Bitterroot National Forest
Noxious Weed Treatment Project
Record of Decision

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Native bunchgrasses on left responded well to herbicide control of knapweed. Untreated knapweed and suppressed native grass community show in the background and on the right

BITTERROOT NATIONAL FOREST
NOXIOUS WEED TREATMENT PROJECT
RECORD OF DECISION

USDA FOREST SERVICE
MARCH, 2003
RAVALLI COUNTY, MONTANA

Grasses on left released by herbicide treatment. Untreated flowering knapweed on right.

I. INTRODUCTION

This Record of Decision documents my decision to implement Alternative E–Modified for Noxious Weed Treatment on the Bitterroot National Forest. Alternative E–Modified includes three changes to Alternative E in the Noxious Weed Treatment Project Final Environmental Impact Statement (FEIS). I reached this decision after careful consideration of all the alternatives analyzed in the FEIS along with comments from the public, local governments and other agencies. This document describes my choices and the reasons for my decision.

II. SUMMARY OF THE FOREST SITUATION

Invasive noxious weeds are a serious threat to natural habitats in the West.

The problem has exploded in scale during the last several decades. By the summer of 2000 on the Bitterroot National Forest, invasive weeds infested almost 270,000 acres or over 16% of the Forest's total land area.

While spotted knapweed constitutes most of the historic problem here, several other invasive species are showing alarming rates of spread that reach 30% or more each year (FEIS pg 2-24). The majority of our big game ranges and many of our open grasslands suffer heavy infestations of noxious weeds (FEIS pp 3-29 to 3-34).

Invasive noxious weeds impact resources such as water quality, wildlife and natural diversity of our wildlands. Left unchecked, invasive weeds can:

- Adversely affect rare and sensitive native plant species;
- Degrade the habitat for wildlife, especially big game species that depend on our foothill and mountain slopes forage areas. Reduce the forage opportunities for permitted livestock;
- Threaten habitat for waterfowl and upland game birds;
- Deteriorate water quality through increased soil erosion;
- Replace or reduce native plant communities and biological diversity;
- Diminish the quality of recreational and wilderness experiences.

At the same time that invasive plants are expanding their presence around us, we are beginning to see more examples of successful efforts that use a variety of methods to reduce noxious weeds and recover native plant communities. The Sawmill Creek Restoration Project, inititated in 1998, offers an encouraging scenario in which a rapid surge in the vigor and density of native species followed the reduction of spotted knapweed and leafy spurge (FEIS pg 1-9).

III. PURPOSE AND NEED

The general purpose and need of this project is to prevent and reduce the loss of native plant communities associated with the spread of noxious weeds. A subset of more detailed purposes is described as follows (FEIS pp 1-16 to 1-17)
:

- Prevent or discourage introduction and establishment of newly invading weed species on Forest land, particularly areas at high risk due to recent fires.
- Prevent or limit spread of established weeds into areas with few or no infestations on Forest land, particularly areas at high risk due to recent fires.
- Restore native plant communities and improve forage on specific big game summer and winter ranges.
- Treat weeds near the Forest boundary where adjacent landowners are interested in or are currently managing weeds.
- Limit spread of weeds into and within wilderness areas.

My desire is to reduce the impacts of noxious weeds and restore native plant communities as much as possible in a cost effective and safe manner. Restoration, in this project, means reducing noxious weed competition in order to increase the vigor of existing native plant communities (FEIS pp 1-12, 2-4, and 2-14).

IV. DECISION

It is my decision to select and implement Alternative E-Modified. This alternative consists of Alternative E as described in the Bitterroot National Forest

Noxious Weed Treatment Project FEIS with the following three modifications:

1) A widening of the buffer zone for picloram use that is more restrictive than the approved label direction
2) A more conservative acreage limit for the maximum number of acres that can be treated over the lifespan of the project
3) The inclusion of additional analysis for the Bitterroot River Research Natural Area in conjunction with the grazing demonstration.

These modifications are explained in more detail below.

DETAILED DESCRIPTION OF THE SELECTED ALTERNATIVE, ALTERNATIVE E - MODIFIED

Additional information and interdisciplinary team reviews caused me to modify Alternative E in the FEIS with the following three items:

1. Recently, representatives of the US Fish and Wildlife Service in Montana and some Northern Region Forest Service Fisheries Biologists met to discuss buffer zones associated with the use of picloram. At that meeting, they agreed to recommend a uniform buffer zone for the ground application of picloram of fifty feet from surface water or to the edge of subirrigated land whichever is the greater distance from live water. I am incorporating the picloram-specific buffer into this document for Alternative E – Modified (ROD Table 14).

The ground application herbicide buffer in the FEIS met EPA approved label requirements. The additional buffer width for picloram takes a more cautious approach with near-stream application of that particular herbicide.

2. By the end of the seven to ten year lifespan of the project, the total land area treated with herbicide, will not exceed 35,445 acres. The FEIS analyzed a larger composite amount of acreage for treatment under Alternative E i.e. 43,379 acres (FEIS pg 2-13). I have chosen to authorize only 35,445 acres for treatment within the larger composite acreage that underwent the full effects analysis for Alternative E in the FEIS.

I reduced the acreage targeted for active treatment in Alternative E-Modified because I did not want to select an alternative that treated more acres than any of the alternatives presented to the public in the Draft EIS.

The modification enhances the ability of Alternative E-Modified to meet the purpose and need as I discuss in more detail in the “Meeting Purpose and Need” section (ROD pg 22).

3. The effects of Alternative E-Modified on the Bitterroot River Research Natural Area (RNA) site (also known as Poker Joe) as a grazing demonstration area for noxious weed control were not analyzed in the FEIS. An analysis was prepared and is attached as Appendix A to this Record of Decision.

RNA status does not preclude activities that are designed to improve or recover the natural ecological condition of the site. Invasive weed control qualifies as a beneficial activity for an RNA. However, before domestic grazing animals can use the RNA or before any other restoration plan is finalized, the Forest will work with the Rocky Mountain Research Station to secure formal approval for the activity. Any grazing in the RNA would be closely monitored to protect native vegetation.

The Sawmill RNA has a restoration plan in place that was approved by the Rocky Mountain Research Station.

Other than the three modifications listed above, the Selected Alternative is the same as Alternative E described in the Final Environmental Impact Statement (FEIS pp 2-13 to 2-29).

The Forest developed Alternative E-Modified (ROD pp 2 to 20) in response to public comments received on the DEIS. Reviewers wanted more assurance that the safest herbicides would be used in a judicious manner as part of an integrated weed management program that placed greater emphasis on native ecosystem restoration, weed prevention, public notification, and monitoring.

The treated areas in Alternative E-Modified are similar to those in Alternative A, although some sites were refined/adjusted or added in response to specific comments on the DEIS. Total analyzed acres in this alternative are about 43,379 acres. However, only 35,445 acres will be treated.

E-Modified contains over 7,000 acres of weed-free, pristine grasslands, which would be monitored and treated if weeds were discovered. It includes more trails and trailheads. (ROD Figures 1 through 6 in map packet). In response to public comments, Alternative E-Modified contains demonstration areas for small ruminant (goats and/or sheep)

grazing to treat weeds, and hand-pulling (ROD Tables 7 and 8).

