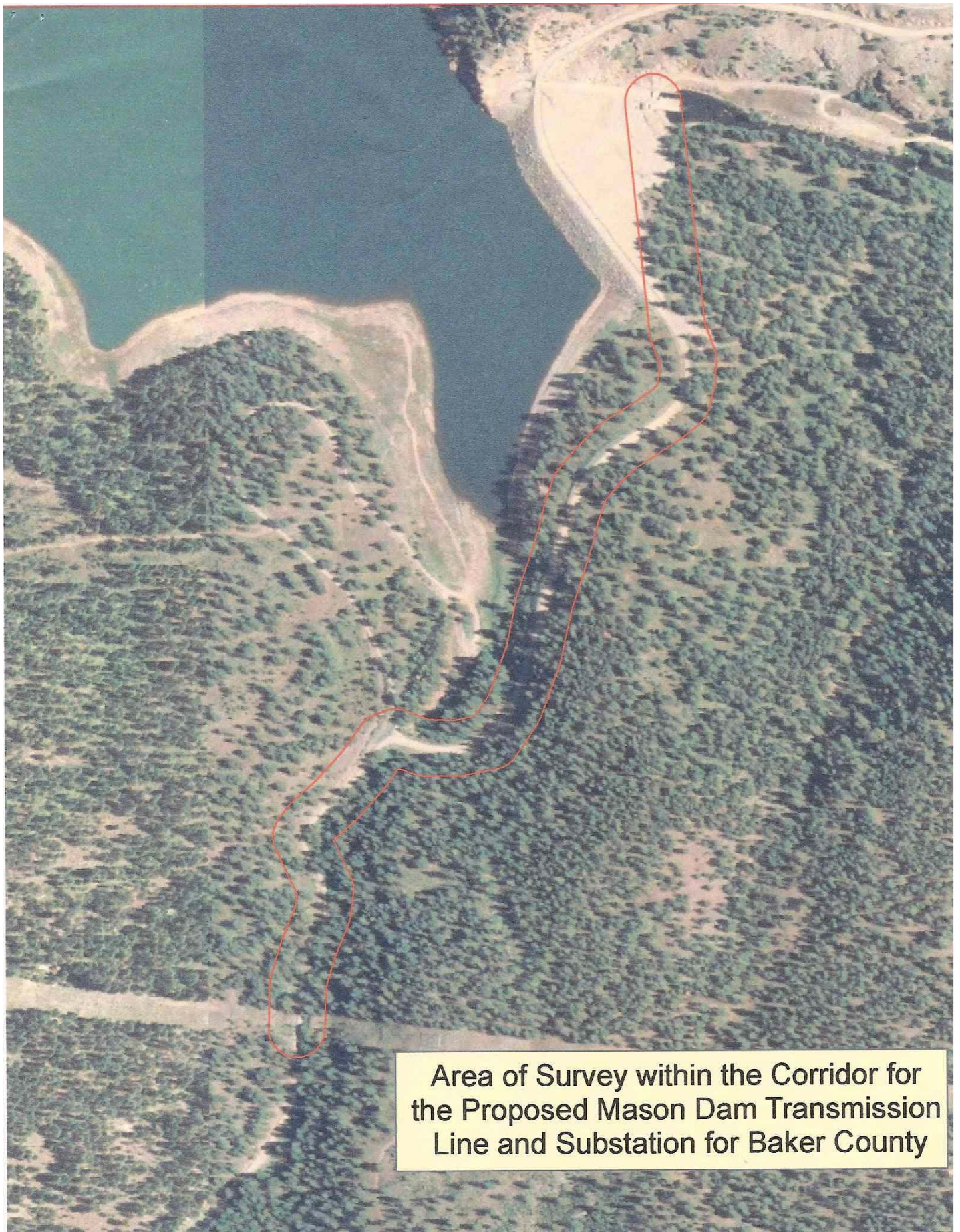
Name: BLUE CANYON  
 Date: 1/22/2008  
 Scale: 1 inch equals 2000 feet

Location: 044° 40' 19.93" N 117° 59' 54.29" W NAD 27  
 Caption: Mason Dam Site

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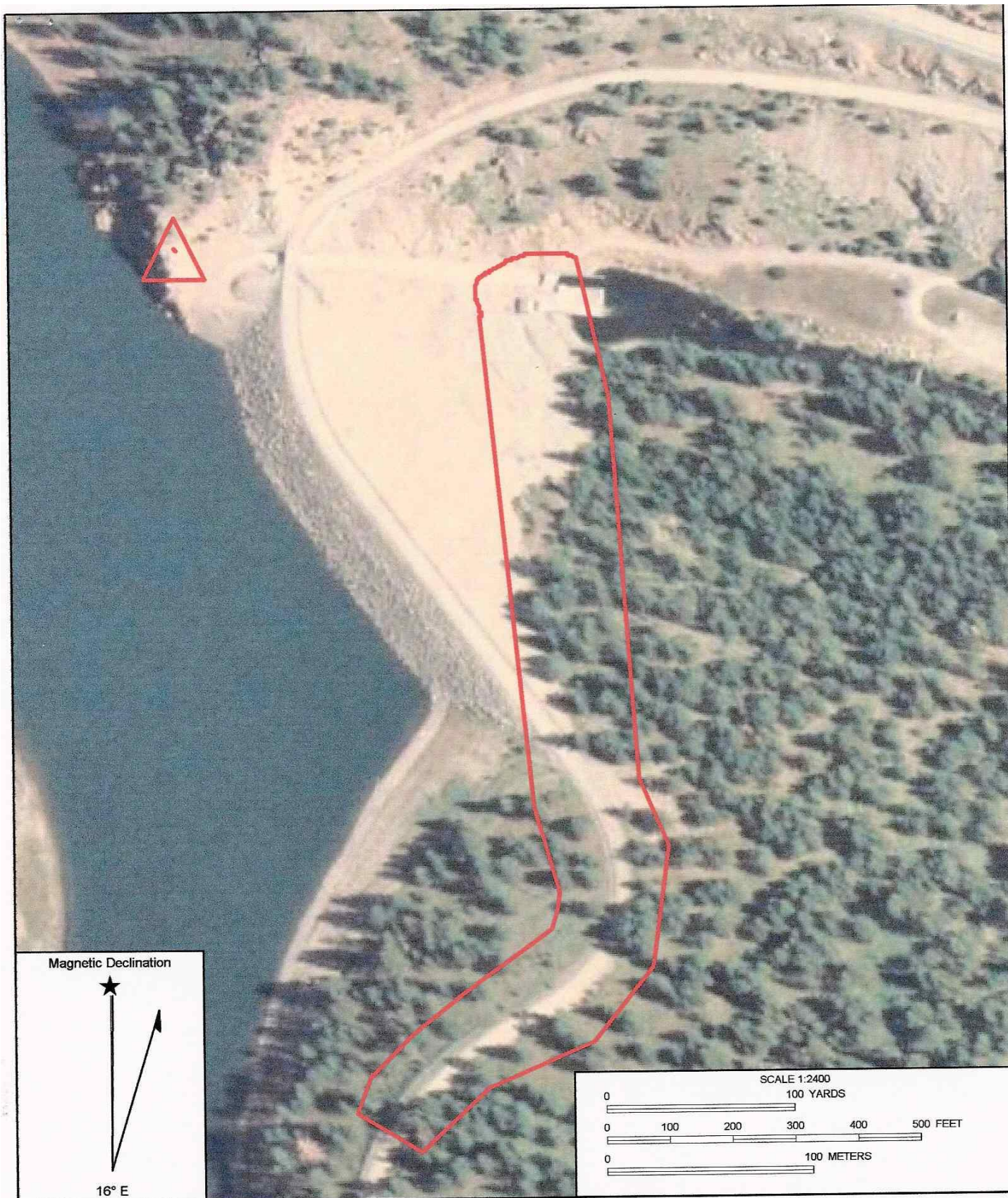
Map of Mason Dam area.





Area of Survey within the Corridor for  
the Proposed Mason Dam Transmission  
Line and Substation for Baker County





Name: BLUE CANYON SW, OR  
Date: 1/22/2008  
Scale: 1 inch equals 200 feet

Location: 044° 40' 17.41" N 117° 59' 51.90" W NAD 27  
Caption: PIPO Plant Association  
SYAL

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Plant Association Area 1

# Proposed Transmission Line and Substation

## Mason Dam Site Plant Association and Existing Vegetation

### **1. Ponderosa Pine - Snowberry Plant Association**

Description: Approximately the first 800 ft of the proposed line. (See Map)

<b><u>Trees Present</u></b>	<b><u>Code</u></b>	<b><u>Cover Estimate %</u></b>
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Ponderosa Pine - <i>Pinus Ponderosa</i>	PIPO	45
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Douglas Fir – <i>Pseudotsuga menziesii</i>	PSME	3
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Western Juniper – <i>Juniperus occidentalis</i>	JUOC	2
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<b><u>Shrubs present:</u></b>	<b><u>Code</u></b>	<b><u>Cover Estimate %</u></b>
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Snowberry - <i>Symphoricarpus albus</i>	SYAL	35
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Oregon Grape – <i>Berberis repens</i>	BERE	12
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Gray Rabbitbrush – <i>Chrysothamnus vicidiflorus</i>	CHVI	5
--	------	---

Sticky Currant – <i>Ribes viscosissimum</i>	RIVI	3
---	------	---

Woods Rose – <i>Rosa woodsii</i>	ROWO	2
----------------------------------	------	---

<b><u>Forbs present:</u></b>	<b><u>Code</u></b>	<b><u>Cover Estimate %</u></b>
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Yarrow – <i>Achellia millefolium</i>	ACMI	4
--------------------------------------	------	---

Heartleaf arnica – <i>Arnica cortifolia</i>	ARCO	4
---	------	---

Lupine species - <i>Lupinus spp.</i>	LUPIN	1
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Wild iris – <i>Iris missouriensis</i>	IRMO	1
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Blue Camas – <i>Camissia quamash</i>	CAQU	1
--------------------------------------	------	---

Woods Strawberry – <i>Fragaria virginiana</i>	FRVI	1
---	------	---

Slender Cinquefoil – <i>Potentilla gracilis</i>	POGR	1
---	------	---

Buttercup – <i>Ranunculus spp.</i>	RANUN	1
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Buckwheat – <i>Eriogonum spp.</i>	ERIO	1
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<b><u>Grasses/Sedges present:</u></b>	<b><u>Code</u></b>	<b><u>Cover Estimate %</u></b>
---------------------------------------	--------------------	--------------------------------

Idaho Fescue – <i>Festuca idahoensis</i>	FEID	30
--	------	----

Pinegrass – <i>Calamagrostis rubescenes</i>	CARU	25
---	------	----

Bluebunch wheatgrass – <i>Pseudoregnaria spicata</i>	PSSP	20
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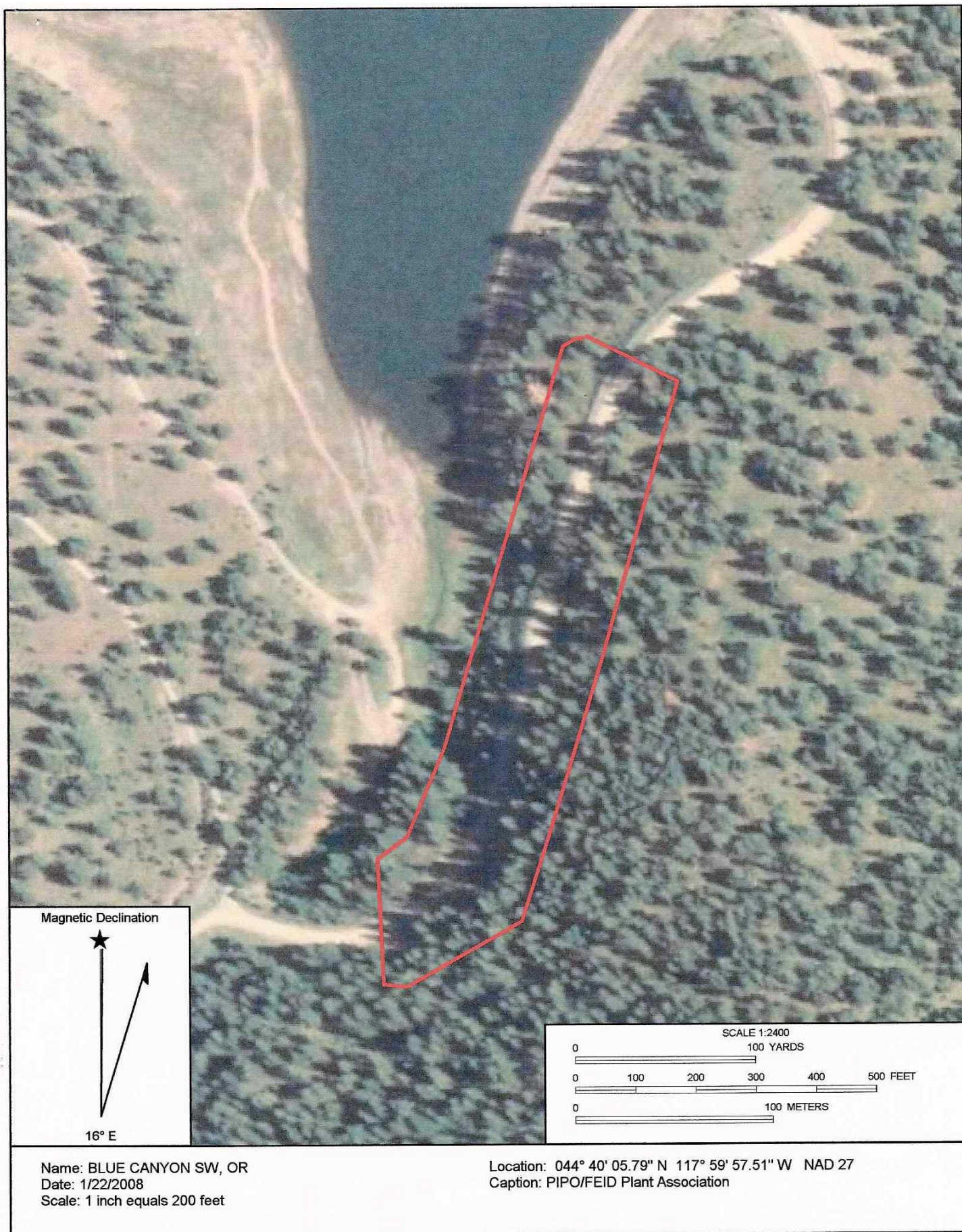
Kentucky Bluegrass – <i>Poa pratensis</i>	POPR	10
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Cheatgrass – <i>Bromus tectorum</i>	BRTE	10
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Elk Sedge – <i>Carex geyeri</i>	CAGE	4
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Prairie Junegrass – <i>Koeleria cristata</i>	KOCR	4
California Brome – <i>Bromus carinatus</i>	BRCA	4
Orchardgrass – <i>Dactylis glomerata</i>	DAGL	3
<b><u>Noxious weeds present:</u></b>	<b><u>Code</u></b>	<b><u>Cover Estimate %</u></b>
Canada thistle – <i>Cirsium arvense</i>	CIAR	2





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Plant Association Area 2



## **2. Ponderosa Pine - Idaho Fescue Plant Association**

Description: The straight stretch paralleling the unnamed tributary running into Phillips Reservoir near the Dam. (See Map)

<b><u>Trees present:</u></b>	<b><u>Code</u></b>	<b><u>Cover Estimate %</u></b>
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Ponderosa Pine - <i>Pinus Ponderosa</i>	PIPO	65
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Douglas Fir – <i>Pseudotsuga menziesii</i>	PSME	10
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<b><u>Shrubs present:</u></b>	<b><u>Code</u></b>	<b><u>Cover Estimate %</u></b>
-------------------------------	--------------------	--------------------------------

Snowberry - <i>Symphoricarpus albus</i>	SYAL	35
---	------	----

Oregon Grape – <i>Berberis repens</i>	BERE	12
---------------------------------------	------	----

Woods Rose – <i>Rosa woodsii</i>	ROWO	2
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Sticky Currant – <i>Ribes viscosissimum</i>	RIVI	1
---	------	---

<b><u>Forbs Present:</u></b>	<b><u>Code</u></b>	<b><u>Cover Estimate %</u></b>
------------------------------	--------------------	--------------------------------

Yarrow – <i>Achellia millefolium</i>	ACMI	10
--------------------------------------	------	----

Heartleaf arnica – <i>Arnica cortifolia</i>	ARCO	8
---	------	---

Lupine species - <i>Lupinus</i> spps.	LUPIN	3
---------------------------------------	-------	---

Blue Camas – <i>Camissia quamash</i>	CAQU	1
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Woods Strawberry – <i>Fragaria virginiana</i>	FRVI	1
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Buttercup – <i>Ranunculus</i> spps.	RANUN	1
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Buckwheat – <i>Eriogonum</i> spps.	ERIO	1
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<b><u>Grasses/Sedges present:</u></b>	<b><u>Code</u></b>	<b><u>Cover Estimate %</u></b>
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Idaho Fescue – <i>Festuca idahoensis</i>	FEID	40
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Pinegrass – <i>Calamagrostis rubescenes</i>	CARU	25
---	------	----