Additional mitigation measures that restrict herbicide applications and provide more safeguards for water, air, soil, wildlife, human health, and non-target plant species are included (ROD Table 14).

Alternative E-Modified includes an expanded monitoring plan to evaluate both the implementation of weed treatments and the effectiveness of such treatments. Monitoring results are used to improve implementation of future weed treatments and reduce potential resource effects. It includes provisions for a citizen monitoring team to review results.

Treatment Areas and Methods (map for Alternative E-Modified is attached)

Aerial application of herbicide has been reduced from about 13,530 acres in Alternative A to about 11,030 acres because high risk burned areas will be treated from the ground in Alternative E-Modified. Ground application of herbicides has been increased from about 21,910 acres in Alternative A to 24,415 acres due to the switch in the high risk burned area treatment method and the additions of some trails and recreational sites. Alternative E-Modified also contains currently weed free areas (7,106 acres) not in Alternative A, which would be treated with an eradication objective if weeds were discovered.

Herbicide treatment of all sites would total about 5,000 acres annually, including both initial treatment and re-treatments for skips. Aerial application of herbicides would be approximately 3,000 acres annually. During the first year of the project implementation, aerial application would be used on about 1,000 acres to demonstrate the technique and monitor the effectiveness of this method. Treatments of fire camps and heli-spots (about 72 acres) would occur.

Under Alternative E-Modified, approximately 1,100 acres have been identified as potentially supporting infestations that would meet the criteria where hand-pulling would be considered effective (FEIS pg 2-14). This does not imply that 1,100 acres would be treated by hand-pulling. In fact, approximately 5 acres a year within the 1,100 acres could potentially be treated using this method. Other treatment methods may also be applied as necessary. Hand-pulling acres will be composed of small, scattered patches generally consisting of a low number of plants and individuals or clusters of plants scattered along a trail.

Biocontrol agents would be authorized for release at all winter and summer ranges, high-risk burn sites, cross-boundary treatment areas, roads, non-Wilderness trails/trail segments and recreation sites, for a total of 35,381 acres. Biological control agents will be released only on sites that lie outside the Wilderness.

Biological controls are not expected to produce immediate or adequate impacts on target weeds (Wilson and McCaffrey 1999). Using biological control agents throughout the project area may help stabilize weed population densities by mediating the host's ability to compete in its environment, until more aggressive control measures can be implemented.

Demonstration areas would be established to show the effectiveness of grazing for weed control (382 acres) and hand-pulling (48 acres).

Biological, cultural, and mechanical treatments, education, and prevention would occur as described in the following sections.

Big Game Winter and Summer Ranges: These treatment areas would total 10,263 acres (ROD Table 1). Treatment objectives in big game winter/summer range sites would suppress and contain weed infestations. Restoration efforts would re-establish grasslands dominated by native vegetation instead of invasive weeds. Treatment methods would include application of clopyralid on all sites with a woody vegetation component to avoid damage to non-target species, release of biological agents, and hand-pulling or spot spraying of small weed infestations. Where possible, application of herbicides on winter ranges would be done in the fall to reduce damage to non-target native forbs. Herbicides would not be mixed and use of 2,4-D would be limited (see ROD Table 14). Access roads and trails leading to weed-free areas would be treated. Road and trail closures would be considered when necessary to prevent weed spread.

High Risk Burned Areas: Under Alternative E-Modified, high-risk burned areas (approximately 5,942 acres) would be inventoried and small weed populations would be spot-treated with ground application of herbicides (ROD Table 2). The Forest would monitor and spot-treat weeds as needed on high-risk disturbed sites in the BAR (Burned Area Recovery) project (FEIS Table 2-3, 355 acres). The displayed estimated acres are the

maximum that would be treated within the high-risk burn areas.

Cross-Boundary Cooperation Treatment Areas: These sites total approximately 5,431 acres (ROD Table 3). The purpose of the treatments is to benefit both Forest and private or State land resource and land-use values.

TABLE 1
Big Game Winter/Summer Range and Other Grassland Treatments – Alternative E-Modified

Map Item #	Treatment Site	Acres[1]	Predominant Species	Treatment Method	Treatment Objective
1	Little Sleeping Child Winter Range	24	Leafy spurge	Ground application of herbicide; biological agents	Eradicate/suppress
		836	SK/SC[2]	Aerial/ground application of herbicide, biological agents	Suppress/contain
2	Sleeping Child	7	Leafy spurge	Ground application of herbicide; biological agents	Eradicate/suppress
3	Skalkaho Big Horn Sheep Summer Range	1,336	SK/SC	Aerial/ground application of herbicide, biological agents	Suppress/contain
4	Skalkaho	26	Leafy spurge	Ground application of herbicide; biological agents	Eradicate/suppress
5	Barley Ridge Winter Range	1,066	SK/SC	Aerial/ground application of herbicide; cultural; biological agents	Suppress/contain
6	Sula Peak Winter Range	2,970	Spotted knapweed	Aerial/ground application of herbicide; cultural; biological agents	Suppress/contain
7	Reimel Ridge Winter Range	1,231	SK/SC	Aerial/ground application of herbicide; cultural; biological agents	Suppress/contain
8	Shirley Mountain Winter Range	154	SK/SC	Aerial/ground application of herbicide; cultural; biological agents	Suppress/contain
9	Medicine Tree Winter Range	1,462	SK/SC	Aerial application with herbicide, biological agents	Suppress/contain
10	Jennings/Guide Winter Range	895	SK/SC	Aerial/ground application of herbicide; cultural; biological agents	Suppress/contain
42	Three Mile Wildlife Management Area	256	SK/SC	Ground application of herbicide; cultural; biological agents	Suppress/contain
	Total Area Treated	**10,263**			

Notes:
1 Acreage figures were derived using geographic information system methods and are approximate. Total acreage includes a 20 percent increase to account for predicted spread.
2 Spotted knapweed and sulfur cinquefoil complex.

TABLE 2
High Risk Burned Areas – Alternative E-Modified

Map Item #	Treatment Site	Acres[1]	Predominant Species	Treatment Method	Treatment Objective
11	High Risk Burned Areas	5,942	SK[2] and new invasive species	Ground application of herbicide; cultural; biological agents	Suppress/ contain/eradicate new invaders

Notes:
1 Acreage figures were derived using geographic information system methods and are approximate. Total acreage includes a 20 percent increase to account for predicted spread.
2 Spotted knapweed.