Cheatgrass – <i>Bromus tectorum</i>	BRTE	8
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Bluebunch wheatgrass – <i>Pseudoregnaria spicata</i>	PSSP	5
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Elk Sedge – <i>Carex geyeri</i>	CAGE	5
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Kentucky Bluegrass – <i>Poa pratensis</i>	POPR	5
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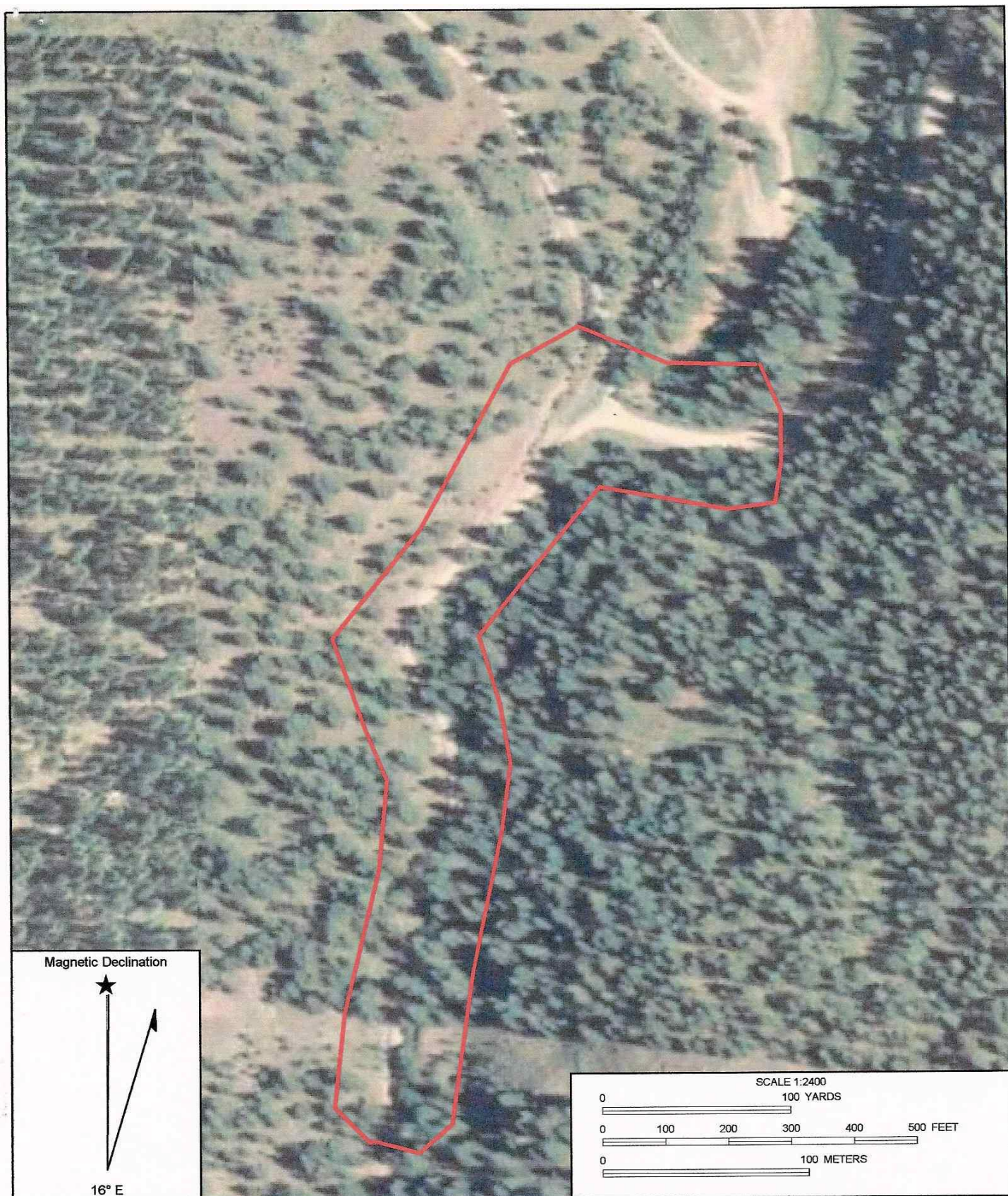
Prairie Junegrass – <i>Koeleria cristata</i>	KOCR	4
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California Brome – <i>Bromus carinatus</i>	BRCA	4
--	------	---

Orchardgrass – <i>Dactylis glomerata</i>	DAGL	3
--	------	---

<b><u>Noxious weeds:</u></b>
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Canada thistle – <i>Cirsium arvense</i>	CIAR	2
---	------	---



Name: BLUE CANYON SW, OR  
Date: 1/22/2008  
Scale: 1 inch equals 200 feet

Location: 044° 39' 57.24" N 118° 00' 05.56" W NAD 27  
Caption: PSME/CARU Plant Association

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Plant Association Area 3

### **3. Douglas Fir - Pinegrass Plant Association**

Description: The remainder of the site paralleling the unnamed tributary on up to the cattle guard. (See Map)

<b><u>Trees present:</u></b>	<b><u>Code</u></b>	<b><u>Cover Estimate %</u></b>
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Douglas Fir – <i>Pseudotsuga menziesii</i>	PSME	45
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Ponderosa Pine - <i>Pinus Ponderosa</i>	PIPO	20
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<b><u>Shrubs present:</u></b>	<b><u>Code</u></b>	<b><u>Cover Estimate %</u></b>
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Snowberry - <i>Symphoricarpus albus</i>	SYAL	35
---	------	----

Oregon Grape – <i>Berberis repens</i>	BERE	12
---------------------------------------	------	----

Woods Rose – <i>Rosa woodsii</i>	ROWO	2
----------------------------------	------	---

Sticky Currant – <i>Ribes viscosissimum</i>	RIVI	1
---	------	---

<b><u>Forbs Present:</u></b>	<b><u>Code</u></b>	<b><u>Cover Estimate %</u></b>
------------------------------	--------------------	--------------------------------

Yarrow – <i>Achellia millefolium</i>	ACMI	20
--------------------------------------	------	----

Heartleaf arnica – <i>Arnica cortifolia</i>	ARCO	10
---	------	----

Lupine species - <i>Lupinus</i> spp.	LUPIN	10
--------------------------------------	-------	----

Longstalked clover – <i>Trifolium longipes</i>	TRLO	2
--	------	---

Woods Strawberry – <i>Fragaria virginiana</i>	FRVI	1
---	------	---

Buttercup – <i>Ranunculus</i> spp.	RANUN	1
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<b><u>Grasses/Sedges present:</u></b>	<b><u>Code</u></b>	<b><u>Cover Estimate %</u></b>
---------------------------------------	--------------------	--------------------------------

Pinegrass – <i>Calamagrostis rubescenes</i>	CARU	25
---	------	----

Elk Sedge – <i>Carex geyeri</i>	CAGE	15
---------------------------------	------	----

Idaho Fescue – <i>Festuca idahoensis</i>	FEID	10
--	------	----

Bluebunch wheatgrass – <i>Pseudoregnaria spicata</i>	PSSP	5
--	------	---

Kentucky Bluegrass – <i>Poa pratensis</i>	POPR	5
---	------	---

Cheatgrass – <i>Bromus tectorum</i>	BRTE	5
-------------------------------------	------	---

Prairie Junegrass – <i>Koeleria cristata</i>	KOCR	4
--	------	---

California Brome – <i>Bromus carinatus</i>	BRCA	4
--	------	---

Orchardgrass – <i>Dactylis glomerata</i>	DAGL	3
--	------	---

<b><u>Noxious weeds:</u></b>		
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Canada thistle – <i>Cirsium arvense</i>	CIAR	2
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Scotch thistle – <i>Onopordum ancathium</i>	ONAN	2
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## **STUDY PLAN 2:   Vegetation, Rare Plant and Noxious Weeds**

These studies were requested by FERC and US Forest Service. In consultation with US Fish and Wildlife and the Oregon Dept. of Fish and Wildlife these issues also arose.

### *2.0   Introduction*

Baker County filled for their preliminary license and received it on October 8, 2003 for the 3 MW Mason Dam Hydroelectric Project (Project No. P-12058-002). The project is run of release meaning Baker County does not and will not have any control over the release of the water at Mason Dam. The Bureau Of Reclamation and Baker Valley Irrigation District have control of the release of water and will not change water flows at Baker County's request.

The project consists of two small turbines that will be housed in a power plant at the base of Mason Dam. The power generated will be sent approximately 1 mile to an existing Idaho Power Company 138kv transmission line. The 34.5kv power line connecting the power plant to the substation and then to the 138kv transmission line will be buried in the Black Mountain Road right of way.

The project boundary consists of 100 feet beyond the area that contains the powerhouse and tailrace facilities, and the substation to the interconnect with IPC transmission line. It also includes 50 feet on each side of the underground power line that will be placed in the Black Mountain Road right of way.

### *2.1   Goals and Objectives*

The goal of this study is to evaluate the effects of project construction, operation and maintenance and other related activities on the distribution and composition of botanical resources, including wetland and riparian habitats, rare plants, and noxious weeds, in the project area. The objectives of the study are to:

1. Identify, describe, classify, and delineate land map vegetation cover types on a map. Describe each cover type by species composition, successional stage, and aerial extent (acreage). Wetland classifications should distinguish the degree of inundation (seasonally flooded, permanently flooded) in areas affected by project construction, operation and maintenance.
2. Determine the extent and relative quality of wetlands and riparian habitat in the tailrace, along the Powder River and in areas that would be affected by project construction, operation and maintenance.
3. Determine the presence and distribution of rare plants and noxious weeds within the influence of project construction, operation and maintenance activities through ground truth mapping efforts.
4. Identify project-related actions that may influence the distribution of wetlands, riparian habitat, rare plants and noxious weeds.
5. After collection of the above information is complete prepare a report that includes the above mapping effort, and identifies, describes, and assesses the extent to which project-related actions and activities may affect riparian and

wetland habitats (and species dependent on these habitats), rare plants, and noxious weeds.

The project is proposed to work primarily in areas that have previously been disturbed. The goal to protect vegetation and rare plants and to control noxious weeds can be accomplished with a compilation of known and gathered data.

## *2.2 Relevant Resource Management Goals*

All resource agencies are responsible for the protection of sensitive or threatened and endangered species. In making its license decision, the Commission must equally consider the environmental, recreational, fish and wildlife, and other non-developmental values of the project, as well as power generation. Any license issued shall be best adapted to a comprehensive plan for improving or developing a waterway for all beneficial public uses.

Wetlands, riparian habitat, rare plant communities, and invasive and noxious weeds are resources of particular interest because of their rarity and/or ecological functions. Ensuring that environmental measures pertaining to these resources are considered relevant to the Commission's public interest determination.

Control of noxious weeds is a priority in Baker County and we have a Weed Department that works with all resource agencies to formulate plans and control noxious weeds.

## *2.3 Background and Existing Information*

Information on botanical resources in the following attachments:

1. A list of federally designated and special status species that have been documented or may occur in the Wallowa-Whitman National Forest or Powder River Subbasin. (Attachment A)
2. A list of state and federal special status plant species found in the Upper Powder River Subbasin. (Attachment B)
3. A map of wetland and deep-water habitats in the State of Oregon. (Attachment C)
4. A list of noxious weeds designated in the Baker County Noxious Weed Rating System. (Attachment D)

While this information is useful in narrowing the scope of the requested studies, we agree that an assessment of the area within the project boundary is necessary. As the project boundary and work area are all to be contained within previously disturbed areas, assessment for special status species, rare plants, wetlands and other types of vegetation can be accomplished in a cost effective manner. The issues associated with invasive and noxious weeds will be mitigated with effective baseline data, revegetation of disturbed areas and control of post construction weeds during the life of the project. Baker County intends to work with all agencies to identify and mitigate these issues.

## *2.4 Project Nexus*

Project related activities, especially ground disturbing activities, related to construction of powerhouse, power lines and substation, could adversely affect wetland and riparian habitats and their associated wildlife and botanical resources. These could include special status species, and rare plant communities, through direct loss, disturbance or habitat alterations. If potential effects on these resources are identified, environmental measures may be developed to reduce or eliminate these effects. Baker County agrees that there is a project nexus within close proximity to the Project Boundary.

## 2.5 *Study Area and Methods*

A vegetation, rare plant, and noxious weed survey in the Mason Dam project area will identify the vegetation type, rare plant and noxious weed species, and their distribution and abundance in the project area. The following sections describe the planned survey.

### 2.5.1 Study Area

The study area is defined in section 2.0 as the project boundary.

### 2.5.2 Survey Methodology

The rare plant and noxious weed survey of the Mason Dam study area will be performed using commonly accepted botanical survey methods to systematically locate and identify rare plant and noxious weed presence and distribution. Survey methods are straightforward, and involve visually searching the study area for the presence of rare plants and noxious weeds. The timing of field surveys will be concurrent with the flowering times and identifiability of potential plant and weed species. A spreadsheet will be formulated by the surveyor of the plant and weed species found on attachments A, B, and D of their flowering and identifiability times prior to the field survey. Findings will be documented on Forest Service forms TES Plant Element Occurrence field forms (Attachment E) and TES Plant Survey field form (Attachment F) for the plant survey. Findings for the weed survey will be documented on Forest Service Invasives Plant field form (Attachment G) and Rangeland General Form (Attachment H). The following Forest Service reference guides will be used The Threatened, endangered and Sensitive Plants Survey field guide, The Threatened, Endangered and Sensitive Plant Element Occurrence field guide, and The Invasive Plant Inventory, Monitoring and Mapping Protocol field guide.

The vegetation survey of the Mason Dam study area will be done by using existing Forest Service GIS vegetation data. From this data, base maps will be created of the study area. Field sampling points will be selected from these maps. Each major cover type will be sampled. The general locations for each sample point will be assigned prior to fieldwork; exact location will be determined in the field to ensure that sample points are representative of the cover type. Major vegetative and structural characteristics will be documented using a plotless, rapid vegetation assessment technique. The following data will be collected at each point:

- Universal Transverse Mercator (UTM) coordinates
- Representative photograph(s)
- Species and estimated cover for dominant and subdominant trees and shrubs
- Estimated diameter at breast height (DBH) of dominant trees, or height of dominants in non-forested areas
- Plant community type

- Plant association, if defined for the habitat
- Estimated local density of snags and coarse woody debris
- Potential for or occurrence of special status species
- At wetland sites, observe source(s) of wetland hydrology
- At wetland sites, hydrogeomorphic classification
- At wetland sites, classification of dominant wetland types

Revisions to the draft maps will be digitized and final GIS vegetation coverage will be prepared, with all sampling information included in a layer of the GIS map data. The total acreage of each cover type will also be determined.

The focus of the rare plant survey will be on those listed on the State and Federal special status plant species in the Powder River Subbasin as listed in attachments A and B.

The noxious weed survey will be focused on Baker County Weed Control Noxious Weed List (see attachment D). Baker County's list is composed of four major classifications; the Watch List, the "A" List, the "B" List, and the "C" list.

The Watch List is defined as small, isolated and identified sites of very high concern. These sites are designated for periodic treatment by the Baker County Weed Supervisor. At this time, there are no known sites of this classification of noxious weeds within the project boundary.

The second classification, known as the "A" List, is defined as those noxious weeds that are found in limited numbers and distribution, but have a high likelihood of detrimentally affecting Baker County's agriculture and environment. The Baker County Board of Commission and the County Weed Board has designated these weeds "Mandatory Control" countywide.

The third classification, known as the "B" List, is defined as those weeds that are widespread, but still of economic and environmental concern throughout the county.

The fourth and final classification, known as the "C" list, is composed of weeds that are widespread and of moderate concern. This classification includes species that are ubiquitous throughout the county, and therefore are of lesser priority than the above-defined classifications.

Rare plants and noxious weeds will be identified using the Flora of the Pacific Northwest (Hitchcock and Cronquist, 1973) and Weeds of the West (Western Society of Weed Science, 2000).

Once identified, sites for each species will be quantifiably surveyed using the measurement of Density (the number of individual plants in a given unit of area) and Frequency (the number of species within a given site) using a Line-Transect methodology as outlined in Measurement of Terrestrial Vegetation (Bonham, 1989). Individual sites where species are located will be mapped using GPS and ArcView® technology. Given the modest size of the study area, this process will be a simple but highly effective method at defining the amount of individual plants within each species present in the study area.

### 2.5.3 Products

With this information:

1. A noxious weed report will be prepared by Baker County Weed Control that includes the above mapping effort. This report will include a description of the methodology used, dates of surveys, identify, describe and assess the extent to which project-related activities may potentially affect all noxious weeds present within the study area, and include the survey forms as an appendix to the report. In addition, this report will also outline effective noxious weed management strategies to address and alleviate project-related actions. The maps included in the noxious weed report should show any concentrations of weeds in relationship to any project facilities and disturbance areas as well as roads and trails.
2. A rare plant report will be prepared that discusses the methodology used, dates of surveys, the rare species found, their distribution, habitat associations, and include survey forms as an appendix to the report. If results indicate that there is a demonstrated impact or likely impact, a management plan will be developed to include some combination of avoiding impacts, protecting resources, and conducting mitigation as needed. The report should include maps showing any rare plants in relationship to any project facilities and disturbance as well as roads and trails.
3. A vegetation coverage report that will include study objectives, study area, methods, tabulated results, descriptions of habitats, and electronic GIS files of vegetation cover types and sample points.

### 2.6 *Level of Effort and Cost*

A literature review to obtain information on rare and special status species will need to be done. The mapping and survey efforts can be completed within one year.

Technicians would be expected to spend approximately one to two days to assess and review ground vegetation. With the relative low acreage of the project boundary and working in disturbed areas, aerial photos would be of little use. Baker County intends to contract with local agency personnel to do the appropriate mapping, assessment and report preparations.

It is proposed this study will begin with the field season starting in May 1, 2007 and ending in October 31, 2007. A draft report will be submitted by December 15, 2007. Comments will be due by January 15, 2008. The final report will be completed by February 15, 2008.



## Attachment A

### FEDERALLY LISTED THREATENED, ENDANGERED, PROPOSED, CANDIDATE SPECIES AND SPECIES OF CONCERN WHICH MAY OCCUR WITHIN BAKER COUNTY, OREGON

#### LISTED SPECIES<sup>1/</sup>

##### Birds

Bald eagle <sup>2/</sup>	<i>Haliaeetus leucocephalus</i>	T
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##### Fish

Bull trout (Columbia River Basin) <sup>3/</sup>	<i>Salvelinus confluentus</i>	CH T
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##### Plants

Howell's spectacular thelypody <sup>4/</sup>	<i>Thelypodium howellii</i> ssp. <i>Spectabilis</i>	T
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#### PROPOSED SPECIES

None

#### CANDIDATE SPECIES<sup>5/</sup>

##### Birds

Yellow-billed cuckoo	<i>Coccyzus americanus</i>	
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##### Amphibians and Reptiles

Columbia spotted frog	<i>Rana luteiventris</i>	
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##### Plants

Slender	moonwort <i>Botrychium lineare</i>	
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#### SPECIES OF CONCERN

##### Mammals

Pygmy rabbit	<i>Brachylagus idahoensis</i>	
Pale western big-eared bat	<i>Corynorhinus townsendii pallescens</i>	
California wolverine	<i>Gulo gulo luteus</i>	
Silver-haired bat	<i>Lasionycteris noctivagans</i>	
Small-footed myotis (bat)	<i>Myotis ciliolabrum</i>	
Long-eared myotis (bat)	<i>Myotis evotis</i>	
Fringed myotis (bat)	<i>Myotis thysanodes</i>	
Long-legged myotis (bat)	<i>Myotis volans</i>	
Yuma myotis (bat)	<i>Myotis yumanensis</i>	
California bighorn	<i>Ovis canadensis californiana</i>	
Preble's shrew	<i>Sorex preblei</i>	

##### Birds

Northern goshawk	<i>Accipiter gentilis</i>	
Western burrowing owl	<i>Athene cunicularia hypugea</i>	
Ferruginous hawk	<i>Buteo regalis</i>	
Greater sage-grouse	<i>Centrocercus urophasianus</i>	
Olive-sided flycatcher	<i>Contopus cooperi</i>	
Willow flycatcher	<i>Empidonax trailli adastus</i>	
Yellow-breasted chat	<i>Icteria virens</i>	
Lewis' woodpecker	<i>Melanerpes lewis</i>	
Mountain quail	<i>Oreortyx pictus</i>	
White-headed woodpecker	<i>Picoides albolarvatus</i>	

##### Amphibians and Reptiles

Tailed frog	<i>Ascaphus truei</i>	
Northern sagebrush lizard	<i>Sceloporus graciosus graciosus</i>	

##### Fishes

Interior redband trout	<i>Oncorhynchus mykiss gibbsi</i>	
------------------------	-----------------------------------	--

##### Plants

Wallowa ricegrass	<i>Achnatherum wallowaensis</i>	
Upward-lobed moonwort	<i>Botrychium ascendens</i>	
Crenulate grape-fern	<i>Botrychium crenulatum</i>	
Mountain grape-fern	<i>Botrychium montanum</i>	
Twin spike moonwort	<i>Botrychium paradoxum</i>	
Stalked moonwort	<i>Botrychium pedunculatum</i>	
Clustered lady's-slipper	<i>Cypripedium fasciculatum</i>	

Cronquist's stickseed  
Red-fruited desert parsley  
Cusick's lupine  
Oregon semaphore grass  
Snake River goldenweed  
Biennial stanleya

*Hackelia cronquistii*  
*Lomatium erythrocarpum*  
*Lupinus lepidus* var. *cusickii*  
*Pleuropogon oregonus*  
*Pyrrocoma radiata*  
*Stanleya confertiflora*

(E) - Listed Endangered (T) - Listed Threatened (CH) - Critical Habitat has been designated for this species

(PE) - Proposed Endangered (PT) - Proposed Threatened (PCH) - Critical Habitat has been proposed for this species

Species of Concern - Taxa whose conservation status is of concern to the Service (many previously known as Category 2 candidates), but for which further information is still needed.

\* Consultation with NOAA's National Marine Fisheries Service may be required.

<sup>1/</sup> U.S. Department of Interior, Fish and Wildlife Service, October 31, 2000, Endangered and Threatened Wildlife and Plants, 50 CFR 17.11 and 17.12

<sup>2/</sup> Federal Register Vol. 60, No. 133, July 12, 1995, - Final Rule - Bald Eagle

<sup>3/</sup> Federal Register Vol. 63, No. 111, June 10, 1998, Final Rule - Columbia River and Klamath River Bull Trout

<sup>4/</sup> Federal Register Vol. 64, No. 101, May 26, 1999, Final Rule - *Thelypodium howellii* ssp. *spectabilis*

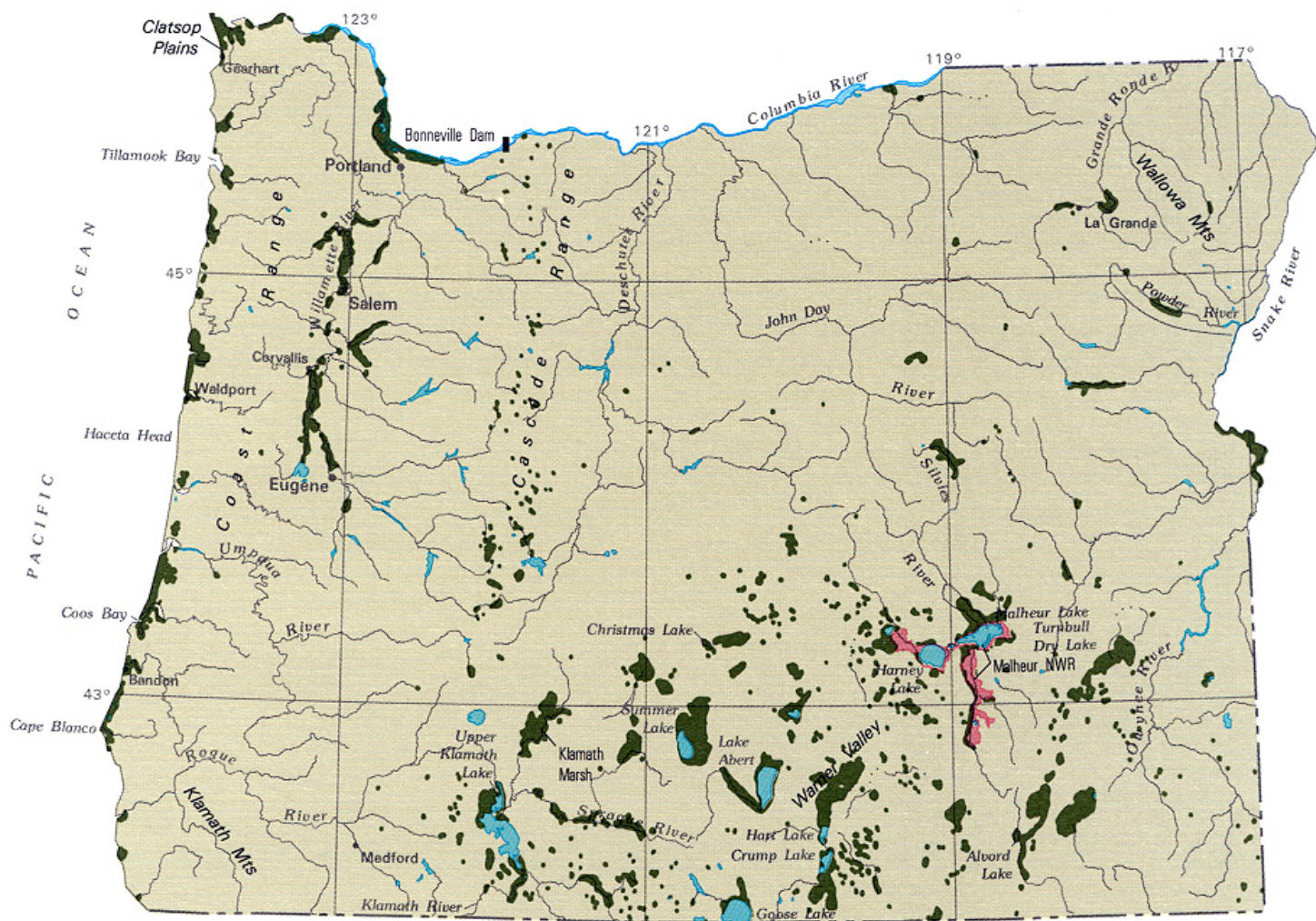
<sup>5/</sup> Federal Register Vol. 69, No. 86, May 4, 2004, Notice of Review - Candidate or Proposed Animals and Plants

**Attachment B**  
**State and Federal Special Status Plant Species in the Powder River**  
**Subbasin**

*Table from Powder River Subbasin Plan (10)*

<b>Common Name</b>	<b>Scientific Name</b>	<b>Federal Status</b>	<b>State Status</b>	<b>Documented Locations (drainages)</b>
Upward-lobed moonwort	<i>Botrychium ascendens</i>	Species of Concern	Candidate Species	Powder, Upper John Day
crenulate moonwort	<i>Botrychium crenulatum</i>	Species of Concern	Candidate Species	
skinny moonwort	<i>Botrychium lineare</i>	Species of Concern	None	
Twin-spike moonwort	<i>Botrychium paradoxium</i>	Species of Concern	Candidate Species	Powder, Upper John Day, NF John Day
Clustered lady's-slipper	<i>Cypripedium fasciculatum</i>	Species of Concern	Candidate Species	
Red-fruited lomatium	<i>Lomatium erythraeum</i>	Species of Concern	Listed Endangered	Powder
Oregon semaphoregrass	<i>Pleuropogon oregonus</i>	Species of Concern	Listed Threatened	Powder
Snake River goldenweed	<i>Pyrrocoma radiata</i>	Species of Concern	Listed Endangered	
Howell's spectacular thelypody	<i>Thelypodium howellii</i>	Listed Threatened	Listed Endangered	Powder

**10. M. Cathy Nowak, Cat Tracks Wildlife Consulting. Powder River Subbasin Plan. May 28, 2004. Prepared for the Northwest Power and Conservation Council.**



A

**WETLANDS AND DEEPWATER HABITATS****Distribution of wetlands and deepwater habitats—**

This map shows the approximate distribution of large wetlands in the State. Because of limitations of scale and source material, some wetlands are not shown

- Predominantly wetland
- Predominantly deepwater habitat

0 25 50 MILES  
0 25 50 KILOMETERS

Attachment D  
Baker County Noxious Weeds List  
2006-2007

*“Watch List”, “A”, “B” & “C” Designated Weeds*

**“Watch List” – Known Sites; Controlled by Weed Supervisor County-Wide**

- |                       |                   |
|-----------------------|-------------------|
| 1. Musk Thistle       | Carduus nutans    |
| 2. Mediterranean sage | Salvia aethiopis  |
| 3. Dyers Woad         | Istaxis tinctoria |

**“A” Designated Weeds – Mandatory Control County-wide**

- |                         |                        |
|-------------------------|------------------------|
| 1. Tansy ragwort        | Senecio jacobaea       |
| 2. Leafy spurge         | Euphorbia esula        |
| 3. Rush skeletonweed    | Chondrilla juncea      |
| 4. Spotted knapweed     | Centaurea maculosa     |
| 5. Diffuse knapweed     | Centaurea diffusa      |
| 7. Dalmation toadflax   | Linaria dalmatica      |
| 8. Yellow starthistle   | Centaurea solstitialis |
| 9. Perennial pepperweed | Lepidium latifolium    |
| 10. Purple loosestrife  | Lyrum salicaria        |
| 11. Black henbane       | Hyoscyamus niger       |
| 12. Jointed goatgrass   | Aegilops cylindrica    |
| 13. Buffalobur          | Solanum rostratum      |
| 14. Common bugloss      | Anchusa officinalis    |
| 15. Japanese knotweed   | Polygonum cuspidatum   |
| 15. Myrtle spurge       | Euphorbia myrsinites   |
| 16. Scotch Thistle      | Onopordum acanthium    |
| 17. Whitetop            | Lepidium draba         |

Whitetop is listed as an “A” weed in designated areas of the County. Pine Valley, West Baker Valley and the Bowen Valley-Sumpter areas North and West of Oregon State Highway 7 are classified as Mandatory Control for whitetop.

**“B” Designated Weeds – Widespread and/or of High Concern**

- |             |                |
|-------------|----------------|
| 1. Whitetop | Lepidium draba |
|-------------|----------------|
- (Whitetop is a “B” weed in all other areas of the County not listed in the above section.)
- |                     |                      |
|---------------------|----------------------|
| 2. Russian knapweed | Centaurea repens     |
| 3. Canada thistle   | Cirsium vulgare      |
| 4. Venice mallow    | Hibiscus trionum     |
| 5. Yellow toadflax  | Linaria vulgaris     |
| 6. Dodder           | Cuscuta campestris   |
| 7. Chickory         | Cichorium intybus    |
| 8. Teasel           | Dipsacus fullonum    |
| 9. Common Tansy     | Tanacetum vulgare    |
| 10. Klamathweed     | Hypericum perforatum |
| 11. Puncturevine    | Tribulus terrestris  |

**“C” Designated Weeds – Widespread and/or of Moderate Concern**

- |                       |                            |
|-----------------------|----------------------------|
| 1. Water hemlock      | Circuta maculata           |
| 2. Poison hemlock     | Conium maculatum           |
| 3. Morningglory       | Convolvulus arvensis       |
| 4. Russian thistle    | Salsola iberica            |
| 5. Medusahead wildrye | Taeniatherum caput-medusae |
| 6. Kochia             | Kochia scoparia            |
| 7. Common mullein     | Verbascum thapsus          |
| 8. Moth mullein       | Verbascum blattaria        |
| 9. Bur buttercup      | Ranunculus testiculatus    |

**R6 TES PLANT ELEMENT OCCURRENCE - FIELD FORM - USDA FOREST SERVICE 2005**

® = required field, ®\* = conditionally required field, ® = R6 REQUIRED FIELD

**General Information**

1) FS SITE ID: ®		2) DATE: ®		3) SITE NAME:	
4) NRCS PLANT CODE: ®					
5) SCIENTIFIC NAME: ®					
6) RECORD SOURCE: ®		7) SURVEY ID: ®*		8) Survey Name:	
9) EXAMINER(S)- LAST: ®				FIRST:	MIDDLE INITIAL:
LAST:				FIRST:	MIDDLE INITIAL:
10) OWNERSHIP: ®					
11) E.O. #				12) NEW OCCURRENCE – YES: OR No:	
13) STATE: ®*		14) COUNTY: ®*			
15) REGION: ®*		16) FOREST: ®*		17) DISTRICT: ®*	
18) Entire extent mapped: Yes: No: Uncertain:			19) Area (Est):		20) Area UOM: ®*
21) Canopy Cover Method ®* (circle one): COVER PERCENT; DAUBEN; NRMCOV					

**Element Occurrence Data**

22) EO Canopy Cover: ® %Cov: or Cover Class Code:		23) Lifeform:	
24) Number of subpopulations:			
25) Plant Count: ®		26) Count Type: ® Genet/Ramet/Undetermined	
27) Count: ® Actual or Est.			
28) Revisit needed - Yes or No		29) Revisit Date:	
30) Revisit Justification:			
31) Phenology (%) ® (Sum to 100%): Vegetative . . . . . ____ Flower/Bud . . . ____ Fruit/Dispersed . ____ Seedlings/ Juvenile . . . . . ____		32) Population Comments: (e.g., distribution, vigor, density, phenology, dispersal)	
		33) Evidence of disease, competition, predation, collection, trampling, or herbivory: Yes ____ or No ____	
		34) Evidence Comments:	
35) Pollinator observed – Yes or No 36) Pollinator type(s):			
37) Pollinator comments:			

**Site Morphometry**

38) Percent Slope: ®		39) Slope position: ®	
40) Aspect: ® azimuth: or cardinal:			
41) Elev.: ® Ave: Min: Max:		42) Elev UOM: ®*	

**Soil Characteristics and Light Conditions**

43) Substrate on which EO occurs:			
44) Parent Material:		45) Soil Moisture:	
46) Soil Texture:			
47) Soil Type:		48) Light Exposure: ®	

### Site Classifications

Record taxonomic units of the given type(s) if published classifications exist for the area.			
CLASS TYPE	CLASS CODE	CLASS SHORT NAME	CLASS SET
49) Existing Veg			
50) Potential Veg	®	®	®
51) Ecotype			

### Habitat Quality and Management Comments

52) Habitat Description:	
53) Dominant Process:	
54) Community Quality (L, M, H):	55) Landscape Integrity (L, M, H):
56) Process Comment:	
57) Disturbance/Threats (present or imminent):	
58) Disturbance/Threats Comment:	
59) Non-Native Comment:	
60) Current Land Use Comment:	

### Canopy Cover

Record % canopy cover by actual percent, <i>or</i> by cover class (as indicated in General Information Block).			
Lifeform Canopy Cover	61)% Cov or Code	Ground Cover	62) % Cov or Code
Tree		Bare	
Shrub		Gravel	
Forb		Rock	
Graminoid		Bedrock	
Non-vascular		Moss	
Lichen		Litter/Duff	
Algae		Basal Veg	
		Water	
		Road surface	
		Lichen	

## Associated Species

List species directly associated with the EO species on this site. Record the NRCS Plant Code, scientific name or both. If desired, indicate lifeform, dominant species, % cover for each species and flag non-native species.

**63) Completeness of Species List: ®\* C, R, OR S ®**

**64) Species List Comment:**

[illegible]

## EO Specimen Documentation

71) Reference for ID:			
72) Primary Collector – ® Last Name:		First Name:	M.I.
Other Collectors – ® Last Name:		First Name:	M.I.
73) Collection #:®*		74) ID Confirmed: ®* Y:    or N:    or Questionable:	
75) Verification: ®			
76) Specimen Repository: ®*			



### Image Information ® (IF IMAGES TAKEN)

77) Image ID	78) Image Description

### Location Information

(State, County, Region, Forest, District will be auto-populated by the database application when the spatial feature is entered)

<b>79) USGS Quad Number:</b>	<b>80) USGS Quad Name:</b>
<b>81) Forest Quad Number:</b>	<b>82) Forest Quad Name:</b>

<b>83) Legal Description: ® Required where public land survey is available.</b>				
<b>Meridian:</b>		<b>Township and Range:</b>		
<b>Section:</b> _____	<b>Q Sec:</b> _____	<b>QQ Sec:</b> _____	<b>QQQ Sec:</b> _____	<b>QQQQ Sec:</b> _____

<b>84) Latitude and Longitude (either in degrees, minutes, seconds or in decimal degrees)</b>				
<b>Geodetic Datum:</b>				
<b>Latitude:</b>	<b>Degrees</b> ____	<b>N</b>	<b>Minutes</b>	<b>Seconds</b> ____.
<b>Longitude:</b>	<b>Degrees</b> ____	<b>W</b>	<b>Minutes</b>	<b>Seconds</b> ____.
<b>GPS Datum:</b>				
<b>GPS Lat. Dec. Degrees:</b>			<b>GPS Long. Dec. Degrees:</b>	

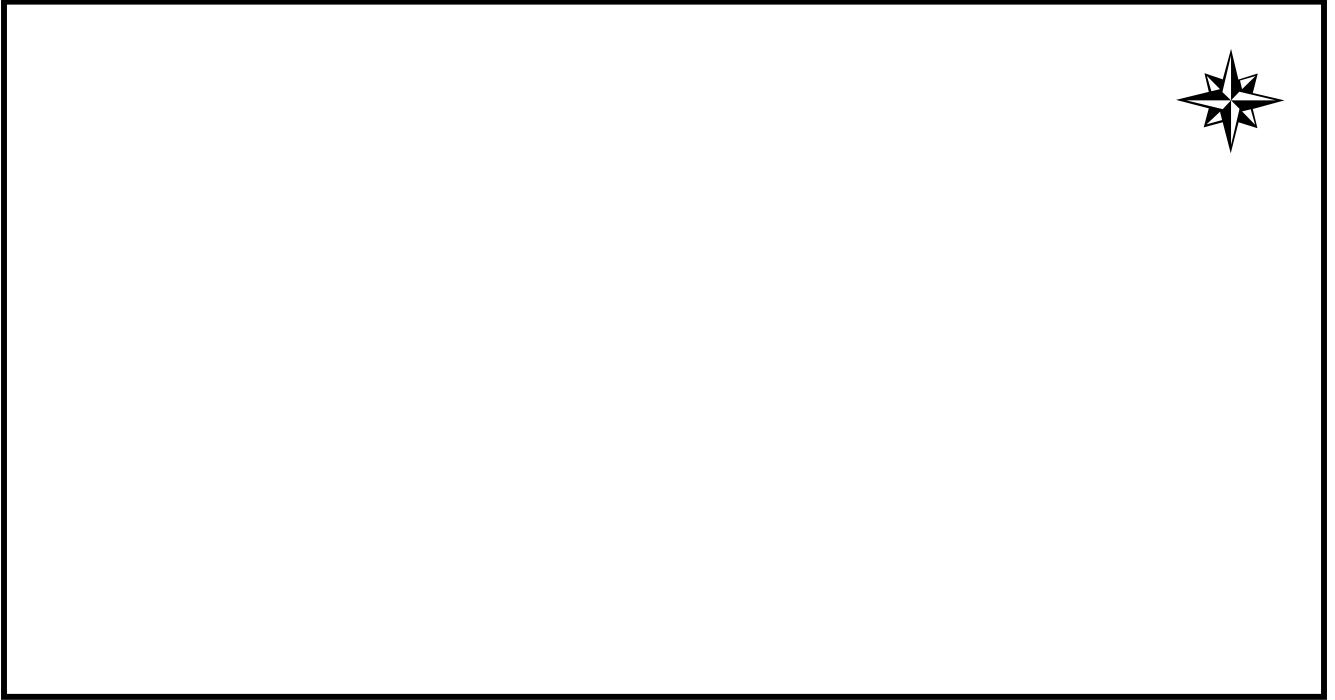
<b>85) UTM</b>	
<b>UTM Datum:</b>	<b>UTM Zone:</b>
<b>Easting:</b> _____	<b>Northing:</b> _____