TABLE 3
Cross-Boundary Cooperation Treatment Areas – Alternative E-Modified

Map Item #	Treatment Site	Acres[1]	Predominant Species	Treatment Method	Treatment Objective
12	Sawmill RNA[2]	180	SK/SC[3]	Aerial application of herbicide; cultural; biological agents	Suppress/contain
13	Burke Gulch Cross-Boundary	574	SK/SC	Aerial/ground application of herbicide; cultural, biological agents	Suppress/contain
14	Sleeping Child Cross Boundary (part of Burke Gulch project)	844	SK/SC	Aerial/ground application of herbicide; cultural; biological agents	Suppress/contain
15	Ross Hole/French Basin Cross Boundary	408	SK/SC	Aerial/ground application of herbicide; cultural; biological agents	Suppress/contain
16	Bunch Gulch (part of Ross Hole/French Basin)	625	SK/SC	Aerial/ground application of herbicide; cultural; biological agents	Suppress/contain
17	Razor Fire Cross-Boundary	2,686	SK[4]	Aerial/ground application of herbicide; cultural; biological agents	Suppress/contain
43	Roan Gulch	114	SK	Aerial/ground application of herbicide; cultural; biological agents	Suppress/contain
	Total Area Treated	**5,431**			

Notes:
1 Acreage figures were derived using geographic information system methods and are approximate. Total acreage includes a 20 percent increase to account for predicted spread.
2 Research natural area.
3 Spotted knapweed and sulfur cinquefoil complex.
4 Spotted knapweed

Roads, Trails, Trailheads, and Recreation Areas: Alternative E-Modified would use a variable width treatment corridor that provides flexibility to treat weed patches adjacent to the road. An average figure of 8.5 acres per mile was used to estimate acres. The treatment would be spot treatment of new invaders on or adjacent to the existing road system. Continuous treatment on roadsides would occur only when adjacent land is weed free and when the road acts as a weed seed transportation corridor from an area of heavy infestation into a nearby area that is relatively weed-free. Existing road closures would be maintained following weed treatment to reduce the risks of reinfestation.

Specific trails would be treated under Alternative E-Modified (ROD Table 4). Hand-pulling of small weed populations (less than ¼ acre) would be used where it meets the criteria (FEIS pg 2-23), on less than 5 acres per year. Spot treatment with appropriate herbicides applied with backpack or horse-pack sprayers would be used when weed populations exceed hand-pulling capability. Biological control agents can be released on all non-Wilderness portions of these sites. The total of these types of treatments is approximately 14,135 acres (**Table 4**).

Fire Camps and Heli-spots: Proposed treatment of fire camps and heli-spots are displayed in Table 5 of the ROD.

Weed-Free Areas: Two areas totaling approximately 7,106 acres were identified as "weed-free" because currently they don't have weed infestations or infestations are sparse (ROD Table 6). New or small weed populations in these weed-free areas would be hand-pulled or spot sprayed with herbicide to eradicate the weeds.

TABLE 4
Roads, Trails, and Recreational Sites – Alternative E-Modified

Map Item #	Treatment Site	Acres[1]	Predominant Species	Treatment Method	Treatment Objective
19	Darby District Roads	8,896	SK/SC[2]	Ground application of herbicide vehicle; cultural; rehabilitation, biological agents	Suppress
		180	Oxeye daisy		
		360	Goatweed		
20	Lake Como Recreation Area	30	SK[3]	Ground application of herbicide; mowing; incidental hand-pulling, biological agents	Suppress
21	Bass Creek Trail/Campground	368	SK	Ground application of herbicide, biological agents	Suppress
		T[4]	Oxeye daisy		
22	Bass Creek Trail	18	SK/SC	Ground application of herbicide, biological agents outside Wilderness	Suppress
23	Stevensville District Roads	3,727	SK	Ground application of herbicide; cultural; biological agents	Suppress
		120	Oxeye daisy		
		T	Leafy spurge		
		60	Goatweed		
24	Sweeney Creek	42	SK	Ground application of herbicide; cultural; biological agents outside Wilderness	Suppress/contain
		48	Dalmatian toadflax		
25	Larry Creek	24	Canada thistle	Ground application of herbicide; biological agents	Suppress/contain
		48	SK/SC		
26	Fred Burr Trail	6	SK	Ground application of herbicide	Eradicate
27	West Side Trails[5]	67	SK	Ground application of herbicide, biological agents outside Wilderness	Suppress/contain
28	Warm Springs Trail	12	SK	Ground application of herbicide, biological agents	Suppress
29	Fire Creek Trail	12	SK	Ground application of herbicide, biological agents	Suppress
30	East Fork Wilderness Trailhead/Trail	6	SK/SC	Ground application of herbicide, biological agents outside Wilderness	Eradicate/suppress
31	Twogood Cabin	36	SK	Ground application of herbicide, biological agents	Suppress
		12	Tall Buttercup		
32	Blue Joint Meadows	42	SK	Ground application of herbicide, biological agents	Suppress
44	East Side Trails[6]	21	SK	Ground application of herbicide, biological agents	Suppress/contain
45	South Fork Sweeney Creek Trail	0.25	Houndstongue	Ground application of herbicide, biological agents	Suppress/contain
	Total Area Treated	**14,135**			

Notes:

1 Acreage figures were derived using geographic information system methods and are approximate. Total acreage includes a 20 percent increase to account for predicted spread.

2 Spotted knapweed and sulfur cinquefoil complex.

3 Spotted knapweed.

4 Trace.

5 West Side Trails include: Canyon Creek, Sawtooth Creek, Roaring Lion, South Fork Lost Horse Creek, Rock Creek, Little Rock Creek, Tin Cup Creek, Chaffin Creek, Trapper Creek, Blodgett Creek, Mill Creek, Sheafman Creek, South Fork Bear Creek, Middle Fork Bear Creek, Sweathouse Creek, Big Creek, Kootenai Creek, Lost Trail, Boulder Creek, Soda Springs Creek, Watchtower Creek, Sheephead Creek and Blue Joint Creek Trails.

6 East Side Trails include: Little Three Mile Creek, Three Mile Cutoff, Burnt Fork, Gold Creek, Gold Ridge, Willow Creek, and Chain of Lakes Trails.

TABLE 5
Fire Camps and Heli-spots – Alternative E-Modified

Map Item #	Treatment Site	Acres[1]	Predominant Species	Treatment Method	Treatment Objective
33	Nez Perce Pass Heli-spot	6	SK[2]	Ground application of herbicide; incidental hand-pulling	Suppress/eradicate
34	Peyton Rock Fire Camp	6	SK	Ground application of herbicide; incidental hand-pulling	Suppress/eradicate
35	Quartzite Mountain Heli-spot	6	SK	Ground application of herbicide; incidental hand-pulling	Suppress/eradicate
36	Thunder Mountain Heli-spot	6	SK	Ground application of herbicide; incidental hand-pulling	Suppress/eradicate
37	Piquett Mountain Heli-spot	6	SK	Ground application of herbicide; incidental hand-pulling	Suppress/eradicate
38	Razorback Mountain Heli-spot	6	SK	Ground application of herbicide; incidental hand-pulling	Suppress/eradicate
39	Steep Hill Heli-spot	6	SK	Ground application of herbicide; incidental hand-pulling	Suppress/eradicate
40	West Fork Fire Camp/Heli-spot	24	SK	Grounds application of herbicide; cultural; biological agents	Suppress/contain
41	Castle Rock Heli-spot	6	SK	Ground application of herbicide; incidental hand-pulling	Suppress/eradicate
	Total Area Treated	**72**			

Notes:
1 Acreage figures were derived using geographic information system methods and are approximate. Total acreage includes a 20 percent increase to account for predicted spread.
2 Spotted knapweed.