<b>86) GPS Equipment Used (Manufacturer and Model):</b>

<b>87) Metes and Bounds</b>

**88) Directions to Site**

**89) Sketch of Site or Area**



**ATTACHMENT F**  
**USDA FOREST SERVICE**  
**TES PLANT SURVEY FIELD FORM**  
 (® = Required Fields)

**General Information**

<b>1) SURVEY ID:</b> ® 061604S0001		<b>2) SURVEY NAME:</b> KIRKWOOD ROAD		
<b>3) SURVEY STATUS:</b> ® COMPLETE		<b>4) SOURCE OF WORK:</b> FORCE ACCT.		
<b>5) Survey Type:</b> ® SELECTED				
<b>6) Survey Focus:</b> ® INTUITIVE				
<b>7) Estimate of Survey Area Size (acres):</b> ® 60				
<b>8) Elevation:</b> Min:		Max:		<b>9) Elevation UOM:</b>
Average:				
<b>10) State:</b> ®	<b>11) County:</b> ®	<b>12) Region:</b> ®	<b>13) Forest:</b> ®	<b>14) District:</b> ®
Idaho	Idaho	06	16	04
<b>15) Parameters of Survey</b> ( <i>Describe any ecological parameters, criteria or combinations of these used to focus the survey. (I.e., north slopes, specific habitat types, certain soils within certain forest conditions, etc.):</i> Survey was limited to 33 feet either side of the Kirkwood Road, except where TES plants were encountered.				
<b>16) Survey Comments</b> ( <i>Directions, area description, specific comments by visit date, etc.):</i> Survey commenced from the "Green Gate" to the Kirkwood Historic Ranch Site.				

**Survey Visits**

*Required.* Enter a Date (MM/DD/YYYY) and Examiners for each visit made.

17) VISIT DATE ®	18) LAST NAME ® AND FIRST NAME OF EXAMINERS FOR EACH VISIT
JULY 14, 2006	YATES, GENE AND HUSTAFA, JERRY

## Target Species

**Required.** List all targeted plant species (TES, special forest products, or other species of concern) that are the focus of the survey. Enter all the species individually using the NRCS *PLANTS* code and/or scientific name. All columns are required.

[illegible]

## Species List of Surveyed Area

**Optional.** List other species found during the survey. Record the NRCS *PLANTS* Code, scientific name or both. Indicate habitat (locally defined), lifeform and cover abundance (all optional). Indicate non-native plants with "X"

**24) Completeness of species list: Reduced**

**25) Cover Method** (if cover recorded):

**26) Comments** (e.g. details about species list approach, habitat focus, vegetation types or structure, etc.):

[illegible]

### Optional Location Information

Location information to represent the survey area may be recorded,  
in addition to entering the spatial feature in the application

33) USGS Quad Number:	34) USGS Quad Name:
35) Forest Quad Number:	36) Forest Quad Name:
37) Legal Description: Required where public land survey is available.	
Meridian: _____ Township and Range: _____	
Section: _____ Q Sec: _____ QQ Sec: _____ QQQ Sec: _____ QQQQ Sec: _____	
38) Latitude and Longitude (either in degrees, minutes, seconds or in decimal degrees)	
Geodetic Datum:	
Latitude: Degrees ____ N	Minutes _____ Seconds _____. ____
Longitude: Degrees ____ W	Minutes _____ Seconds _____. ____
GPS Datum:	
GPS Lat. Dec. Degrees:	GPS Long. Dec. Degrees:
39) UTM	
UTM Datum:	UTM Zone:
Easting: _____	Northing: _____
40) GPS Equipment: Manufacturer:	Model:
41) Metes and Bounds	

### 42) Directions to Survey Area

### 43) Sketch of Survey Area


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## ATTACHMENT G

### INVASIVES PLANT FIELD FORM

G

#### General Information

SITE ID _____ R	DATE (MMDDYYYY) _____ R
EXAMINER: LAST _____ R	FIRST _____ R Middle Initial _____

#### Data Elements

Plant Code _____ R	Common Name _____
Genus _____	Species _____
Subspecies _____	Variety _____ Authority _____
Phenology _____	Life Form _____ Distribution _____
Infested Area _____ R	Unit of Measure _____ R
Gross Area _____	Unit of Measure _____
Gross Area to Infested Area Calculation: Gross area _____ X _____ (% of land area occupied by weeds) = _____ Infested Area	
Plant Status _____	Plant Treatment Priority _____

#### Canopy Cover

<b>Canopy Cover</b> is a required data element. You can describe canopy cover by either entering the actual percent, ( <i>Canopy Cover Percent</i> ) or by using canopy cover classes ( <i>Canopy Cover Set</i> and <i>Cover Code</i> ). <b>R</b>		
Canopy Cover Set _____	Cover Code _____	Canopy Cover Percent _____ %

#### Distance to Water

Horizontal Distance to Water _____	Unit of Measure _____ l
Vertical Distance to Water _____	Unit of Measure _____

#### Associated Species

Associated Species Code _____	
Assoc. Genus _____	Assoc. Species _____
Assoc. Subspecies _____	Assoc. Variety _____
Associated Species Code _____	
Assoc. Genus _____	Assoc. Species _____
Assoc. Subspecies _____	Assoc. Variety _____
Associated Species Code _____	
Assoc. Genus _____	Assoc. Species _____
Assoc. Subspecies _____	Assoc. Variety _____

30. Comments
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This image shows a blank sheet of white paper with horizontal dashed lines, typical of primary-ruled notebook paper. The lines are evenly spaced and run across the width of the page. There is no handwriting or other markings on the paper.

## Map to Site





# ATTACHMENT H

## RANGELAND GENERAL FORM – FOR INTERIM INVASIVE TOOL

(® INDICATES A REQUIRED FIELD)

### Site Information

SITE ID _____ ®	
DATE (MMDDYYYY) _____ ®	
Project Name _____ ®	Project Purpose _____
Site Sample Type _____ ®	

### General Information

EXAMINER:	LAST Name _____ ®	FIRST Name _____ ®	Middle Initial _____
Ownership _____ ®			
Region _____ ®	National Forest/Grassland _____ ®	District _____ ®	
Proclaimed National Forest/Grassland _____			
Proclaimed National Forest/Grassland Name _____			
State _____ ®	County Number _____ ®	County Name _____	
Sample Area Size _____		Unit of Measure _____	

### Location Information

<b>QUADS</b>	
USGS Quad Number _____	USGS Quad Name _____
Forest Quad Number _____	Forest Quad Name _____

**Data Entry is Required in at least one of the displayed location methods below.**  
 The site location can be described through at least one, and maybe more of the following methods.  
 Users with GIS technology may link the location directly with that information. Some users may substitute Metes and Bounds (**Required.**)

<b>Legal Description:</b>				
Meridian _____	Township/Direction Range/Direction _____			
SEC _____	Q SEC _____	QQ SEC _____	QQQ SEC _____	QQQQ SEC _____

<b>Latitude and Longitude</b>				
Geodetic Datum _____				
Lat dms:	Degrees _____ N	Minutes _____	Seconds _____.	
Long dms:	Degrees _____ W	Minutes _____	Seconds _____.	
Geodetic Datum _____				
GPS Latitude Decimal Degrees _____.				
GPS Longitude Decimal Degrees _____.				

UTM	
UTM Datum _____	UTM Zone ____
Easting: _____	Northing: _____

**Metes and Bounds:** (narrative) Metes are the bearing and distance to get to someplace or to return to the place of origin. Bounds are the written directions going to something or someplace.


### Management Area

Allotment (RMU) Number _____	Allotment Name _____
Pasture (Sub-RMU) Number _____	Pasture Name _____
Key Area Number _____	Key Area Name _____

Area Number _____	Area Name _____
-------------------	-----------------

Watershed HUC # ** _____ ®
HUC Name _____
**Required for aquatic invasive species

### Site Information

Elevation Average _____	Min Elevation _____
Max Elevation _____	Elevation UOM _____

Aspect-Azimuth _____	Aspect-Cardinal Direction _____
Percent Slope _____	Slope Position _____

### Existing Vegetation Information

Please enter one or more of the three listed existing vegetation classification types.

Plant Community	
Class Set Name _____	Class Code _____
Class Name _____	
SAF Cover Type Code _____	SAF Cover Type _____
SRM Cover Type Code _____	SRM Cover Type _____

Dominant Life Form _____®
Dominant Species _____ (Genus, Species, Subspecies, Variety)
Co-Dominant Species _____ (Genus, Species, Subspecies, Variety)
Co-Dominant Species _____ (Genus, Species, Subspecies, Variety)
Co-Dominant Species _____ (Genus, Species, Subspecies, Variety)

### Potential Vegetation Information

Range Site/Eco Classification	
Class Code _____	Class Name _____

Habitat Type Code _____	Habitat Type Name _____
HT Phase Code _____	HT Phase Name _____
Plant Association Code _____	Plant Association Name _____
Seral Stage _____	Ecological Status (%) _____

Ecological Map Unit Code _____
Ecological Map Unit Name _____
Ecological Type Code _____
Ecological Type Name _____

### Soil/Geo Climate Information

Soil Name _____	Class Level _____
Texture _____	Common Landform Code _____
Common Landform Description _____	
Mean Annual Precipitation _____	UOM _____

### Reference

Include information in locating the starting point for the traverse leg and other important description information.

Narrative (detailed description of location, direction to site and map location if applicable.)
-----
-----
-----
-----
-----
-----
-----
-----

Traverse information for start point to sample point.

Azimuth (degrees) _____	Distance _____
Distance UOM _____	

### Photo/Image

Aerial Photo Information	
Photo Label _____	Aerial Photo Set _____
Photo Number _____	Flight Line Code _____
Photo Date\Time (mm/dd/yyyy hh:mm) _____	

Photo Information	
Photo Number _____	Film Type _____
File Name _____	File Directory _____

### Comments

Comments

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## Appendix

# ATTACHMENT G

## INVASIVES PLANT FIELD FORM

9

1. PIPD SYAL Plant Association General Information

SITE ID	Site #1 PIPD/SYAL	R	DATE (MMDDYYYY)	06 15 2007	R
EXAMINER:	LAST	Grammon	R	FIRST	Arnie
				R	Middle Initial
					A

### Data Elements

Plant Code	CIAR	R	Common Name	Canada Thistle
Genus	Cirsium		Species	arvense
Subspecies	—		Variety	—
Phenology	Bolt		Life Form	Perennial
			Distribution	scattered
Infested Area	0.1	R	Unit of Measure	Acres
			R	
Gross Area	6.2		Unit of Measure	Acres
Gross Area to Infested Area Calculation:				
Gross area 6.2 X 2 (% of land area occupied by weeds) = 0.1 A Infested Area				
Plant Status	B weed Baker County		Plant Treatment Priority	low

### Canopy Cover

**Canopy Cover** is a required data element. You can describe canopy cover by either entering the actual percent, (*Canopy Cover Percent*) or by using canopy cover classes (*Canopy Cover Set and Cover Code*). **R**

Canopy Cover Set	Cover Code	Canopy Cover Percent	35 %
------------------	------------	----------------------	------

### Distance to Water

Horizontal Distance to Water	106	Unit of Measure	ft
Vertical Distance to Water	—	Unit of Measure	—

### Associated Species

See List

Associated Species Code	
Assoc. Genus	Assoc. Species
Assoc. Subspecies	Assoc. Variety
Associated Species Code	
Assoc. Genus	Assoc. Species
Assoc. Subspecies	Assoc. Variety
Associated Species Code	
Assoc. Genus	Assoc. Species
Assoc. Subspecies	Assoc. Variety

### 30. Comments

- Baker County will commit to treatment using site-appropriate herbicides
- Canada Thistle is treated very effectively using herbicides
- Appropriate cautions and guidelines will be followed due to proximity of stream

Map to Site  
See attached map



# ATTACHMENT H

## RANGELAND GENERAL FORM – FOR INTERIM INVASIVE TOOL

(® INDICATES A REQUIRED FIELD)

### Site Information

SITE ID <u>Site # 1 PIPD / SYAL</u> ®	
DATE (MMDDYY) <u>08 20 2007</u> ®	
Project Name <u>Mason Dam</u> ®	Project Purpose <u>Power generation</u>
Site Sample Type <u>Transect</u> ®	

### General Information

EXAMINER:	LAST Name <u>Grauman</u> ®	FIRST Name <u>Arnie</u> ®	Middle Initial <u>A</u>
Ownership <u>US Forest Service</u> ®			
Region <u>06</u> ®	National Forest/Grassland <u>NF</u> ®	District _____ ®	
Proclaimed National Forest/Grassland _____			
Proclaimed National Forest/Grassland Name _____			
State <u>OR</u> ®	County Number _____ ®	County Name <u>Baker</u>	
Sample Area Size <u>1-300 A Linear Transect</u>		Unit of Measure <u>FT</u>	

### Location Information

QUADS	
USGS Quad Number <u>OR 44117 F8 04 PHT</u>	USGS Quad Name <u>Blue Canyon SW</u>
Forest Quad Number _____	Forest Quad Name _____

Data Entry is Required in at least one of the displayed location methods below.  
 The site location can be described through at least one, and maybe more of the following methods.  
 Users with GIS technology may link the location directly with that information. Some users may substitute Metes and Bounds (Required.)

Legal Description:				
Meridian _____	Township/Direction Range/Direction _____			
SEC _____	Q SEC _____	QQ SEC _____	QQQ SEC _____	QQQQ SEC _____

Latitude and Longitude					
Geodetic Datum <u>NAD 27</u>					
Lat dms:	Degrees <u>44</u> N	Minutes <u>40</u>	Seconds <u>16.51</u>		
Long dms:	Degrees <u>117</u> W	Minutes <u>59</u>	Seconds <u>50.60</u>		
Geodetic Datum <u>WGS 84</u>					
GPS Latitude Decimal Degrees <u>44.6709155</u> N					
GPS Longitude Decimal Degrees <u>117.9979790</u> W					



UTM	
UTM Datum _____	UTM Zone _____
Easting: _____	Northing: _____

**Metes and Bounds:** (narrative) Metes are the bearing and distance to get to someplace or to return to the place of origin. Bounds are the written directions going to something or someplace.

998 ft from bench mark P10 QC 1052, Mason 12 MK  
138° Heading

### Management Area

Allotment (RMU) Number _____	Allotment Name _____
Pasture (Sub-RMU) Number _____	Pasture Name _____
Key Area Number _____	Key Area Name _____
Area Number _____	Area Name _____
Watershed HUC # ** 17050203 ®	
HUC Name Middle Snake / Powder / Powder	
**Required for aquatic invasive species	

### Site Information

Elevation Average 4022 ft.	Min Elevation 3940
Max Elevation 4103	Elevation UOM _____
Aspect-Azimuth South	Aspect-Cardinal Direction _____
Percent Slope 8	Slope Position S

### Existing Vegetation Information

Please enter one or more of the three listed existing vegetation classification types.

Plant Community Ponderosa Pine	
Class Set Name _____	Class Code P10 / SYAL
Class Name Ponderosa Pine / Snowberry	
SAF Cover Type Code _____	SAF Cover Type _____
SRM Cover Type Code _____	SRM Cover Type _____

Dominant Life Form	PIPO®
Dominant Species	Pinus Ponderosa (Genus, Species, Subspecies, Variety)
Co-Dominant Species	Symphoricarpos albus (Genus, Species, Subspecies, Variety)
Co-Dominant Species	(Genus, Species, Subspecies, Variety)
Co-Dominant Species	(Genus, Species, Subspecies, Variety)

### Potential Vegetation Information

Range Site/Eco Classification	
Class Code	Class Name
Habitat Type Code	Habitat Type Name
HT Phase Code	HT Phase Name
Plant Association Code	Plant Association Name
Seral Stage	Ecological Status (%)
Ecological Map Unit Code	
Ecological Map Unit Name	
Ecological Type Code	
Ecological Type Name	

### Soil/Geo Climate Information

Soil Name	Class Level
Texture	Common Landform Code
Common Landform Description	
Mean Annual Precipitation	UOM

### Reference

Include information in locating the starting point for the traverse leg and other important description information.