TABLE 6
Weed-Free Areas – Alternative E-Modified

Map Item #	Treatment Site	Acres[1]	Predominant Species	Treatment Method	Treatment Objective
46	Upper Hughes, Upper West Fork, Watchtower/Piquette	1,736	All new invaders	Spot treat - Ground application of herbicide; incidental hand-pulling	Eradicate
47	Tolan, Reimel, Upper Meadow, Porcupine Ridge	5,370	All new invaders	Spot treat - Ground application of herbicide; incidental hand-pulling	Eradicate
	Total Area Treated	**7,106**			

Notes:
1 Acreage figures were derived using geographic information system methods and are approximate. Total acreage includes a 20 percent increase to account for predicted spread.

TABLE 7
Hand-Pulling/Grubbing Demonstration Areas - Alternative E-Modified

Map Item #	Treatment Site	Acres[1]	Predominant Species	Treatment Method	Treatment Objective
18	Willoughby Environmental Education Area	48	All species currently present	Hand-pulling/grubbing, biological agents	Suppress/eradicate

Notes:
1 Acreage figures were derived using geographic information system methods and are approximate. Total acreage includes a 20 percent increase to account for predicted spread.

TABLE 8
Grazing Demonstration Areas – Alternative E-Modified

Map Item #	Treatment Site	Acres[1]	Predominant Species	Treatment Method	Treatment Objective
48	Ambrose Demonstration Area	334	All species currently present	Grazing (sheep or goat)	Suppress/eradicate
49	Poker Joe Demonstration Area	48	All species currently present	Grazing (sheep or goat)	Suppress/eradicate

Notes:
1 Acreage figures were derived using geographic information system methods and are approximate. Total acreage includes a 20 percent increase to account for predicted spread.

Hand-Pulling/ Grubbing Demonstration Areas: Willoughby Environmental Education Area comprising approximately 48 acres would be used to demonstrate techniques and effectiveness of handpulling and grubbing on weed populations (ROD Table 7).

A non-herbicide approach is the preferred method. Volunteer efforts will be solicited for the hand-pulling of spotted knapweed and other non-rhizomatous weeds as an education and demonstration project. Biological agents would also be authorized for introduction within this area. Current NEPA authorizing herbicide treatment on Dalmatian toadflax would continue and would not be altered as a result of this project because handpulling is not effective against the rhizomatous root system of Dalmatian toadflax.

Grazing Demonstration Areas: Two sites, Poker Joe and Ambrose Grazing Demonstration Areas (comprising approximately 382 acres, ROD Table 8), would be established to demonstrate techniques and effectiveness of sheep and/or goat grazing on weed populations. Using grazing animals to control weed infestations can either promote or reduce weed abundance on weed-infested sites. The intent of the grazing demonstration areas will be to learn more about potential applications on a larger scale, and how grazing prescriptions are implemented. Grazing as a prescriptive treatment will be key to managing weeds on these sites. A long term commitment to small ruminant grazing is necessary for effective weed control results.

FEATURES COMMON TO ALL ACTION ALTERNATIVES

The following features are common to all action alternatives:

- Treatment Methods
- Adaptive Management Approach
- Monitoring;
- Weed Prevention Plan; and,
- Environmental Protection Measures

TREATMENT METHODS IN ACTION ALTERNATIVES

Aerial and Ground-Based Herbicide Applications: Access to noxious weed infestations is a major challenge in Project areas. Aerial and ground-based equipment would allow noxious weed control on areas where terrain is not suitable for ground-based equipment alone. Many of these areas are critical winter ranges for big game animals. Infestations would be contained or suppressed. Herbicide application would help restore and protect native plant communities. Small, newly established infestations and weeds introduced during fire suppression activities are targeted for eradication using ground-based herbicide applications.

Aerial application would allow greater coverage of infested areas, and use of global positioning system (GPS)-guided equipment would reduce occurrence of “skips” or non-treated areas. This technology generates coverage maps to increase accuracy and reduces the number of re-treatments.

Successful models of effective aerial and ground-based weed management projects on wildland tracts have been reviewed. These projects used an integrated approach similar to that proposed under Alternative E-Modified using herbicides and biological management agents. The Lolo National Forest Mormon Ridge Pilot Weed Management Project used aerial herbicide application and

biological management agents to achieve 95 percent control of spotted knapweed (USDA-FS 1996). Pioneering infestations of established leafy spurge were suppressed. The Bitterroot National Forest Sawmill Restoration Project is an example of restoration with ground-based equipment where management could be enhanced with aerial application. These pilot projects are described in Chapter 1 of the FEIS.

Herbicides would be applied in accordance with label instructions. Application rates and types of herbicides are displayed in ROD Table 9. Herbicide selection considers, but is not limited to, the following criteria:

- Herbicide effectiveness on target weed species;
- Proximity to water or other sensitive areas;
- Soil characteristics;
- Potential unintended impacts to non-target species such as sensitive plant species,
- Conifers or shrubs;
- Application method (aerial, ground);
- Adjacent treatments (private or state land);
- Timing of treatment (spring, fall); and,
- Priority weed—new invaders vs. spotted knapweed.

The intent of considering these items is to reduce any potential impacts on non-target species and to minimize the risk for unintended consequences associated with the application of herbicides. However, the effectiveness of the various methods of achieving the purpose and need for the project are also strongly considered. For example, clopyralid (Transline) would be a preferred herbicide for use on knapweed within forested communities or on ranges where mule deer depend on the shrub component for winter feed (it is labeled for use within these types of environments). However, when other species such as sulfur cinquefoil are intermixed with spotted knapweed (a common association on the Bitterroot NF), the use of Transline alone would not be effective since it has little to no effect on sulfur cinquefoil. In this case, spot-spraying of picloram may also be recommended. ROD Table 9 shows the herbicides considered and which weeds they are commonly used on.

In addition, environmental protection measures developed by the Forest are included to further ensure adequate protection for herbicide applicators and health and welfare of the general public and sensitive resources. These measures are described in ROD Table 14.

Previous treatment projects have shown that invasive weed infestations on big game winter range would likely require two treatments. A follow-up treatment would likely occur where post treatment monitoring revealed presence of invasive weeds capable of re-occupying treated sites.

Table 9
Examples of Herbicide Application Rates and Timing

Weed Species	Plant Biology	Herbicide* (trademark)	Rate (per acre)	Timing
Spotted knapweed; Diffuse knapweed	Tap-rooted	Tordon 22K®	1 pint	Active growth Bolt to early bud; fall
Yellow starthistle	Tap-rooted	Curtail® Transline® 2,4-D®	2 quarts 0.67 pint 2 quarts	 Rosette to early bolt
Sulfur cinquefoil	Tap-rooted	Tordon 22K® 2,4-D®	1 pint 2 quarts	Active growth Rosette to bolt
St. Johnswort	Perennial; deep-rooted; rhizominous	Tordon 22K® 2,4-D®	1 to 1.5 pint 2 quarts	Pre-bloom Seedling/pre-bloom
Canada thistle	Perennial; deep-rooted; rhizominous	Tordon 22K® Curtail® Transline® 2,4-D®	1 to 1.5 pint 2 quarts 0.67 pint 2 quarts	Late bolt-pre-bud Bolt-early bud Bolt to pre-bud Bolt
Musk thistle	Tap-rooted	Tordon 22K® Curtail® Transline® 2,4-D®	1 pint 2 quarts 0.67 pint 2 quarts	Rosette to early bolt, fall rosettes Rosette to early bolt
Leafy spurge	Perennial; deep-rooted; rhizominous	Tordon 22K® Plateau® 2,4-D®	1 to 2 quarts 8 to 12 oz. 2 quarts	Full flower/fall Fall/ prior to first frost Full flower
Dalmatian toadflax; Yellow toadflax	Perennial; rhizominous	Tordon 22K® Plateau® 2,4-D®	1 to 2 quarts 8 to 10 oz. 2 quarts	Flower or fall Fall Flower
Houndstongue	Perennial; rhizominous	Escort® 2,4-D®	0.25 to 0.5 oz 2 quarts	Rosette to bolt Rosette
Common tansy	Perennial; deep-rooted; rhizominous	Escort® 2,4-D®	0.3 to 1.0 oz 2 quarts	Full flower/fall Full flower
Oxeye Daisy	Perennial; shallow-rooted; rhizominous	Tordon 22K® Escort® 2,4-D®	1 pint 0.5 oz 1 quart	Late bud/early bloom
Russian knapweed	Perennial; deep-rooted; rhizominous	Tordon 22K® Curtail® Transline® 2,4-D®	1 quart 2 to 3 quarts 1.67 pint 2 quarts	Fall, early bud Early bud Early bud Early bud
Hawkweeds	Perennial; shallow-rooted; rhizominous	Curtail®	2 quarts	Rosette to early bolt
Tansy ragwort	Perennial; fibrous root	Transline®	1.67 pints	Rosette to bud; fall
Whitetop	Perennial; rhizominous	Escort® 2,4-D®	0.25 to 0.5 oz 2 quarts	Rosette to pre-bud Rosette
Common crupina	Annual; fibrous root	Tordon 22K® Escort®	1 pint 0.5 to 1 oz	Seedling to early bolt
Purple loosestrife	Perennial; rhizominous	2,4-D® Glyphosate®	2 quarts 0.75 to 1.5 percent solution	Bolt
Tall buttercup	Fibrous; tap-rooted	2,4-D® Clarity®	2 quarts 1 quart	Rosette to early bolt
Rush skeletonweed	Perennial; tap-rooted	Tordon 22K® 2,4-D® Transline®	2 quarts 2 quarts 1.5 pints	Rosette
Blueweed	Biennial; tap-rooted	Escort®	0.5 to 1 oz	Rosette to early bolt

* The Forest Service is not promoting the use of these specific products over any other product with this herbicide. This information is provided as examples of the formulations and rates that might be used.

Table 10
Herbicide and Target Weed Species

Chemical Name	Trade Name(s)[1] for pasture & rangeland herbicides (examples)	Target Weed Species (general)
Chlorsulfuron	Telar®	Spotted knapweed, yellow starthistle, dyer's woad, thistles, common tansy, Russian knapweed, whitetop, tall buttercup,
Clopyralid	Stinger®, Transline®, Curtail®,	Thistles, yellow starthistle, orange hawkweed, yellow hawkweed, diffuse knapweed, Russian knapweed, rush skeletonweed, spotted knapweed, oxeye daisy
Dicamba	Clarity®, Banvel®, others	Houndstongue, yellow starthistle, common crupina, orange hawkweed, yellow hawkweed, diffuse knapweed, spotted knapweed, oxeye daisy, tall buttercup, Canada thistle, blueweed, leafy spurge, tansy ragwort
Glyphosate	Round-up Ultra RT®, Round-up Original®, Rodeo®, Accord®, others	Purple loosestrife, field bindweed, yellow starthistle, Canada thistle, cheatgrass, common crupina, yellow toadflax,
Hexazinone	Velpar®, Velpar L®	Cheatgrass, oxeye daisy, yellow starthistle, Canada thistle
Imazapic	Plateau®	Cheatgrass, leafy spurge
Imazapyr	Arsenal®, Chopper®	
Metsulfuron	Ally®, Escort®	Houndstongue, thistles, sulfur cinquefoil, common crupina, dyers woad, purple loosestrife, common tansy, whitetop, blueweed
Picloram	Tordon 22K®, Tordon RTU®	Houndstongue, thistles, yellow starthistle, sulfur cinquefoil, common crupina, orange hawkweed, yellow hawkweed, diffuse knapweed, Russian knapweed, spotted knapweed, rush skeletonweed, common tansy, Dalmatian toadflax, yellow toadflax, leafy spurge
Sulfometuron	Oust®	Cheatgrass, whitetop, oxeye daisy, tansy ragwort, musk thistle
Triclopyr	Garlon 3A®, Garlon 4®, Redeem®, Remedy®,	Yellow hawkweed, orange hawkweed, sulfur cinquefoil, purple loosestrife, diffuse knapweed, spotted knapweed, oxeye daisy, thistles, Russian knapweed
2,4-D	numerous	Musk thistle, sulfur cinquefoil, common crupina, dyers woad, Russian knapweed, purple loosestrife, tall buttercup, whitetop, spotted knapweed

1 The Forest Service is not promoting the use of these specific products over any other product with this herbicide. This information is provided as examples of the formulations that might be used.

Herbicides will not be mixed together during application. A common herbicide mix in past weed treatments has been a combination of Picloram and 2,4-D applied in the late bud or flower stage to halt seed production in weed species such as yellow starthistle. However, since the soil seed bank is high on most sites, the addition of 2,4-D will probably not significantly reduce the amount of seed reaching the soil. This fact, combined with the unknown synergistic effects of mixing the herbicides, limits its applicability to this project. Application of 2,4-D will be limited to areas where picloram and clopyralid are restricted by label because of sandy soils or relatively high water tables.

Biological Control Agents: Biological control agents would be released at specific sites across the Forest. Specific sites proposed are detailed in these ROD Tables 1 through 8. The types of agents are shown in ROD Table 11. Biological management would be complemented by herbicide applications.

Discovery, screening, and release of new biological management agents could lead to less reliance on herbicides in the future.

Successful combination of herbicide application and biological agents for leafy spurge management has been reported in several areas of Montana and in research reports. Picloram in combination with leafy spurge flea beetles reduced leafy spurge more than insects or herbicides alone (Lym 1998). Similar results were observed on the Lolo National Forest where leafy spurge flea beetles were released in combination with picloram applications. The knapweed root weevil is expected to have a greater impact on spotted knapweed when infestation densities are reduced by herbicide treatments. Aerial herbicide application would allow managers to increase effectiveness of biological agents over a larger number of infested acres than ground-based methods.