Narrative (detailed description of location, direction to site and map location if applicable.)
Traveling west on Hwy 7, turn left onto FS 1145. Go approximately 6.6 mile to site

# ATTACHMENT G

## INVASIVES PLANT FIELD FORM

g

PIPO  
FEID Plant Association

### General Information

SITE ID _____ R		DATE (MMDDYYYY) <u>06 18 2007</u> R	
EXAMINER:	LAST <u>Dramm</u> R	FIRST <u>Arnie</u> R	Middle Initial <u>A</u>

### Data Elements

Plant Code <u>CIAR</u> R		Common Name <u>Canada thistle</u>	
Genus <u>Cirsium</u>		Species <u>arvense</u>	
Subspecies <u>—</u>		Variety <u>—</u>	Authority <u>—</u>
Phenology <u>Bolt</u>	Life Form <u>Perennial</u>	Distribution <u>scattered</u>	
Infested Area <u>0.1</u> R	Unit of Measure <u>Acres</u> R		
Gross Area <u>5.2</u>	Unit of Measure <u>Acres</u>		
Gross Area to Infested Area Calculation:			
Gross area <u>5.2</u> X <u>2</u> (%of land area occupied by weeds) = <u>0.1</u> A Infested Area			
Plant Status <u>B-Weed Baker County</u>		Plant Treatment Priority <u>low</u>	

### Canopy Cover

**Canopy Cover** is a required data element. You can describe canopy cover by either entering the actual percent, (*Canopy Cover Percent*) or by using canopy cover classes (*Canopy Cover Set and Cover Code*). R

Canopy Cover Set _____	Cover Code _____	Canopy Cover Percent <u>75</u> %
------------------------	------------------	----------------------------------

### Distance to Water

Horizontal Distance to Water <u>106</u>	Unit of Measure <u>ft</u>
Vertical Distance to Water _____	Unit of Measure _____

### Associated Species

*See Plant Association List*

Associated Species Code _____	
Assoc. Genus _____	Assoc. Species _____
Assoc. Subspecies _____	Assoc. Variety _____
Associated Species Code _____	
Assoc. Genus _____	Assoc. Species _____
Assoc. Subspecies _____	Assoc. Variety _____
Associated Species Code _____	
Assoc. Genus _____	Assoc. Species _____
Assoc. Subspecies _____	Assoc. Variety _____

30. Comments

Baker County will commit to annual  
treatment using site appropriate herbicides

Map to Site

See Attached Maps



# ATTACHMENT H

## RANGELAND GENERAL FORM – FOR INTERIM INVASIVE TOOL

(® INDICATES A REQUIRED FIELD)

PIPD/FIED  
Plant Association

### Site Information

SITE ID	Site #2 PIPD/FIED Plant Association			®
DATE (MMDDYYYY)	8/21/2007			
Project Name	Mason Dam	®	Project Purpose	Power Generation
Site Sample Type	Transect			

### General Information

EXAMINER:	LAST Name	Grammon	®	FIRST Name	Arnie	®	Middle Initial	A.
Ownership	US Forest Service							
Region	06	®	National Forest/Grassland	NF	®	District	BA	®
Proclaimed National Forest/Grassland								
Proclaimed National Forest/Grassland Name	Wallawa Whitman							
State	OR	®	County Number		®	County Name	Baker	
Sample Area Size	2-300 ft Linear Transects			Unit of Measure	FP			

### Location Information

<b>QUADS</b>	
USGS Quad Number	OR 44117 F8 D4 DHT
USGS Quad Name	Blue Canyon SW
Forest Quad Number	
Forest Quad Name	

Data Entry is Required in at least one of the displayed location methods below.  
 The site location can be described through at least one, and maybe more of the following methods.  
 Users with GIS technology may link the location directly with that information. Some users may substitute Metes and Bounds (Required.)

<b>Legal Description:</b>				
Meridian	Township/Direction	Range/Direction	Section	
SEC	Q-SEC	QQ SEC	QQQ SEC	QQQQ SEC

<b>Latitude and Longitude</b>				
Geodetic Datum				
Lat dms:	Degrees	Minutes	Seconds	
Long dms:	Degrees	Minutes	Seconds	
Geodetic Datum	WGS 84			
GPS Latitude Decimal Degrees	44.6681469 N			
GPS Longitude Decimal Degrees	117.9995967 W			

UTM	
UTM Datum _____	UTM Zone _____
Easting: _____	Northing: _____

**Metes and Bounds:** (narrative) Metes are the bearing and distance to get to someplace or to return to the place of origin. Bounds are the written directions going to something or someplace.

1754 ft 167° (true) from benchmark PID  
 1052 Mason AZ MK

### Management Area

Allotment (RMU) Number _____	Allotment Name _____
Pasture (Sub-RMU) Number _____	Pasture Name _____
Key Area Number _____	Key Area Name _____

Area Number _____	Area Name _____
-------------------	-----------------

Watershed HUC # ** 17050203
HUC Name Middle Snake Powder / Powder
**Required for aquatic invasive species

### Site Information

Elevation Average 4152 ft	Min Elevation 4135
Max Elevation 4181	Elevation UOM _____

Aspect-Azimuth South west facing	Aspect-Cardinal Direction _____
Percent Slope 8	Slope Position _____

### Existing Vegetation Information

Please enter one or more of the three listed existing vegetation classification types.

Plant Community PIPD/FEID Plant Association	
Class Set Name Ponderosa Pine/Idaho Fescue	Class Code PIPD FEID
Class Name _____	
SAF Cover Type Code _____	SAF Cover Type _____
SRM Cover Type Code _____	SRM Cover Type _____

Dominant Life Form	PIPD®
Dominant Species	Pinus ponderosa (Genus, Species, Subspecies, Variety)
Co-Dominant Species	Festuca idahoensis (Genus, Species, Subspecies, Variety)
Co-Dominant Species	(Genus, Species, Subspecies, Variety)
Co-Dominant Species	(Genus, Species, Subspecies, Variety)

### Potential Vegetation Information

Range Site/Eco Classification	
Class Code	Class Name
Habitat Type Code	CPS 524
Habitat Type Name	dry ponderosa pine forest
HT Phase Code	HT Phase Name
Plant Association Code	Plant Association Name
Seral Stage	MID
Ecological Status (%)	
Ecological Map Unit Code	
Ecological Map Unit Name	
Ecological Type Code	
Ecological Type Name	

### Soil/Geo Climate Information

Soil Name	1670 Top McGarr Complex
Class Level	
Texture	Silt loam
Common Landform Code	
Common Landform Description	
Mean Annual Precipitation	25
UOM	

### Reference

Include information in locating the starting point for the traverse leg and other important description information.

Narrative (detailed description of location, direction to site and map location if applicable.)
Going W on Hwy 7, turn left onto FS rd 1145 approximately 0.8 of mile to site

# ATTACHMENT G

## INVASIVES PLANT FIELD FORM

PSME Plant Association  
CARV General Information

SITE ID PSME / CARV Plant Assoc. R		DATE (MMDDYYYY) 06 15 2007 R	
EXAMINER:	LAST Grammon R	FIRST Arnie R	Middle Initial A

### Data Elements

Plant Code DNAN R		Common Name Scotch Thistle	
Genus Onopordum		Species ancahium	
Subspecies —		Variety — Authority —	
Phenology —		Life Form — Distribution —	
Infested Area 0.15 R		Unit of Measure Acres R	
Gross Area 7.4		Unit of Measure Acres	
Gross Area to Infested Area Calculation: Gross area 7.4 X 2 (% of land area occupied by weeds) = 0.15 A Infested Area			
Plant Status A Listed Baker County		Plant Treatment Priority High	

### Canopy Cover

Canopy Cover is a required data element. You can describe canopy cover by either entering the actual percent, (Canopy Cover Percent) or by using canopy cover classes (Canopy Cover Set and Cover Code). R		
Canopy Cover Set	Cover Code	Canopy Cover Percent 90 %

### Distance to Water

Horizontal Distance to Water 25	Unit of Measure ft 1
Vertical Distance to Water	Unit of Measure

### Associated Species

See Plant Association List (Attached)

Associated Species Code	
Assoc. Genus	Assoc. Species
Assoc. Subspecies	Assoc. Variety
Associated Species Code	
Assoc. Genus	Assoc. Species
Assoc. Subspecies	Assoc. Variety
Associated Species Code	
Assoc. Genus	Assoc. Species
Assoc. Subspecies	Assoc. Variety



30. Comments

Baker County will commit to annual treatment of this weed using site appropriate herbicides.

Treatment options will be coordinated with the USFS.

Map to Site

See attached Map



# ATTACHMENT G

## INVASIVES PLANT FIELD FORM

G

PSME  
CARV

Plant Association

### General Information

SITE ID		R	DATE (MMDDYYYY)		06 18 2007	R
EXAMINER:	LAST	Grammon	R	FIRST	Arnie	R
				Middle Initial	A	

### Data Elements

Plant Code		CIAR	R	Common Name		Canada Thistle
Genus		Cirsium		Species		arvense
Subspecies		—		Variety		—
Phenology		Bolt		Life Form		Perennial
				Distribution		Scattered
Infested Area		0.15	R	Unit of Measure		Acres
Gross Area		7.4		Unit of Measure		Acres
Gross Area to Infested Area Calculation:						
Gross area 7.4 X 2 (% of land area occupied by weeds) = 0.15 A Infested Area						
Plant Status		A Listed Baker County		Plant Treatment Priority		High

### Canopy Cover

<b>Canopy Cover</b> is a required data element. You can describe canopy cover by either entering the actual percent, (Canopy Cover Percent) or by using canopy cover classes (Canopy Cover Set and Cover Code). R		
Canopy Cover Set	Cover Code	Canopy Cover Percent 90 %

### Distance to Water

Horizontal Distance to Water	~ 25	Unit of Measure	ft.
Vertical Distance to Water		Unit of Measure	

### Associated Species

See Plant Association List (attached)

Associated Species Code	
Assoc. Genus	Assoc. Species
Assoc. Subspecies	Assoc. Variety
Associated Species Code	
Assoc. Genus	Assoc. Species
Assoc. Subspecies	Assoc. Variety
Associated Species Code	
Assoc. Genus	Assoc. Species
Assoc. Subspecies	Assoc. Variety

30. Comments

Baker County will commit to annual  
treatment of this weed using site-  
appropriate herbicide

Map to Site  
See attached



# ATTACHMENT H

## RANGELAND GENERAL FORM – FOR INTERIM INVASIVE TOOL

(® INDICATES A REQUIRED FIELD)

### Site Information

SITE ID	Site #3 PSME / CARV ®		
DATE (MMDDYYYY)	8/22/2007 ®		
Project Name	Mason Dam ®	Project Purpose	Power Generation
Site Sample Type	transect ®		

### General Information

EXAMINER:	LAST Name Grammer ®	FIRST Name Arnie ®	Middle Initial A.
Ownership	US National Forest ®		
Region	OK ®	National Forest/Grassland	NF ® District BA ®
Proclaimed National Forest/Grassland			
Proclaimed National Forest/Grassland Name			
Willow Whitman NF			
State	OR ®	County Number	County Name Baker
Sample Area Size	1 - 300 ft Linear Transect		Unit of Measure Ft

### Location Information

QUADS	
USGS Quad Number	OR 44117 P8 04 PHT
USGS Quad Name	Blue Canyon SW
Forest Quad Number	
Forest Quad Name	

Data Entry is Required in at least one of the displayed location methods below.  
 The site location can be described through at least one, and maybe more of the following methods.  
 Users with GIS technology may link the location directly with that information. Some users may substitute Metes and Bounds (Required.)

Legal Description:				
Meridian	Township/Direction Range/Direction			
SEC	Q SEC	QQ SEC	QQQ SEC	QQQQ SEC

Latitude and Longitude				
Geodetic Datum				
Lat dms:	Degrees	N	Minutes	Seconds
Long dms:	Degrees	W	Minutes	Seconds
Geodetic Datum WGS 84				
GPS Latitude Decimal Degrees 44.6649536 N				
GPS Longitude Decimal Degrees 118.0024054 W				

UTM	
UTM Datum _____	UTM Zone _____
Easting: _____	Northing: _____

**Metes and Bounds:** (narrative) Metes are the bearing and distance to get to someplace or to return to the place of origin. Bounds are the written directions going to something or someplace.

2930 ft from benchmark D10 AC 1052,  
Mason AZ UK 189° (true) heading

### Management Area

Allotment (RMU) Number _____	Allotment Name _____
Pasture (Sub-RMU) Number _____	Pasture Name _____
Key Area Number _____	Key Area Name _____
Area Number _____	Area Name _____
Watershed HUC # ** 17050203 ®	
HUC Name Middle Snake Powder / Powder	
**Required for aquatic invasive species	

### Site Information

Elevation Average 4175	Min Elevation 4128
Max Elevation 4218	Elevation UOM _____
Aspect-Azimuth South-facing	Aspect-Cardinal Direction _____
Percent Slope 4	Slope Position _____

### Existing Vegetation Information

Please enter one or more of the three listed existing vegetation classification types.

Plant Community Douglas Fir	
Class Set Name Pseudotsuga menziesii / Calamagrostis / Rubus	Class Code PSME / CARV
Class Name Douglas Fir / Pinegrass	
SAF Cover Type Code _____	SAF Cover Type _____
SRM Cover Type Code _____	SRM Cover Type _____

Dominant Life Form	PSME®
Dominant Species	<i>Pseudotsuga menziesii</i> (Rocky) (Genus, Species, Subspecies, Variety)
Co-Dominant Species	<i>Calanagrostis rubescens</i> (Genus, Species, Subspecies, Variety)
Co-Dominant Species	(Genus, Species, Subspecies, Variety)
Co-Dominant Species	(Genus, Species, Subspecies, Variety)

### Potential Vegetation Information

Range Site/Eco Classification	
Class Code	Class Name
Habitat Type Code	Habitat Type Name
HT Phase Code	HT Phase Name
Plant Association Code	Plant Association Name
Seral Stage	Ecological Status (%)
Ecological Map Unit Code	
Ecological Map Unit Name	
Ecological Type Code	
Ecological Type Name	

### Soil/Geo Climate Information

Soil Name	167D Top-McGarr Complex	Class Level
Texture	Silt Loam	Common Landform Code
Common Landform Description		
Mean Annual Precipitation	25	UOM

### Reference

Include information in locating the starting point for the traverse leg and other important description information.

Narrative (detailed description of location, direction to site and map location if applicable.)
Traveling west on Hwy 7, turn left onto FS 1145J. Go approximately 1.2 miles to site.



Dugout Creek (Proposed RNA) (Prairie City RD, Malheur NF)

Table of Principal Species (n = 16)

Species	Code	Mean Cov (%)	Cons. (%)	Range
ponderosa pine	PIPO	45	100	17-81
Douglas-fir	PSME	2	56	1-3
western juniper	JUOC	2	25	1-4
common snowberry	SYAL	1	50	1-3
creeping Oregon-grape	BERE	2	37	1-3
spirea	SPBE	3	43	2-5
balchup rose	ROGY	2	37	1-3
pinegrass	CARU	38	100	7-70
elk sedge	CAGE	20	87	2-45
Foss' sedge	CARO	3	31	1-7
northwestern sedge	CACO	3	37	1-5
Wheeler's bluegrass	PONE	2	56	1-7
tallcup lupine	LUCA	3	56	1-8
heartleaf arnica	ARCO	12	56	2-29
broadpetaled strawberry	FRVI	2	62	1-5
western hawkweed	HIAL2	2	62	1-8
yarrow	ACMIL	3	81	1-10
woods strawberry	FRVE	6	25	2-12

#### ENVIRONMENT

LOCATION: North, central, south

ELEVATION: 3900-5300 ft. (4636 ft.)

ASPECT: Principally southerly exposures

SLOPE: 1-80% (18%)

TERRAIN FEATURES: Ridge-top, upper, middle, or lower 1/3 of slope on all surfaces in steep, rough to rolling or undulating terrain.

SOIL DEPTH: 12-50 in. (28 in.)

ASH DEPTH:

SURFACE SOIL TEXTURES: sandy loam, loam, silt loam

SUBSURFACE SOIL TEXTURES: sandy loam, loam, silt loam, clay loam, silty clay

COARSE FRAGMENTS: 6-54% (31%)

PARENT MATERIAL: Residuum and colluvium of igneous, sedimentary, and metamorphic rocks; some with loess.

#### UTILIZATION RESPONSE

D - FEID, AGSP

IP - POSA3, KOOR, HIAL

IU - PONE, SHRY, ACMIL, LUCA, GETR

INV - ANNUAL BROMES

#### STAND AND OVERSTORY ATTRIBUTES (n = 15)

HERBAGE PRODUCTION (LBS/ACRE AIR DRY): 250-487 (362)

TOTAL BASAL AREA (SQ FT/ACRE): 25-196 (81)

TREE CANOPY COVERAGE (%): 9-60 (33)

STAND GBA (SQ FT/ACRE): 25-146 (69)

SPECIES	NO. PLOTS	BASAL AREA	AGE	SITE INDEX	GBA	PROD. INDEX
PIPO	15	79/28	196/34	62/5	66/19	18/6

**Veg. Composition:** Ponderosa pine forms an open, park-like savannah with bunchgrass vegetation. Western juniper and ponderosa pine are the only tree species these warm, dry sites can support. Bitterbrush is often present at low coverage. Idaho fescue (FEID) is the dominant herbaceous species in late seral communities. Other bunchgrasses usually present are bluebunch wheatgrass (AGSP), Sandberg's bluegrass (POSA3) and bottlebrush squirreltail (SHRY). Yarrow (ACMIL) is the most common forb.

**Typal Comparisons:** PIPO/FEID communities occur at low to mid elevations in the Blue and Ochoco Mountains. The type occurred on gentle to steep slopes at all positions. They were found on moderate to deep soils overlying all geologic substrates. Sites supporting this plant association are more mesic than FEID/AGSP sites; PIPO/FEID sites occupy slightly cooler sites with greater moisture retention capability. Water holding capacity was 50% greater on sampled PIPO/FEID sites than on the PIPO/AGSP sites. This association has low productivity for PIPO, similar to other types with bunchgrass understories.

**Successional Relationships:** Periodic fire helps provide vitality to the grassland, stimulates grass vigor and provides seeded opportunities for pine regeneration. Disturbed sites may show increases by yarrow (ACMIL), lupines, red evens (GETR), penstemons, clovers, phlox, and annual bromes.

**Management Considerations:** This association may be unsuited as commercial timber producing communities because of regeneration difficulties and low productivities. Uneven-aged management results in retention of valuable older age classes. Prescribed burns can promote the bunchgrasses, improve pine establishment and control stocking. Sites are important to elk and deer in providing spring and early summer forage.

**Relationship to Other Studies:** PIPO/FEID was described in eastern Washington by Daubenmire (1969). In the Blue Mountains by Hall (1973). In Montana by Pfister, et al (1977). In central Idaho by Steele (1981). In north Idaho by Cooper, et al (1987). In northern Washington by Clausenizer and Ziemer (1987). and in the Wallows and Seven Devils by Johnson and Simon (1987).



Chicken Hill (La Grande RD, Wallowa-Whitman NF)

Table of Principal Species (n = 24)

Species	Code	Mean Cov (%)	Cons. (%)	Range
Douglas-fir	PSME	27	100	6-70
ponderosa pine	PIPO	34	95	1-53
grand fir	ABGR	2	37	1-4
common snowberry	SYAL	2	70	1-6
creeping Oregon-grape	BERE	2	66	1-6
baldhip rose	ROGY	2	41	1-6
spirea	SPBE	2	33	1-5
pinegrass	CARU	42	100	8-90
elk sedge	CAGE	14	95	1-35
northwestern sedge	CACO	4	33	1-15
western tawue	FECC	1	29	1-3
heartleaf arnica	ARCO	7	75	1-20
yarrow	ACMIL	2	66	1-5
broadleaved strawberry	FRVI	2	41	1-3
tailcup lupine	LUCA	4	58	1-10
white hawkweed	HAL	2	45	1-3
western hawkweed	HAL2	2	62	1-5

**ENVIRONMENT**  
 LOCATION: North, central, south  
 ELEVATION: 4050-5900 ft. (4908 ft.)  
 ASPECT: All aspects  
 SLOPE: 3-80% (20%)  
 TERRAIN FEATURES: Ridgetop, upper, middle, or lower 1/3 of slope on flat or convex surfaces in steep, rough to rolling or undulating terrain.  
 SOIL DEPTH: 16-70 in. (38 in.)  
 ASH DEPTH: 8-42 in. (23 in.)  
 SURFACE SOIL TEXTURES: sandy loam, silt  
 SUBSURFACE SOIL TEXTURES: clay loam  
 COARSE FRAGMENTS: 6-72% (35%)  
 PARENT MATERIAL: Residuum and colluvium of igneous, sedimentary, or metamorphic rocks, most with a mantle of ash or loess.