Table 11
Biological Control Agents

Target Weed	Agent	General Mode of Action
Knapweeds	*Agapeta zoegana* (moth)	Root miner
	Bangasternus fausti (weevil)	Seed head feeder
	Chaetorellia acrolophi (fly)	Seed head feeder
	Cyphocleonus achates (weevil)	Root miner
	Larinus minutus (weevil)	Seed head feeder
	Larinus obtusus (weevil)	Seed head feeder
	Metzneria paucipunctella (moth)	Seed head feeder
	Pelochrista medullana (moth)	Root miner
	Pterolonche inspera (moth)	Root miner
	Sphenoptera jugoslavica (beetle)	Defoliator, root miner
	Terellia virens (fly)	Seed head feeder
	Urophora affinis (fly)	Seed head feeder
	Urophora quadrifasciata (fly)	Seed head feeder
Yellow starthistle	*Bangasternus orientalis* (weevil)	Seed head feeder
	Chaetorellia austalis (fly)	Seed head feeder
	Eustenopus villosus (weevil)	Seed head feeder
	Larinus curtus (weevil)	Seed head feeder
	Urophora sirunaseva (fly)	Seed head feeder
Purple loosestrife	*Galerucella calmariensis* (beetle)	Defoliator
	Galerucella pusilla (beetle)	Defoliator
	Hylobius transversovittatus (weevil)	Root miner, defoliator
	Nanophyes brevis (weevil)	Seed head feeder
	Nanophytes marmoratus (weevil)	Seed head feeder
Rush skeletonweed	*Cystiphora schmidti* (gall midge)	Galls leaves/stem
	Eriophytes chondrillae (gall mite)	Galls terminal buds
	Puccinia chondrillina (rust fungus)	Rusts foliage/flowers
Leafy spurge	*Apthona abdominalis* (flea beetle)	Defoliator, root miner
	A.cyparissiae (flea beetle)	Defoliator, root miner
	A.czwalinae (flea beetle)	Defoliator, root miner
	A.flava (flea beetle)	Defoliator, root miner
	A.lacertosa (flea beetle)	Defoliator, root miner
	A nigriscutis (flea beetle)	Defoliator, root miner
	Chamaesphecia empiformis (moth)	Root miner
	C.hungarica (moth)	Root miner
	C.tenthrediniformis (moth)	Root miner
	Dasineura sp. nr. Capsulae (gall midge)	Galls growing tips
	Hyles euphorbiae (hawkmoth)	Defoliator
	Oberea erythrocephala (beetle)	Feeds on crown/root
	Spurgia esula (gall midge)	Galls growing points
St. Johnswort	*Agrilus hyperici* (beetle)	Feeds on stem/roots
	Aplocera plagiata (moth)	Feeds on foliage
	Chrysolina hyperici (beetle)	Feeds on leaves/flowers
	C.quadrigemina (beetle)	Feeds on leaves/flowers
	Zeuxidiplosis giardi (gall midge)	Galls leaves
Tansy ragwort	*Longitarsus jacobaeae* (flea beetle)	Root miner
	Pegohylemyia seneciella (fly)	Feeds on flower
	Tyria jacobaeae (tiger moth)	Feeds on terminal buds
Canada thistle	*Ceutorrhynchus litura* (weevil)	Defoliator
	Larinus planus (weevil)	Seed head feeder
	Urophora cardui (fly)	Creates galls in stem
Musk thistle	*Cheilosia corydon* (fly)	Defoliator
	Rhinocyllus conicus (weevil)	Seed head feeder
	Trichosirocalus horridus (weevil)	Root miner
Dalmatian toadflax Yellow toadflax	*Brachypterolus pulicarius* (beetle) *Calophasia lunula* (moth)	Flower feeder Foliage feeder
	Gymnetron antirrhini (weevil)	Seed head feeder

Cultural: Disturbed areas such as road cuts or burned areas could be seeded under all action alternatives. In areas with adequate native plants present, seeding would not be done. Seeding disturbed areas can also be considered a component of prevention. Species used for seeding treatments would be coordinated with the Forest botanist, and would likely include species that occupy different rooting zones to effectively remove root space needed by competing weed species. Some examples of species that could be used in seeding are bluebunch wheatgrass, Covar sheep fescue, and slender wheatgrass, depending on existing plant community.

Mechanical (Mowing/Hand-pulling): In Alternative E-Modified, mowing treatments would be intermittent due to roadside obstacles such as rocks, logs, trees, and shrubs, and would occur on level surfaces, some shoulder areas and turn-outs or parking areas. Mowing, topping, and hand-pulling would occur twice per year. Established rhizomatous weeds may have to be mowed indefinitely, as mowing would decrease seed production but would not kill the plants. Hand-pulling would only be feasible on about 5 acres per year. Hand-pulling acres will be in relatively small patches, generally one-quarter acre, although occasionally larger patches may be treated with this method.

ADAPTIVE MANAGEMENT APPROACH

I have decided to implement an adaptive management approach for noxious weed management. This approach allows me to react to changing conditions relative to existing and predicted weed infestation, invasion, and spread. It is not possible to have a complete and current inventory of weeds on every acre of the entire Bitterroot National Forest. It is probable that we do not know the location or extent of all existing weed populations. A predicted spread of 20% in area infested was applied to all sites identified for treatments. The acreage total for the project along with all the specific resource environmental analyses includes the predicted spread factor of 20%.

In addition to treating spread of weeds, the adaptive management strategy would be used to improve subsequent treatment methodologies. These adaptations might include changes in the type of equipment used, width of buffers, herbicides used (ROD Table 10), methods of treatment, mitigation measures or herbicide application rates.

The management options displayed in ROD Table 12 represent types of actions that could be implemented as a result of monitoring, to prolong the effectiveness of initial treatments or to enhance ongoing treatments. These are discretionary options of integrated weed management and are part of the adaptive management strategy.

Results of monitoring on the Forest during the last ten years indicate that the percent annual increase for leafy spurge, Dalmatian toadflax, goatweed, and sulfur cinquefoil has ranged from approximately 1 to 35 percent per year depending on the species (ROD Table 13). Spotted knapweed is spreading and is expected to continue expanding within its ecological range on the Forest.

Table 12
Adaptive Management Options
Alternative E-Modified

Treatment Area	Integrated Weed Management Options to Prolong Effectiveness of Treatments
Big Game Winter/Summer Ranges	➢ Seeding ➢ Grazing management ➢ Emergency travel closures ➢ Treatment of skips (spot treatment) ➢ Re-treatment ➢ Monitoring-- adjusting treatments where necessary; rapid response to new invasive species ➢ Use of biological control agents ➢ Incidental hand-pulling on small sites
High Risk Burned Areas	➢ Seeding ➢ Grazing management

Table 12
Adaptive Management Options
Alternative E-Modified

Treatment Area	Integrated Weed Management Options to Prolong Effectiveness of Treatments
	➢ Emergency travel closures ➢ Treatment of skips (spot treatment) ➢ Re-treatment ➢ Monitoring—adjust treatments where necessary; rapid response to new invasive species ➢ Use of biological control agents ➢ Incidental hand-pulling ➢ Treatment of major travel corridors passing through burned areas
Cross Boundary Treatments	➢ Seeding ➢ Grazing management ➢ Emergency travel closures ➢ Treatment of skips (spot treatment) ➢ Re-treatment ➢ Monitoring—adjust treatments where necessary; rapid response to new invasive species ➢ Use of biological control agents ➢ Incidental hand-pulling
Roads, Trails, Recreation Sites	➢ Seeding ➢ Emergency travel closures ➢ Treatment of skips (spot treatment) ➢ Re-treatment ➢ Monitoring—adjust treatments where necessary; rapid response to new invasive species ➢ Use of biological control agents ➢ Incidental hand-pulling ➢ Weed awareness signing ➢ Education efforts with user groups or other interested parties
Fire Camps/ Heli-spots	➢ Seeding ➢ Treatment of skips (spot treatment) ➢ Re-treatment ➢ Monitoring—adjust treatments where necessary; rapid response to new invasive species ➢ Use of biological control agents ➢ Incidental hand-pulling ➢ Education efforts directed at fire-going personnel
Poker Joe And Ambrose	➢ Prescriptive grazing ➢ Monitoring—adjust treatments where necessary ➢ Use of biological controls agents

Table 13
Percent Annual Increase of Four Weed Species from 1990-2000 – BNF

Weed Species	Percent Increase	Percent Annual Increase
Leafy Spurge	433	18
Dalmatian Toadflax	1,900	35
Goatweed	13	1
Sulfur Cinquefoil	1,100	28

Source: Bitterroot National Forest Monitoring Reports, 1990-2000.