**UTILIZATION RESPONSE**  
 D - CAGE  
 IP - CARU, CACO, HIERA, SYAL  
 IU - FECC, ARCO, ACMIL, FRVI, LUCA  
 INV - LATHY, VIAM

**STAND AND OVERSTORY ATTRIBUTES** (n = 18)  
 HERBAGE PRODUCTION (LBS/ACRE AIR DRY): 228-645 (392)  
 TOTAL BASAL AREA (SQ FT/ACRE): 70-213 (117)  
 TREE CANOPY COVERAGE (%): 46-86 (61)  
 STAND GBA (SQ FT/ACRE): 79-182 (115)

SPECIES	NO. PLOTS	BASAL AREA	AGE	SITE INDEX	GBA	PROD. INDEX
PSME	17	37/14	134/39	81/6	133/16	46/8
PIPO	18	77/18	243/33	75/4	106/14	33/5

**Veg. Composition:** Ponderosa pine commonly dominates in PSME/CARU stands from its greater fire resistance. Douglas-fir is the climax dominant, however. Common snowberry (SYAL) and creeping Oregon-grape (BERE) are common but in low coverage within the pinegrass-alk sedge dominated ground cover. Heartleaf arnica (ARCO) is the most prevalent forb.

**Typal Comparisons:** Understory dominance by the rhizomatous grass and sedge, CARU and CAGE, typify stands representing this plant association. Low shrubs, while ubiquitous, are somewhat inconspicuous in the pinegrass dominated understory. Sites supporting this type represent some of the highest elevation occurrences of the PSME series in the Blue Mountains. Most sampled stands had soils with a mantle of volcanic ash. Overstory productivity is moderate.

**Successional Relationships:** Ponderosa pine is the principal seral tree species. Spirea (SPBE) and Oregon-grape (BERE) may be more abundant in early seral stands. Pinemal manzanita (ARNE) and ceanothus (CEVE) are pioneers following fire along with pinegrass-alk sedge. Prewines (LATHY), vetch (VIAM), tailcup lupine (LUCA) and heartleaf arnica (ARCO) are forbs that increase with disturbance in the type.

**Management Considerations:** Regeneration activities that consider competition from rhizomatous grasses and sedges, potential pocket gopher populations, wildlife and cattle damage of seedlings, and soil drought are appropriate in the PSME/CARU plant association. Big game and cattle may make heavy seasonal use of understory grasses, sedges and associated forbs. The association recovers quickly from fire, ponderosa pine, pinegrass, and seral shrubs (CEVE and SASO) are promoted by recurrent fire. Buckbrush serves as passive habitat as well as a nitrogen-fixer for the site.

**Relationship to Other Studies:** Daubenmire (1968) described the PSME/CARU habitat type in eastern Washington; Hall (1973) incorporated PSME/CARU in the mixed conifer-pinegrass p.c.t. in the Blue Mountains; Pilelet, et al (1977) described PSME/CARU in Montana; Steele (1981) considered PSME/CARU a major habitat type in central Idaho; Cooper, et al (1987) found it to be incidental in northern Idaho; Williams and Ulybidge (1983) and Williams, et al (1991), described it in northern Washington. Cleunziger and Zamora described PSME/CARU on the Colville Indian Reservation. Johnson and Simon (1987) described it in the Wallowas.





Tucannon River Canyon (Pomeroy RD, Umatilla NF)

Table of Principal Species (n = 16)

Species	Code	Mean Cov (%)	Cons. (%)	Range
ponderosa pine	PIPO	35	100	7-65
Douglas-fir	PSME	2	37	1-3
western juniper	JUOC	3	25	1-10
common snowberry	SYAL	32	100	5-80
spirea	SPBE	8	50	1-30
balship rose	ROGY	6	56	1-20
serviceberry	AMAL	4	43	1-10
creeping Oregon-grape	BERE	2	37	1-5
elk sedge	CAGE	13	93	1-40
pinegrass	CARU	27	56	5-70
mountain brome	BRCA	4	37	1-15
blue wildrye	ELGL	5	37	1-10
Wheeler's bluegrass	PONE	5	31	1-10
Idaho fescue	FEID	10	25	1-30
western needlegrass	STOC	3	25	1-6
tailcup lupine	LUCA	2	37	1-5
broadpetal strawberry	FRVI	2	31	1-4
heartleaf amica	ARCO	7	43	1-20
sticky geranium	GEVI	2	37	1-4
vetch	VIAM	7	31	1-15
yarrow	ACMIL	2	68	1-3

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#### ENVIRONMENT

LOCATION: North, central  
 ELEVATION: 2475-5250 ft. (3995 ft.)  
 ASPECT: All aspects

SLOPE: 3-50% (19%)

TERRAIN FEATURES: Upper, middle, or lower 1/3 of slope  
 on all surfaces in steep, rolling to undulating terrain.  
 SOIL DEPTH: 32-80 in. (43 in.)

ASH DEPTH:

SURFACE SOIL TEXTURES: sandy loam, silt loam, silt

SUBSURFACE SOIL TEXTURES: sandy loam, silt loam, silt, clay loam, clay

COARSE FRAGMENTS: 25-52% (36%)

PARENT MATERIAL: Residuum and colluvium of igneous, sedimentary, and metamorphic rocks, some with a mantle of ash and/or loess.

#### UTILIZATION RESPONSE

D - CAGE, AMAL  
 IP - CARU, BRCA, ELGL, GEVI  
 IU - LUCA, FRVI, ARCO, ACMIL  
 INV - VIAM

STAND AND OVERSTORY ATTRIBUTES (n = 16)  
 HERBAGE PRODUCTION (LBS/ACRE AIR DRY): 175-1500 (582)  
 TOTAL BASAL AREA (SQ FT/ACRE): 64-177 (116)  
 TREE CANOPY COVERAGE (%): 7-65 (37)  
 STAND GBA (SQ FT/ACRE): 76-243 (155)

SPECIES	NO. PLOTS	BASAL AREA	AGE	SITE INDEX	GBA	PROD. INDEX
PIPO	10	114/27	113/48	94/13	154/40	70/29

**Veg. Composition:** Ponderosa pine is climax; Douglas-fir may occur at low coverage. Common snowberry, spirea (SPBE), balship rose (ROGY) and serviceberry (AMAL) are principal shrub components. Elk sedge is the principal herb. Shrubs are usually present at lower coverages unless the understory has been disturbed.

**Typical Comparisons:** PPO/SYAL occurs at the lowest mean elevation of any PPO plant association (3995 ft.). It occurs principally in the north and central Blue Mountains on gentle to steep slopes at all slope positions. It occurs on deep soils over varying geologic substrates. The PPO/SYAL community occurs on the deepest soils of any PPO series vegetation and is considered the most mesic of the PPO plant associations. Site index, stockability, and the productivity index are the highest of the PPO series.

**Successional Relationships:** Mountain brome (BRCA) and blue wildrye (ELGL) are grasses that tend to increase with disturbance. Forbs which may be more abundant at lower seral stages are vetch (VIAM), heartleaf amica (ARCO), tailcup lupine (LUCA) and yarrow (ACMIL).

**Management Considerations:** Tree regeneration success is limited by SYAL, CARU, and CAGE competition. Clumps of pine regeneration can cause stagnation requiring stocking level control. Ungulate use is high (proximity is to adjacent bunchgrass). CARU used late in season after frost; SYAL use is high by deer, elk, grouse, and passerines. Open used for bedding and shading. Fire promotes CARU, PPO regeneration and bunchgrasses. Use of prescribed fire promotes vigor of rhizomatous shrub, grass, forb species. Additionally, fire maintains community vigor and develops the uneven-aged character of the PPO/SYAL plant community. This is one of the highest herbage producing plant associations of the ponderosa pine series.

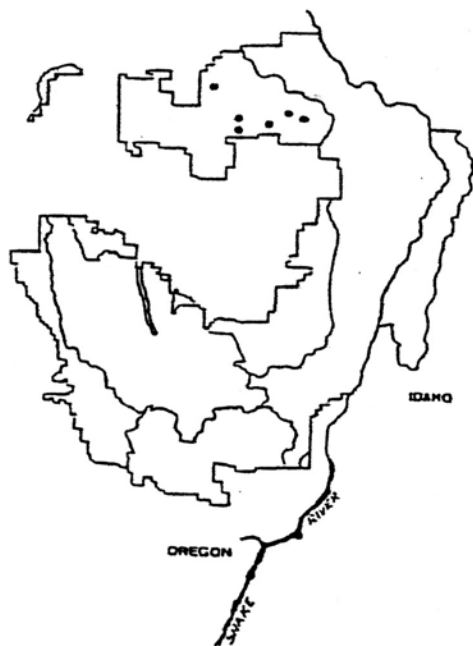
**Relationship to Other Studies:** The PPO/SYAL h.l. was described by Daubenmire (1968) in eastern Washington and north Idaho; Pister, et al (1977) in Montana; Steele (1981) in central Idaho; Cooper, et al (1987) in north Idaho; Johnson and Simon (1987) in the Yellow-Snake of northeast Oregon; Clausenizer and Zamora (1987) on the Colville Indian Reservation of northern Washington.

Ponderosa pine/common snowberry plant association  
*Pinus ponderosa*/*Symphoricarpos albus* (PIPO/SYAL) (CPS5 22)



66. Peavine Creek Canyon  
 (Wallowa Valley Ranger District)

Plot 211



ENVIRONMENT  
 (all plots)

Location:  
 WVRD

Elevation: (4050 ft.)  
 3000, 3800-4500 ft.

Aspect: (SW)  
 E-W

Slope (37%)  
 9-55%

Position: upper 1/3  
 slopes to brows

Other: Heavily used  
 by deer and elk for  
 winter browse.

SOILS  
 (typical soils)

Parent Material: loess and  
 basalt colluvium

Solum depth: (30 in.)  
 25-40 in.

Loess depth: mixed

Root conc: (18 in.)  
 11-24 in.

Depth to GT 15%  
 rock frag./size:  
 rock to surface/gravels, cobbles

Surface soil/subsoil  
 texture:  
 silt loam/silt loam, silty  
 clay loam

# PONDEROSA PINE (PIPO) SERIES

## Summary of Plant Association and Community Type Characteristics 1/

Plant Community Type	Elevation (feet)	Slope Position	Aspect	Slope	Parent Material	(2) Soil Depth Total (in.) Rt. Conc.	(3) Principal Indicators	(3) Relative Cubic prod./ Stockability	(4) Forage (lbs./acre) dry
PIPO/SYAL	3800-4500 (4050)	upper slope	E-W	9-55% (37%)	Loess + basalt colluvium	25-40 (30) 11-24 (18)	SYAL, AGSP FEID, CARU	Low/Low	(600) 400-850
PIPO/SPBE	3600-5300 (4800)	mid to upper slope	S-SE	53-60% (56%)	Loess + basalt colluvium	26-40 (33) 11-22 (17)	SPBE, CARU PUTR, BERE	Low/Low	(700) 500-1000
PIPO/FEID	3600-4800 (4200)	ridges, mid- upper slope	W-E	4-45% (25%)	Loess + mixed geol.	10-18 (15) 9-20 (16)	FEID, AGSP BROMES	Low/ low	(220) 130-260
PIPO/AGSP	3200-4900 (3800)	mid to upper slope	S	45-65% (58%)	Loess + mixed geol.	8-20 (15) 12-18 (20)	AGSP, POSC BRTE	Low/ Low	(90) 20-240

- 1/ Range and mean (no.)
- 2/ Total soil depth and depth of root concentration (80% of roots)
- 3/ Comparison of relative cubic volume production/stockability for the primary species (from Appendices E & F)
- 4/ Forage production in all conditions sampled.



Tucannon River Canyon (Pomroy RD, Umatilla NF)

Table of Principal Species (n = 16)

Species	Code	Mean Cov (%)	Cons. (%)	Range
ponderosa pine	PIPO	35	100	7-65
Douglas-fir	PSME	2	37	1-3
western juniper	JUOC	3	25	1-10
common snowberry	SYAL	32	100	5-80
splaea	SPBE	8	50	1-30
balchip rose	ROGY	6	56	1-20
serviceberry	AMAL	4	43	1-10
creeping Oregon-grape	BERE	2	37	1-5
elk sedge	CAGE	13	93	1-40
pinegrass	CARU	27	56	5-70
mountain brome	BRCA	4	37	1-15
blue wildrye	ELGL	5	37	1-10
Wheeler's bluegrass	PONE	5	31	1-10
Idaho fescue	FEID	10	25	1-30
western needlegrass	STOC	3	25	1-8
tailcup lupine	LUCA	2	37	1-5
broadpetal strawberry	FRVI	2	31	1-4
heartleaf arnica	ARCO	7	43	1-20
sticky geranium	GEVI	2	37	1-4
velch	VIAM	7	31	1-15
yarow	ACML	2	68	1-3

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ENVIRONMENT  
 LOCATION: North, central  
 ELEVATION: 2475-3250 ft. (3995 ft.)  
 ASPECT: All aspects  
 SLOPE: 3-50% (19%)

TERRAIN FEATURES: Upper, middle, or lower 1/3 of slope  
 on all surfaces in steep, rolling to undulating terrain.  
 SOIL DEPTH: 32-80 in. (43 in.)

ASH DEPTH:  
 SURFACE SOIL TEXTURES: sandy loam, silt loam, silt  
 SUBSURFACE SOIL TEXTURES: sandy loam, silt loam, clay  
 COARSE FRAGMENTS: 25-52% (36%)  
 PARENT MATERIAL: Residuum and colluvium of igneous, sedimentary, and metamorphic rocks, some with a mantle of  
 ash and/or loess.

UTILIZATION RESPONSE  
 D - CAGE, AMAL  
 IP - CARU, BRCA, ELGL, GEVI  
 IU - LUCA, FRVI, ARCO, ACML  
 INV - VIAM

STAND AND OVERSTORY ATTRIBUTES (n = 16)  
 HERBAGE PRODUCTION (LBS/ACRE AIR DRY): 175-1500 (592)  
 TOTAL BASAL AREA (SQ FT/ACRE): 64-177 (116)  
 TREE CANOPY COVERAGE (%): 7-65 (37)  
 STAND GBA (SQ FT/ACRE): 76-243 (155)

SPECIES	NO. PLOTS	BASAL AREA	AGE	SITE INDEX	GBA	PROD. INDEX
PIPO	10	114/27	113/48	94/13	154/40	70/29

Veg. Composition: Ponderosa pine is climax; Douglas-fir may occur at low coverage. Common snowberry, splaea (SPBE), balchip rose (ROGY) and serviceberry (AMAL) are principal shrub components. Elk sedge is the principal herb. Shrubs are usually present at lower coverages unless the understory has been disturbed.

Typical Components: PIP0/SVAL occurs at the lowest mean elevation of any PIP0 plant association (3995 ft.). It occurs principally in the north and central Blue Mountains on gentle to steep slopes at all slope positions. It occurs on deep soils over varying geologic substrates. The PIP0/SVAL community occurs on the deepest soils of any PIP0 series vegetation and is considered the most mastic of the PIP0 plant associations. Site index, stockability, and the productivity index are the highest of the PIP0 series.

Successional Relationships: Mountain brome (BRCA) and blue wildrye (ELGL) are grasses that tend to increase with disturbance. Forbs which may be more abundant at lower seral stages are velch (VIAM), heartleaf arnica (ARCO), tailcup lupine (LUCA) and yarow (ACML).

Management Considerations: Tree regeneration success is limited by SYAL, CARU, and CAGE competition. Clumps of pine regeneration can cause stagnation requiring stocking level control. Ungulate use is high (proximity is to adjacent bunchgrass). CARU used late in season after frost; SYAL use is high by deer, elk, grouse, and passerines. Often used for bedding and shading. Fire promotes CARU, PIP0 regeneration and bunchgrasses. Use of prescribed fire promotes vigor of rhizomatous shrub, grass, forb species. Additionally, fire maintains community vigor and develops the uneven-aged character of the PIP0/SVAL plant community. This is one of the highest herbage producing plant associations of the ponderosa pine series.

Relationship to Other Studies: The PIP0/SVAL h.t. was described by Daubenmire (1969) in eastern Washington and north Idaho; Plister, et al (1977) in Montana; Steele (1981) in central Idaho; Cooper, et al (1987) in north Idaho; Johnson and Simon (1987) in the Willows-Snake of northeast Oregon; Clausenizer and Zamora (1987) on the Cozville Indian Reservation of northern Washington.

# Table of Principal Species

PIPO/SYAL (n = 6)

<u>Species</u>	<u>Code</u>	Mean		<u>Range</u>
		<u>Coverage</u> (%)	<u>Constancy</u> (%)	
Tree Overstory				
ponderosa pine	PIPO	33	100	10-65
Tree Understory				
*ponderosa pine	PIPO	42	83	0-60
Shrubs				
*common snowberry	SYAL	34	100	5-75
serviceberry	AMAL	2	67	0-5
Grasses and Sedges				
*pinegrass	CARU	9	67	0-20
elk sedge	CAGE	1	17	0-1
*Idaho fescue	FEID	14	67	0-40
*bluebunch wheatgrass	AGSP	18	100	3-40
prairie junegrass	KOCR	2	50	0-3
Kentucky bluegrass	POPR	11	67	0-16
mountain brome	BRCA	4	50	0-10
Forbs				
blueleaf strawberry	FRVI	7	67	0-15
woods strawberry	FRVE	12	50	0-20
heartleaf arnica	ARCO	4	50	0-10
yarrow	ACMIL	7	83	0-15
lupines	LUPIN	10	50	0-20
long-stalked clover	TRLO	7	67	0-15

\* Principal Indicator Species

## Stand Characteristics and Productivity

		All Stands		
		n = 3		
Herbage production (lbs./acre dry wt.)				
Grasses; range and mean		300-500(400)		
Total range and mean		400-850(600)		
<hr/>				
Average stand diameter/CI*		12.8/6.2		
Number of trees per acre greater than 4 in dbh/CI		115/80		
Total basal area/CI		120/37		
<hr/>				
Mean Age/GBA by species				
PIPO		240/100		
<hr/>				
Productivity estimates				
	No. of Plots Sampled	Site Index ** Mean    CI	GBA Mean    CI	Productivity Index *** Mean    CI
PIPO	3	78    9	100    23	34    6

\* CI = 95% confidence interval, mean plus or minus this value

\*\* Site Index Base 100, Base 50 ( )

\*\*\* SI Base 100 X GBA x .004

**Vegetative Composition** - In these communities, ponderosa pine dominates all tree coverage levels and is reproducing as the predicted climax species. The occasional Douglas-fir on the site is considered to be ephemeral. Common snowberry (SYAL) and pinegrass (CARU) comprise the majority of the understory vegetation. Hawthorne (CRDO) and Woods' rose (ROWO) occur on gentle slopes while serviceberry (AMAL) is found on steep slopes within the type. Since bunchgrass steppe generally occurs adjacent to PIPO/SYAL stands, bluebunch wheatgrass (AGSP), Idaho fescue (FEID), and prairie junegrass (KOCR) are commonly found. The most ubiquitous forbs are yarrow (ACMIL), woods strawberry (FRVE), and heartleaf arnica (ARCO).