Monitoring

A strong monitoring program would be incorporated as part of the adaptive management approach. Monitoring is the collection of data to determine effectiveness of management actions in meeting prescribed objectives. Monitoring would focus on the: 1) density and rate of spread of invasive exotic plant species and the effect these aggressive plants have on natural resources, 2) effect of herbicides on noxious weeds and desirable vegetation, 3) effectiveness of biological control agents, 4) effect of cultural weed management activities, and 5) effects of herbicides and other treatment methods on surface water quality. An *Aquatic Resources Implementation Monitoring Form* has been developed by the Forest and is included in **Appendix A (FEIS).**

Citizen Monitoring: A citizen monitoring team would be established and invited to participate in monitoring weed treatment projects. They would be asked to review project implementation and monitoring data.

Drift Detection: Spray detection cards (Kromekote) would be used on every aerial spray block with adjacent sensitive resources (streams, lakes, wetlands, sensitive plants) to determine the amount and distribution of spray drift. Cards would be placed along the perimeter of the treatment area and inside the buffer around sensitive areas. The herbicide would be dyed with food coloring to produce a distinctive droplet stain when drops of herbicide contact the cards. The cards would be visually examined immediately after spraying. Reexamination of the cards would occur by an independent lab and the samples would be converted to an estimate of the drift quantity. The drift monitoring form will be used to document monitoring results on each spray block. The results of drift card and water quality monitoring would be used to adjust buffer widths on future aerial spray blocks.

Water Quality: The Project hydrologist or fish biologist would review the annual program of work and select sensitive water resources (streams, lakes, wetlands) to monitor water quality. Water samples would be collected before spraying, immediately after spraying, and after the first major rainfall. Lab tests by an independent lab would be used to test the water samples for herbicides whenever there is reason to suspect that herbicide may have entered the stream (drift card results, a major rain fall after spraying).

Vegetation: Vegetation plots would be established prior to treatment in a representative sample of all treatment methods to determine species composition, frequency, and cover. The plots would be remeasured at one, three, and five years after treatment.

Sensitive Plants: Sensitive plant populations would be inventoried prior to weed treatment and a follow-up inventory would be conducted post-treatment to identify and document non-target damage. Monitoring plots may be established to coincide with vegetation monitoring. The combination of inventory results and drift card data would be used to adjust buffer widths on sensitive plant populations.

Heritage Resources: Vegetation resources with cultural significance (peeled trees, cultural plant collection areas) would be inventoried prior to weed treatment and a follow-up inventory would be conducted post-treatment to identify and document non-target damage. The combination of inventory results and drift card data would be used to adjust buffer widths on heritage plant populations.

Soils: Vegetation would be used to gauge soil condition. The project soil scientist would use the vegetation plot data, visual observation, and photo points to evaluate changes in soil productivity and erosion on selected treatment blocks.

Evaluation: The noxious weed treatment program would be evaluated annually and the results made available to the public.

Program Adaptation

The annual evaluation will indicate where adjustments need to be made in the program as described above for each monitoring item.

As new infestations and/or growth of existing infestations are identified adjacent to specified treatment areas, each would be evaluated to determine if it fits within the scope of this EIS relative to issues analyzed and potential effects of treatment. Similarly, areas identified as moderate and high risk for new infestations due to other ongoing or future forest management activities (such as portions of the Burned Area Recovery Project) would also be monitored. New infestations would be evaluated for treatment within the scope and constraints of this Project. These sites would then be prioritized for treatment.

In addition to increasing the potential area proposed for treatment, new biological controls would also be considered once federal approval is provided. All environmental protection measures described below

would also apply to treatments occurring on new infestations.

PROJECT IMPLEMENTATION

Implementation of alternatives involves treatment of up to approximately 35,445 acres. The maximum acreage the Forest could treat in any one year is about 5,000 acres. The schedule would vary based on weather considerations, monitoring, contracting, and other management constraints.

Implementation of proposed treatments includes initial treatments, follow-up spot treatments, re-treatments, and post-treatment effectiveness monitoring.

- Initial treatments are defined as the first treatment applied to the proposed Project areas.
- Follow-up treatments are conducted as a result of post-treatment monitoring, and include treating “skips” with spot applications of herbicide, hand-pulling, or introduction of biological controls. Skips are generally treated the following year.
- Re-treatment would occur where post-treatment monitoring indicates a need. The need for re-treatment is dependent on effectiveness of initial treatments and the rate at which invasive species may return to a treated site.

WEED PREVENTION PLAN

The Forest depends on public education and weed prevention programs to deter establishment of new weed species such as yellow starthistle, common crupina, and rush skeletonweed. Weed education programs have been ongoing on the Forest for more than a decade. Several programs are presented annually throughout the Bitterroot Valley for educational purposes. Programs include staffing public information booths at local fair events and agricultural days, giving presentations at schools and local community group meetings, and coordinating with the Beaverhead-Deerlodge National Forest for weed-related trailhead signing. These programs have helped raise public awareness about noxious weeds, and the steps that can be taken to help reduce the spread of existing weeds and establishment of new invaders.

In Alternative E-Modified, I am adopting the following weed prevention strategy which is tiered to the State of Montana’s strategy found in the Montana Weed Management Plan (January 2001). The plan states goals and strategies that include education, prevention of establishment and spread, and monitoring.

Goals

- Protect areas that are currently not infested with weeds;
- Contain established weed populations and prevent spread to uninfested sites; and
- Maintain healthy native plant communities.

Prevention Education

Continue current education and information programs, including:

- Forest Service publications;
- Information booth at Grange Agriculture Day and Ravalli County Fair;
- Presentations to schools, organizations and the public;
- News releases to the local media;
- Coordinate with ongoing education efforts in Ravalli County as well as in Idaho and Montana; and,
- Coordinate with weed researchers.

Expand the education and information efforts to include the following actions:

- More effectively inform Forest employees, permittees and users about how they can reduce the spread of weeds on the Forest;
- Provide information to Forest employees, permittees and users regarding potential new invaders (weed alerts);
- Focus informational efforts to reach Forest users in key locations (trailheads, weed-free areas), key times of year (hunting season), and in large groups (organizational meetings);
- Develop a weed education "trunk" for presentations; and,
- Provide post-treatment public field tours and presentations.