Since PIPO/SYAL communities are generally near feeding grounds for domestic cattle and elk, they are heavily used for bedding, shading, and cover. Pinegrass use by domestic stock has been observed in September following curing of adjacent bunchgrass vegetation. Heavy usage decreases snowberry and reduces pinegrass and desirable forage grasses. Increasing with disturbance are yarrow (ACMIL), lupine (LUCA), vetch (VIAM), strawberries (FRVI, FRVE), and bigleaf sandwort (ARMA3). Invading species under very heavy pressure are long-stem



clover (TRLO), Kentucky bluegrass (POPR), and hounds tongue (CYOF). Dense stands of currants and gooseberries (RIBES) under ponderosa pine stands assigned to this type are the result of extreme site disturbance.

**Distribution and Environment** - This plant association occurs sporadically throughout the steep canyon slopes in the plateau region at elevations ranging from 3,000 to 4,500 feet (ave: 4,000). Exposure of sites varies with elevation. Within the forest zone, the type occupies the more severely exposed sites, while within the grassland zone, more sheltered sites are occupied. The type was sampled on ridgebrows and backslopes (ave. slope: 37%). Overall, these sites are more severe than those sampled in the PSME/SYAL association. All sites showed at least some accumulation of soil material from the surrounding areas. This is typical on slopes in basalt plateau and canyon areas where rims or flow contacts act as barriers to downward movement of eroding soil and rock materials. These accumulation areas provide a favorable rooting medium for ponderosa pine allowing domination of trees over the more common grasses.

**Soils** - Soils are typically very dark brown to dark reddish brown in color in the surface layers, less than 40 inches in depth, and formed from loess and basalt colluvium, and bedrock materials. Surface layers have silt loam to silty clay loam textures with greater than 35% rock fragments by volume. Rock fragments tend to be gravel-sized in the surface soil and gravel and cobble-sized in the subsoil. Surface rock usually exceeds 10% cover. Few soils were sampled in this type and, therefore, variability in characteristics has not been determined. These soils are more loess-influenced and much deeper than soils supporting PIPO/FEID communities.

**Successional Relationships** - The typical stand of PIPO/SYAL contains a high FEID-AGSP component. At the drier limits where PIPO/SYAL interfaces with the bunchgrass types, snowberry becomes patchier. Its orientation in these areas follows coves and swales where moisture retention is greater and/or aspects more favorable than the dry, hot exposures more conducive to bunchgrasses. Often at these extremes, snowberry is found northeast of large-crowned trees and beneath tree canopy patches. These more xeric PIPO/SYAL stands usually contain a more pronounced rose composition with the snowberry, and a much greater bunchgrass composition. Strawberries, clover, and Kentucky bluegrass are especially prominent in these more xeric stands following repeated disturbance.

**Series Relationship** - PIPO/SYAL communities are found on steep slopes and deeper soils providing a moister rooting medium than PIPO/FEID communities. Shrubs are common with snowberry dominating. Pinegrass is also common on wet extremes of the type while bunchgrasses are often present at the dry extremes of the type. Bareground percentages are among the highest (PIPO/SYAL and PIPO/AGSP = 4%; PIPO/FEID = 5%) of the forest types. These surface relationships result from natural dryness of the sites and compacted soils induced by trafficking animals. Kentucky bluegrass has greater affinities to the PIPO/SYAL type following disturbances.

**Role of Fire** - Rangeland fires have influenced the pattern or mosaic of understory vegetation in these stands. Pinegrass is favored by fire with snowberry somewhat controlled by periodic burning. Establishment of ponderosa pine seedlings is favored by periodic fire which reduces the competitive grass-sedge mats and shrubs and reduces the litter buildup to expose mineral soil. Fire frequents these stands approximately every 20 years. Grasses and forbs are temporarily

stimulated by surface fires. Prescribed fire has proven an excellent tool in this type for controlling understory vegetation, maintaining vigor in crop trees, and in continuing the natural uneven-aged structure of stands.

**Silvicultural Considerations** - Limitations to management in this type include limited moisture and competition with shrubs and graminoids. There is a very low probability for natural regeneration success within five years of overstory removal. Snowberry, pinegrass, and elk sedge competition will also limit artificial regeneration success. Additionally, Kentucky bluegrass has a potential of creating regeneration problems in overgrazed, disturbed areas. The only species suited to stands in this association is ponderosa pine. It should be managed in an uneven-aged silvicultural system. Although there are no serious disease problems, bark beetles are a major concern in decadent stands and in young stagnated stands.

**Range and Wildlife Management** - All ungulates are frequent users of this type due to the proximity of these communities to highly desirable bunchgrass slopes and riparian canyon bottoms. Associated pinegrass is used late in the season. The bunchgrasses occurring as opportunists from adjacent types are preferred forage during the early and mid season grazing period. Silvicultural modification of these communities may result in reseeding needs. Control of rhizomatous shrub and sedge-grass species is necessary to promote other bunchgrass vegetation on these sites. Dry-site species that perform well include: hard fescue, intermediate wheatgrass, and big bluegrass.

Deer and elk use these communities for escape cover. Deer are browsers of snowberry; elk use the snowberry, but make more use of sedge-grass species. Thrushes, robins, grosbeaks, and grouse may be common in these communities.

**Stand Structure and Productivity** - The diameter/age distribution for stands sampled in this association is all-aged to multi-aged as the result of past fire influences. Tree ages ranged from 100 to over 350 years while distinct age classes were evident at intervals ranging from 10 to 27 years (ave. 18 years). This interval compares closely to fire frequency intervals (range 8-34 years, ave. 20 years) measured from fire scars on trees within these same stands. Basal areas ranged from 80 sq. ft./acre to over 140 sq. ft./acre (ave. 120).

In general, tree production in this association was poor in comparison to types in other series, but the best for stands in the PIPO series. Ponderosa pine stockability and volume growth is very low, but individual tree growth appeared as good as that measured in some stands in the PSME series. The largest diameter trees are relatively old (+200 years), but even trees within the 100-200 year age group have diameters near those measured in some of the more productive sites in the PSME series. The poor overall production was the result of open stand conditions with few trees potentially able to occupy the site and maintain good growth rates.

**Comparison with Other Investigators** - The PIPO/SYAL habitat type was described by Daubenmire (1968) in eastern Washington and northern Idaho. Pfister (1977) described a PIPO/SYAL habitat type in Montana with two phases (common snowberry, Oregon-grape). Steele (1981); and Cooper, Neiman, and Steele (1985) also identified the PIPO/SYAL habitat type. Hall (1973) did not recognize a climax ponderosa pine/common snowberry plant association in the Blue Mountains.

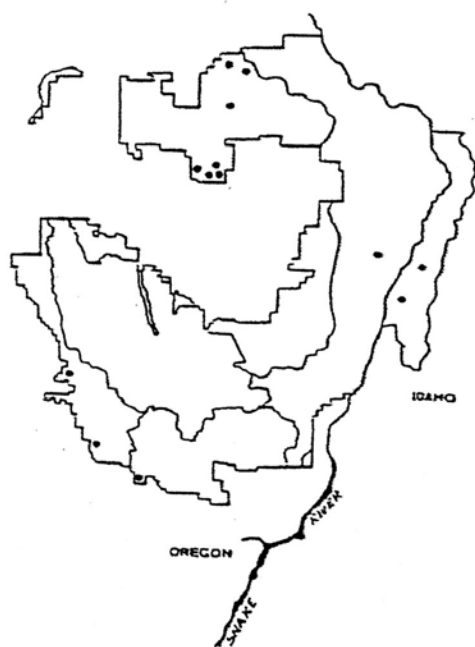


Ponderosa pine/Idaho fescue plant association  
*Pinus ponderosa*/*Festuca idahoensis* (PIPO/FEID) (CPG1 31)



67. Goose Creek Canyon (Pine Ranger District)

Plot 1265



ENVIRONMENT  
(all plots)

Location:  
All Districts

Elevation: (4200 ft.)  
3600-4800 ft.

Aspect: W-E

Slope (25%)  
4-45%

Position: ridges, and  
mid to upper 1/3  
slopes

Other:  
Forms mosaic with  
fescue dominated  
communities.

SOILS  
(typical soils)

Parent Material: loess +  
colluvium from various geologies

Solum depth: (15 in.)  
10-18 in.

Loess depth: mixed

Root conc: (16 in.)  
9-20 in.

Depth to GT 15%  
rock frag./size:  
rock to surface/gravels, cobbles

Surface soil/subsoil  
texture:  
loam, silt loam/loam, clay loam,  
silty clay loam

**Ponderosa pine/spiraea plant community type**  
*Pinus ponderosa/Spiraea betulifolia*  
(PIPO/SPBE) (CPS5 23) (n = 3)

Forested horizontal stringers located on seepy rim palisades of the Imnaha-Big Sheep drainages are dominated by ponderosa pine with codominant spiraea and common snowberry beneath. These communities are oriented on southerly aspects with bunchgrass vegetation dominating the drier inter-rim slopes. Bitterbrush and Oregon-grape are frequent shrub associates. Pinegrass is always associated at relatively high coverages while Idaho fescue occupies drier microsites. Harsh paintbrush (CAHI2), yarrow (ACMIL), wayside gromwell (LIRU), and heartleaf arnica (ARCO) are forbs frequently associated.

These forested garlands are dramatically visible on rim palisades above the Gumboot Creek and Mahogany Creek vicinity of the Imnaha Canyon and on Echo, Big Sheep, Corral Creek Ridges above Big Sheep Creek Canyon. These communities are very limited in extent, remote to active silvicultural management, and provide their greatest benefit to watershed quality by stabilization of steep slopes and vegetative filtering of sediment loads. Wildlife make high use of these stands for cover, bedding, and shading. The garlands provide prime mule deer habitat.

# Table of Principal Species

PIPO/FEID n = 13

<u>Species</u>	<u>Code</u>	<u>Coverage</u> <u>(%)</u>	<u>Mean</u> <u>Constancy</u> <u>(%)</u>	<u>Range</u>
Tree Overstory				
*ponderosa pine	PIPO	34	100	10-60
Tree Understory				
*ponderosa pine	PIPO	10	77	0-20
Shrubs				
common snowberry	SYAL	2	31	0-5
woods rose	ROWO	2	38	0-5
Wyeth's buckwheat	ERHE	3	31	0-10
Grasses and Sedges				
*Idaho fescue	FEID	23	100	4-65
prairie junegrass	KOCR	5	46	0-10
*bluebunch wheatgrass	AGSP	7	77	0-25
cheatgrass	BRTE	3	62	0-5
other annual bromes	BROMU	8	69	0-25
Forbs				
yarrow	ACMIL	2	100	1-10
lupine	LUPIN	6	69	0-15
yellow salsify	TRDU	1	31	0-1
wayside gromwell	LIRU	1	31	0-1
Surface Features				
rock/gravel		5	69	0-10
bare ground		5	69	0-20
moss/lichen		7	31	0-20
litter		81	100	40-99

\* Principal Indicator Species

## Stand Characteristics and Productivity

All Stands  
n - 7

Herbage production (lbs./acre dry wt.)

bluebunch wheatgrass	AGSP	range and mean	0-110(45)
Idaho fescue	FEID	range and mean	20-170(80)
Total		range and mean	130-260(220)

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Average stand diameter/CI*	15.9/2.1
Number of trees per acre greater than 4 in dbh/CI	52/11
Total basal area/CI	78/17

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Mean Age/GBA by species

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PIPO	120/85
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Productivity estimates

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	No. of Plots Sampled	Site Index **		GBA		Productivity Index ***	
		Mean	CI	Mean	CI	Mean	CI
PIPO	6	77	9	85	20	28	9

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\* CI = 95% confidence interval, mean plus or minus this value

\*\* Site Index Base 100, Base 50 ( )

\*\*\* SI Base 100 X GBA x .004

Vegetative Composition - Ponderosa pine totally dominates as the only tree species able to persist in the PIPO/FEID type. Shrubs are essentially absent, but common snowberry and rose do occur in limited amounts. Idaho fescue (FEID), bluebunch wheatgrass (AGSP), and prairie junegrass (KOCR), are the dominant understory species in the type. The most common forbs are lupine (LUPIN), and yarrow (ACMIL).

Disturbance from cattle and elk is highly visible throughout these communities. This type is highly desirable to grazing animals based on its gramineous composition, gentle slopes and proximity to bunchgrass types adjacent to PIPO/FEID stands. Increasing with disturbance are yarrow (ACMIL), lupine (LUPIN), and prairie junegrass (KOCR). Invading species of major importance are Kentucky bluegrass (POPR), annual bromes (BRTE, BRMO), and annual forbs (i.e., shining chickweed).

**Distribution and Environment** - This plant association has a limited distribution in the Wallowa-Snake Province. It occurs only as scattered tree groups within a predominantly non-forest regime. Stands could be characterized as forest savannah and are found on mid- to low-elevation broad ridges and steep canyon slopes. Elevations range from 3,600 to 4,800 feet (ave: 4,200 ft.). Sites occur on upper convex ridgebrows with west to east aspects and moderate slopes (range 10-12%, ave: 11%) and on steep canyon backslopes with southerly aspects. These sites are among the most severe of all the forest types in the Province.

**Soils** - Soils are typically dark brown in color in surface layers, less than 18 inches in depth, and formed in loess and fractured bedrock. Rooting is common beyond this depth into rock fractures and unconsolidated rock material. Surface soils are thin, have loam and silt loam textures, and contain greater than 15% rock fragments by volume. Subsoils are often clayey (clay loam, silty clay loam textures) and very rocky with rock fragments exceeding 35% by volume. Rock in surface soils is predominantly gravel-sized and gravel, cobble, and stone-sized in subsoils. Surface rock usually exceeds 30% cover.

These soils are fairly uniform. Steeper slopes often have deeper soils (greater than 18 inches) in soil accumulation areas and may not have clayey layers. Soils derived in granitic substrates or near rock outcrops are usually shallower and rockier.

Summary of Soil and Site Characteristics (all samples) - PIPO/FEID

Soil Depth*	Rooting Depth**	Loess Depth	Site Stability	*** Summer Temp.	Depth to 15% rock fragments	Rock Outcrop
9 in. to 22 in.	4 in. to 20 in.	0	very stable	50°F to 58°F	to surface	common

\* Depth to bedrock, paralithic contact, or unconsolidated rock material.  
\*\* Depth that includes 80% of all roots. \*\*\* Temperature at 20 in. depth.

**Successional Relationship** - PIPO/FEID is more xeric than the often adjacent PIPO/SYAL and PSME/SYAL communities. PIPO/FEID is located on convexities at the extreme limits of suitable moisture for tree growth. The type is characterized by both pole-sized even-aged trees and scattered, open-growing old-growth in uneven-aged stands. Communities of common snowberry-rose and pinegrass-elk sedge tend to occur on more moist microsites within stands most closely associated with PIPO/SYAL and PSME/SYAL types. The xeric end of the type contains ponderosa pine in an open park-like savannah with bunchgrass vegetation (i.e., FEID-KOCR, FEID-AGSP, and AGSP-POSA3).

**Series Relationship** - See PIPO/SYAL for comparison.

**Silvicultural Considerations** - PIPO/FEID communities occur on some of the most severe forest sites described in the Wallowas, Seven Devils, and associated ridges of the Snake-Imnaha. They are severely limited for long-term timber management and are often unsuited as commercial forest land. Little silvicultural activity has occurred in this type. Past timber harvesting practices have concentrated on reducing competition in potential crop trees or in high grading the scattered, most valuable trees. This type has a very low probability for natural regeneration success following overstory removal. Ponderosa pine is the only natural tree species suitable for planting on these sites and requires

site preparation and control of competing vegetation. Uneven-aged management with special care in protecting existing trees appears to be the only silvicultural system suited on these harsh sites. Although sites are too dry for pocket gophers, the potential for porcupine damage is high.

**Role of Fire** - Stocking of ponderosa pine can be influenced by fire intensity. The role of fire in this type can help maintain grasslands by periodic burning of ponderosa pine seedlings, saplings, and pole clumps slowing the succession to pine and increasing the gramineous coverage on an area. Periodic fire also helps rejuvenate grasses, but may result in increased forb composition. The grass-forb diversity may be desirable for the wildlife and range manager.

**Range and Wildlife Management** - Use by domestic livestock and big game is high. Many PIPO/FEID communities of the Wallowa-Snake Province have been severely overgrazed and are generally in early and very early seral stages. Sites are often suitable for successful revegetation using dry site species (intermediate wheatgrass, hard fescue, big bluegrass). These drier site forest communities are often among the first to become available in spring and remain available to big game into the winter. The associated native vegetation is extremely vulnerable to use at critical growth periods and is readily damaged from trampling by the animals when soils are saturated.

**Stand Structure and Productivity** - Stand diameter/age distribution is mainly even-aged reflecting past fire disturbance. Tree groups of similar age forming multi-aged structures were also sampled. As with stands in the PSME/CARU plant association that occur on ridges, stand replacement fires were probably common in the past. Stand ages range from 50 to 80 years in the even-aged stands and from 50 to over 300 years in the multi-aged stands. It is difficult to accurately assess the stocking level of these sites because of stand patchiness. Within tree groups, basal areas ranged from 50 to over 100 sq. feet per acre. Average basal area, including nonstocked areas, is approximately 80 sq. feet per acre.

Overall growth is poor in stands belonging to this plant association. Individual tree growth, especially in young trees, is moderate. Stockability is very low and may be much less than the data indicates. Accurate estimates of GBA could not readily be made due to clumping of trees. The SDI volume growth index may be a more reliable means for determining the commercial status of these and similar sites. These sites should be considered non-commercial.

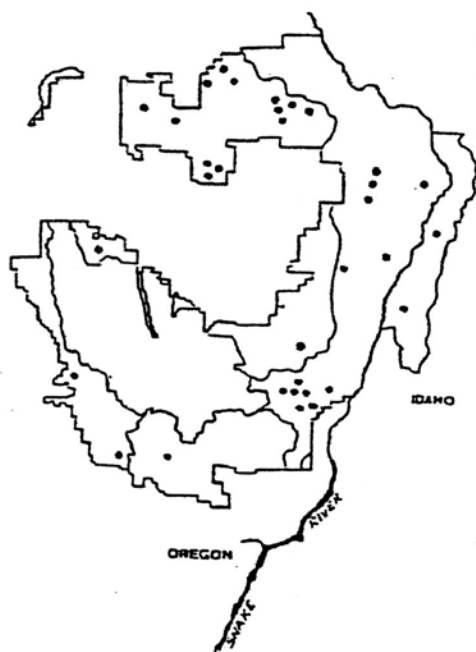
**Comparison with Other Investigators** - The PIPO/FEID habitat type was described in eastern Washington by Daubenmire (1968); in the Blue Mountains of Oregon by Hall (1973); in west-central Montana by Pfister (1977); in central Idaho by Steele (1981); and in northern Idaho by Cooper, Neiman, and Steele (1985). Volland (1976) and Hopkins (1979) describe ponderosa pine/bitterbrush/fescue on buried soils with ash or pumice surface layers in central Oregon.



Douglas-fir/pinegrass plant association  
*Pseudotsuga menziesii*/*Calamagrostis rubescens*  
 (PSME/CARU) (CDG1 21)



60. North of Rattlesnake Creek, Snake River Canyon Plot 761  
 (Hells Canyon NRA)



ENVIRONMENT  
 (all plots)

Location:  
 All Districts

Elevation: (4800 ft.)  
 4100-6000 ft.

Aspect: (E-W)  
 All

Slope (32%)  
 3-70%

Position: undulating  
 ridges and brows

Other: sites overlap  
 with PSME/SYAL,  
 PSME/SPBE, PSME/PHMA.

SOILS  
 (typical soils)

Parent Material: loess and  
 basalt colluvium

Solum depth: (38 in.)  
 20-60 in.

Loess depth: (18 in.)  
 8-30 in.

Root conc: (29 in.)  
 14-40 in.

Depth to GT 15%  
 rock frag./size:  
 (20 in.) 5-30/gravel, cobbles

Surface soil/subsoil  
 texture:  
 silt loam/clay loam, clay

## DOUGLAS FIR (PSME) SERIES

## Summary of Plant Association and Community Type Characteristics 1/

Plant Community Type	Elevation (feet)	Slope Position	Aspect	Slope	Parent Material	(2)		(3)		(4)	
						Soil Depth Total (in.)	Rt. Conc.	Principal Indicators	Relative Cubic prod./ Stockability	Forage (lbs./acre) dry	
PSME/CARU	4100-6000 (4800)	ridges, upper slope	all	3-70% (32%)	Loess(ash)+ basalt colluvium	20-60 (38) 14-40 (29)		CARU, CAGE ARCO, FRVE	Moderate/ Moderate	(550) 170-1300	
PSME/ACGL- PHMA	2500-5800 (4450)	lower to upper slope	all	15-85% (55%)	Loess + basalt colluvium	40-60 (50) 13-26 (18)		ACGL, PHMA OSCH, CARU	Moderate/ Moderate	(150) 100-310	
PSME/PHMA	2500-5300 (4300)	lower to upper slope	all	30-90% (56%)	Loess + basalt colluvium	24-40 (32) 14-34 (20)		PHMA, SYAL CARU, MIST2	Low/ low- moderate	(275) 115-900	
PSME/SPBE	3300-5400 (4400)	lower to upper slope	SE-SW	15-60% (35%)	Loess + mixed geol. colluvium	35-50 (40) 17-20 (20)		SPBE, CARU BERE, SYAL	Mod. - low/ Moderate	(315) 100-500	
PSME/SYAL	3500-5100 (4300)	lower to upper slope	all	5-50% (14%)	Loess + basalt colluvium	35-47 (40) 16-28 (22)		SYAL, CARU ARCO, CAGE	Mod. - low/ Moderate	(330) 50-630	
PSME/SYOR	4300-5300 (4850)	upper slope	SE-W	5-30% (18%)	Loess + basalt colluvium	20-48 (33) 19-37 (25)		SYOR, AMAL OSCH, FRVE	Mod. - low/ Moderate	(150) 100-300	

1/ Range and mean (no.)

2/ Total soil depth and depth of root concentration (80% of roots)

3/ Comparison of relative cubic volume production/stockability for the primary species (from Appendices E &amp; F)

4/ Forage production in all conditions sampled.

# Table of Principal Species

PSME/CARU (n = 34)

Species	Code	Mean Cover (%) / Constancy (%)			Late to Mid Seral Range
		Late Seral (n=3)	Mid Seral (n=11)	Early Seral (n=20)	
Overstory					
ponderosa pine	PIPO	5/33	40/100	40/100	0-70
Douglas-fir	PSME	53/100	20/100	5/10	10-75
Understory					
ponderosa pine	PIPO	-	5/55	9/65	0-15
*Douglas-fir	PSME	7/100	14/91	10/55	0-40
Shrubs					
common snowberry	SYAL	4/100	5/36	2/60	0-15
spiraea	SPBE	1/33	2/64	6/40	0-5
serviceberry	AMAL	-	1/27	2/45	0-1
Grasses and Sedges					
*pinegrass	CARU	55/100	56/100	51/100	20-85
*elk sedge	CAGE	15/33	15/64	12/60	0-30
western fescue	FEOC	10/33	1/36	1/20	0-10
Forbs					
*heartleaf arnica	ARCO	10/67	16/64	11/65	0-35
bigleaf sandwort	ARMA3	5/33	4/55	6/25	0-10
*strawberry spp.	FRVE, FRVI	13/67	7/45	9/55	0-20
showy aster	ASCO	16/67	16/27	1/10	0-45
yarrow	ACMIL	2/100	3/55	3/75	0-10
*long-stalked clover	TRLO	9/100	4/45	53/30	0-40
lupine spp.	LUPIN	-	14/45	18/35	0-50

\* Principal Indicator Species

## Stand Characteristics and Productivity

	<u>Late</u> <u>Serai</u> (n=2)	<u>Mid</u> <u>Serai</u> (n=7)	<u>Early</u> <u>Serai</u> (n=8)				
Herbage production (lbs./acre dry wt.)							
Total range and mean	170-425(300)	250-1300(705)	330-800(475)				
CARU range and mean	60-200(130)	200-1100(605)	100-600(290)				
Average stand diameter/CI*	17.4/1.4	16.0/5.0	17.0/3.6				
Number of trees per acre greater than 4 in dbh/CI	99/25	128/45	125/52				
Total basal area/CI	160/62	170/48	171/38				
Average basal area by species in all sampled stands							
PSME	145	52	1				
PIPO	15	118	170				
Mean Age/GBA by species							
PSME	160/175	120/185	80/250				
PIPO	230/130	195/160	140/160				
Productivity estimates							
	No. of Plots Sampled	Site Index ** Mean CI		GBA Mean CI		Productivity Index *** Mean CI	
PSME	10	72	4	195	38	57	18
PIPO	16	85	4	160	21	60	9

\* CI = 95% confidence interval, mean plus or minus this value

\*\* Site Index Base 100, Base 50 ( )

\*\*\* SI Base 100 X GBA x .004

Vegetative Composition - Old-growth, fire-resistant ponderosa pine is common in most stands with Douglas-fir generally increasing as a result of fire suppression. Pinegrass (CARU) dominates the understory with elk sedge (CAGE) usually present. Snowberry (SYAL) occurs as an opportunist in an otherwise continuous pinegrass stand. With proximity to PSME/PHMA communities spiraea (SPBE), snowberry (SYAL), ninebark (PHMA), serviceberry (AMAL), and mitella (MIST2) are more frequent. Forb occurrence is minimal in this type where competition from rhizomatous shrubs, sedges, and grasses is generally severe. Forbs defining the type are woods strawberry (FRVE), heartleaf arnica (ARCO), and long-stalked clover.

Many stands of PSME/CARU are degraded by ungulate trampling and trailing. Often PSME/CARU stands are included in larger expanses of ABGR/LIBO2 and ABGR/VAME stands. As a result, animals are attracted to the more open sedge-grass stands of this type. In late August, when bunchgrasses have desiccated, pinegrass is regularly used by ungulates, whereas prior to this time of season pinegrass is

avoided. Snowberry often invades as the rhizomatous pinegrass mats are broken down. Identification of degenerated PSME/CARU stands containing snowberry "weediness" is based on occurrence of the following forbs indicative of disturbance: woods strawberry (FRVE), long-stalked clover (TRLO), and heartleaf arnica (ARCO). Elk sedge (CAGE) appears to increase with disturbance of the pinegrass mats. Cleavers (GAAP) is prolific on animal trails. PSME/CARU also occupies sites at the upper end of PSME/PHMA stringers and near FEID-AGSP slopes. Kentucky bluegrass (POPR) increases on gentle topography in PSME/CARU replacing an Idaho fescue (FEID) component. Yarrow (ACMIL), lupines (LUSE, LUCA), and red avens (GETR) also increase on PSME/CARU sites located near bunchgrass communities. Showy aster (ASCO) invades PSME/CARU-disturbed areas adjacent to PSME/PHMA communities.

**Distribution and Environment** - This association is one of the more widespread types in the PSME series and forms extensive stands along mid-to upper elevation ridges and less extensive stands on steep canyon sideslopes. Elevations range from 4,100 feet to 6,000 feet (ave. 4,800 ft.). Slopes range from nearly flat to over 60%. The type occupies three distinct landforms: 1) ridges with slopes less than 20% and undulating microrelief; 2) moderately steep to steep ridgebrows with convex to undulating microrelief; and 3) steep canyon backslopes with southwest aspects, and undulating microrelief. These sites are similar in having accumulations of soil material through trapping of windborne particles or from erosion of the more elevated surrounding landscapes. Ridgebrow sites are below ridge summits but above the first basalt rim-outcrop which acts as a barrier to soil accumulation. These sites commonly merge abruptly with the very steep slopes below where PSME/PHMA communities predominate.

**Soils** - Soils are typically dark brown in color in surface layers, less than 60 inches in depth, and formed in loess and basalt colluvium. Surface soils have silt loam textures with less than 15% rock fragments by volume. Subsoils are often dense and have clay loam and clay textures. They tend to have more than 35% rock fragments by volume. Rock fragments in surface layers are predominantly gravel-sized; in subsoils they are gravel and cobble-sized. Surface rock seldom exceeds 10% cover.

These soils vary considerably depending upon landform position, elevation, and slope steepness. The typical situation described above occurs on undulating ridges and ridgebrows. Soil depth in these situations may be shallower (less than 30 inches) in convex exposed ridgebrows than in depressions (greater than 40 inches) near summit areas. Steep brows and sideslopes (greater than 45% slope) just below summits have more colluvium mixed with loess in surface layers and often are ash-influenced. These soils also have greater rock fragments in subsoils and may be transitional to ABGR/VAME soils on similar landscape positions. Rockier soils with ash and loess are also more common on all sites above 5000 feet in elevation. Clay concentrations in subsoils are rare on slopes greater than 25% but are more common at elevations below 4,500 feet.

Summary of Soil and Site Characteristics (all samples) - PSME/CARU

Solum Depth*	Rooting Depth**	Loess Ash	Site Stability	*** Summer Temp.	Depth to 15% rock fragments	Rock Outcrop
20 in. to 60 in.	11 in. to 47 in.	0 in. to 45 in.	very stable	52°F to 55°F	surface to 45 in.	occasional

\* Depth to bedrock, paralithic contact, or unconsolidated rock material.

\*\* Depth that includes 80% of all roots. \*\*\* Temperature at 20 in. depth.

**Successional Relationship** - PIPO/CARU communities are converting to Douglas-fir domination due to the protection from periodic fire. Larch and lodgepole pine occur infrequently as relicts from past fire seres when stands are near subalpine fir or grand fir sites. Unless fire or logging discriminate against the fir component, Douglas-fir will succeed on these sites. Grand fir requires moister-cooler environmental conditions that are not found in this type.

Late seral stands are dominated by Douglas-fir in the tree overstory. Pinegrass and elk sedge coverage is very high (mean: 70%). Common snowberry is usually present, but as an opportunist rather than a succeeding plant. Strawberries, showy aster, heartleaf arnica, and long-stalked clover are the most frequent forbs reflecting occupancy of disturbed pinegrass mats by ungulates.

Mid seral stands are characterized by ponderosa pine dominance over Douglas-fir in a 2:1 ratio in tree overstory layers. Douglas-fir is the codominant regenerating tree species. Reflecting drier and an earlier seral nature of these communities is the common occurrence by spiraea and lupines at this stage.

Early seral stands are dominated by ponderosa pine in tree overstory layers. Douglas-fir and ponderosa pine are codominant in the tree understory. Spiraea, common snowberry, and occasional serviceberry shrubs may be part of the dominant pinegrass-elk sedge herbaceous understory. Throughout all stages of succession, pinegrass and elk sedge cover is 60-70% with pinegrass dominating 4:1 over elk sedge.

**Series Relationship** - Douglas-fir/pinegrass and Douglas-fir/spiraea communities occupy the highest elevations for types of the Douglas-fir series. Pinegrass-elk sedge coverage is highest for this type over all others (mean: 70%). Disturbance was often very pronounced in PSME/CARU stands. Reflecting this were high coverage amounts for long-stemmed clover (TRLO) and the strawberries (FRVE, FRVI). Moss/lichen coverage was low. Mosses and lichens were found at low levels due to: 1) the open nature of the overstory vegetation which created drier conditions; 2) high moisture-demanding stoloniferous pinegrass mats; and 3) high litter buildup from the relatively droughty micro-environment. When PSME/CARU communities occurred adjacent to PSME/PHMA communities, the ninebark usually occupied well-drained and gravelly areas or rocky outcroppings where the shrubs could more readily tap moisture unavailable to the grass and forb roots. The PSME/CARU stands would then occupy convexities or nonlithic slopes adjacent to PSME/PHMA forests.

**Role of Fire** - Elk sedge and pinegrass are both resistant to fire. Periodic ground fires of a light to moderate intensity will generally not consume old-growth trees and will leave an open understory dominated by pinegrass and elk sedge. Periodic fire may retard Douglas-fir seedlings and shrubs (snowberry, spiraea) promoting the old-growth character of pine-dominated stands. An intense fire would expose areas of bare mineral soil where dormant ceanothus seed may initiate growth and establish dominance. Doghair ponderosa pine clumps also occur on areas of intense burning. Both pinegrass and elk sedge palatability should be temporarily improved by fire. Ponderosa pine needs periodic ground fire to successfully regenerate in this type whereas Douglas-fir is favored by



lack of fire. Fire exclusion is rapidly converting ponderosa pine-dominated pinegrass communities to Douglas-fir with dense pole and intermediate-sized trees now often occurring beneath old-growth pines. These overstocked layered stands have a greater potential for catastrophic stand replacement fires.

**Silvicultural Considerations** - The major limitation to management in this type is competition from rhizomatous grasses. There is a low probability of natural regeneration of both ponderosa pine and Douglas-fir within five years of over-story removal due to the heavy competition with pinegrass and elk sedge in natural situations and with Kentucky bluegrass and pinegrass in stands where logging disturbance has favored these grasses. Sites are most suitable for planting ponderosa pine, although Douglas-fir can be expected to do well on the more moist sites. Other tree species are unsuited on these sites. Seedling release may be necessary where overstocking exists, while control of pinegrass appears important in nearly all situations. Natural 'fill in' of planted areas is poor. In general, shelterwoods should achieve best results but where mistletoe is heavy, clearcuts may be more appropriate. Ungulate damage as well as pocket gopher damage may be severe in young trees. On these sites where dryness and pinegrass competition limit the growth potential for the better site-demanding species (i.e., Douglas-fir), mistletoe may be serious. Spruce budworm and tussock moth cause their highest incidence of damage in these communities. There is also a potentially high risk of bark beetle attacks in old-growth overstocked stands.

**Range and Wildlife Management** - Livestock generally are attracted to more desirable forages utilizing pinegrass and elk sedge only late in the season after other species have desiccated. Early spring use by wild ungulates occurs on succulent young shoots of both species. The moist site exotic grasses (orchardgrass, timothy, hard fescue) along with smooth brome and intermediate wheatgrass will out-produce pinegrass and elk sedge following severe site disturbance. Site preparation is necessary to break up the rhizomatous sod. Some sites containing buckbrush (CEVE) and Scouler willow (SASC) in an early post-fire seral stage may provide important deer browse and hiding cover. Elk and deer may be helping to promote pinegrass dominance by browsing of the shrubs that enter when the pinegrass mat breaks down.

**Stand Structure and Productivity** - The diameter/age distribution for stands in this type is similar to that observed in PSME/PHMA where an even-aged condition is more common than a multi-aged one. Sufficient fuels in the PSME/CARU type and the relatively large extension of stands has contributed to stand replacement fires in the past. This is especially true along ridgetops where almost all stands are even-aged. The multi-aged condition is more common on ridgebrows and steep sideslopes. Even-aged stands may contain Douglas-fir and ponderosa pine ranging in age from 80 to over 250 years old in one of the following distinct age classes: 70-90, 110-130, 140-160, 190-200, or 240+ years. Multi-aged stands may contain at least four distinct age classes of grouped trees of similar age. Across the type, basal area ranges from 80 to 280 sq.ft./acre (ave. 170). Even-aged stands average around 200 sq.ft./acre and multi-aged stands around 150 sq.ft./acre.

Overall production is moderate in stands belonging to this association, but moderately high in comparison to other communities in the PSME series. Average site index and stockability for Douglas-fir is always greater in the ABGR series. This appears to be the most productive site for Douglas-fir within the PSME series. Although Douglas-fir height growth is exceeded in PSME/ACGL-PHMA stands,

stocking levels there are noticeably lower. For dominant and codominant trees within the type, Douglas-fir has greater stockability and volume growth than ponderosa pine.

Comparison with Other Investigators - The PSME/CARU habitat type was first described by the Daubenmires (1968) in eastern Washington as their highest elevation Douglas-fir type. Hall (1973) did not separate PSME/CARU in the Blue Mountains where both grand fir and Douglas-fir were considered co-climax depending on elevation. He placed sites similar to PSME/CARU in a "mixed conifer-pinegrass plant association" on either ash or residual soils. Pfister (1977) separated PSME/CARU in Montana into four phases. Steele (1981) described two phases of PSME/CARU in central Idaho as one of his major types. Cooper, Neiman, and Steele (1985) considered PSME/CARU incidental in northern Idaho. Williams (1983) and Lillybridge (1984) both found PSME/CARU in northern Washington.

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