Prevent Weed Establishment and Spread

Continue current prevention programs, including:

- Enforcement of and education regarding certified weed seed free forage;

- Enforce use of designated or established routes by vehicles and OHVs; and
- Follow Northern Region Guidelines for Noxious Weed Prevention Practices (USDA 2001c) for Forest Service management activities such as fire suppression, prescribed burning, grazing, etc. as appropriate.

Monitor, map and track weeds and weed-free areas on the Forest

Enlist the public to help locate and report new weed infestations and weed-free areas.

- Establish systematic procedures for Forest-wide weed inventory and monitoring so that energy is concentrated where it will have the greatest benefit and changes in infestations can be tracked;
- Expand the Forest's existing weed risk assessment to cover possible new invaders; and,
- Follow state and national protocols for weed mapping and databases.

Prevent Weed Establishment and Spread

- Encourage OHV users, hikers, snowmobilers, mountain bikers, hunters, anglers, boaters, and horse users to clean shoes, equipment and gear before and after all trips;
- Encourage Forest users to reduce weeds by raising the profile of the "see one, pull two" idea;
- Encourage animal users to "flush and brush" - feed animals weed seed free feed 3-4 days prior to a trip to allow pass-through of weed seeds and brush animals (including dogs) prior to a trip to remove weed seeds;
- Place information on weed identification, pulling and prevention (as discussed in this section) at trailheads and portals to weed-free areas; and,
- Develop and encourage volunteer efforts to remove weeds where hand-pulling would be effective.

General

- Develop an incentive/reward program for public weed efforts related to education, removal, and detection; and,
- Establish a Weed Task Force on the Forest to coordinate weed management efforts.

ENVIRONMENTAL PROTECTION MEASURES

Table 14 lists the environmental protection measures that would be implemented for Alternative E-Modified.

Table 14
Environmental Protection Measures
Alternative E-Modified

Buffers
Ground application of herbicides will not occur within 25 feet of sensitive plants
Ground application of herbicides will not occur within 25 feet of culturally sensitive resources.
Picloram will not be applied closer than 50 feet from surface water or the edge of subirrigated land, whichever is the greater distance from live water. Herbicides other than picloram would be authorized for use to within 15 feet of surface water.
Only herbicides approved for streamside applications would be used within 15 feet of live water, surface water or in areas with shallow water tables.
Aircraft will avoid known active raptor nests by 0.25 mile between March 15 and August 31
Aircraft will avoid peregrine eyries by 1 mile.
The Forest Botanist will be consulted when aerial spraying occurs near sensitive plants. Plants that are susceptible to the herbicide in use will be covered with a tarp.
Aerial application of herbicides will not occur within 100 feet of a dry intermittent stream (has a definable channel and bed throughout their length).
Aerial application of herbicides will not occur within 300 feet of live water until drift card monitoring shows what buffer width is adequate to keep herbicides out of streams. In no case will aerial application of herbicides occur within 150 feet of live water.
General

Table 14 Environmental Protection Measures Alternative E-Modified
Weed treatments would only be applied where weed populations actually exist. None of the alternatives propose blanket treatment of areas where no weeds are present.
All invasive weed treatments would be in accordance with local, state, and federal regulations.
Equipment used in off-road operations for Forest management activities would be properly cleaned prior to entering Forest land.
Areas with bare soil and areas proposed for cultural treatment would be monitored to assess need for revegetation.
Certified weed-free seed would be used for revegetation. Revegetation would be considered for any site within the treatment area with soil disturbance or vegetative density low enough to allow re-infestation or introduction of other invasive weeds and/or to control erosion.
Revegetation seed mixes would be designed on a site-specific basis to consider objectives and conditions at each potential revegetation site. Native species would be used in some seed mixes as appropriate. All plant species used on the Forest would comply with Region One USFS policy regarding source and type of plant materials used in seeding projects.
The Forest would convene an interdisciplinary team annually to evaluate the program of work prior to implementation of the Project. The team would consist of appropriate specialists for the respective resource(s).
New invaders within the treatment sites, as identified by local and state agencies, would be given high priority for treatment.
Grazing may be deferred after weed treatment by working with permittees to adjust their annual operating plans as needed based on site-specific conditions.
Biological Agents - General
Biological agents would not be released until screened for host specificity and approved by the USDA Animal Plant Health Inspection Service.
Notification
Traffic control and signing during weed-treatment operations would be used as necessary to ensure safety of workers and the public.
Signs regarding herbicide use would be placed at access points to treatment areas prior to initiating treatment. Signs would list herbicides to be used, effective dates, and name and phone number of Forest contact.
The public would be notified of herbicide use by using a combination of news releases, and maintaining a current telephone hotline and web page during the application season. Colored dye would be used with all herbicide applications
Sensitive Plants
Weed treatments would be coordinated with the Forest botanist. Site-specific treatment prescriptions (e.g., covering with tarps or applications of herbicide in the fall) would be followed for infestations within or adjacent to known special status plant populations.
Water Quality
Land types in treatment areas identified as having a high water table would be field-checked; treatment methods would be modified based on ground conditions (see map in project file).
In buffers, weed treatment would be by individual plants (e.g., hand-pulling, hand-spray, wipe-on, or carpet roller).
Mixing and loading of tanks will occur 300 feet from live water where possible. In no case will it occur closer than 100 feet of live water.
Fish
Forest fisheries biologist would review and coordinate spray projects with the District/Forest weed coordinator to map and identify buffers, methods of application, and necessary herbicide restrictions.
Wildlife
Forest wildlife biologist would review and coordinate spray projects with the District/Forest weed coordinator to map and identify buffers, methods of application, and necessary herbicide restrictions which may be pertinent to the respective project.
Areas with known active raptor nests, including northern goshawk, red-tailed hawk, peregrine falcon, peregrine falcon, golden eagle, Boreal owl, Great Gray owl, and flammulated owl, would be avoided.
Herbicide applications between May 1 and June 15 would be coordinated with the Forest wildlife biologist to ensure that potential big horn sheep and elk calving areas are protected from excessive disturbance.
Heritage Resources

Table 14 Environmental Protection Measures Alternative E-Modified
Weed treatments would be coordinated with the Forest heritage resource specialist to protect heritage resources such as traditional plant gathering areas, pictographs, and wooden structures.
Herbicide Use – General
The state-certified applicator would obtain a current weather forecast for the proposed treatment area prior to applying herbicides. Weather conditions will be monitored so that applications comply with label recommendations for wind, temperature, and humidity
Application of 2,4-D will be limited to areas where picloram and clopyralid are restricted by label because of sandy soils or relatively high water tables
No more than one application of picloram would occur on a given area in a calendar year to reduce potential for accumulation in soil.
Equipment used for transportation, storage, or application of herbicides would be maintained in leak-proof condition.
Herbicides would be used in accordance with federal label instructions and restrictions.
Where woody vegetation is the dominant cover, herbicide treatments would be designed to minimize damage to non-target species such as woody vegetation.
Ground-spray application of herbicides would occur only when the wind speed is less than 10 mph.
A pre-operations briefing would be required and documented to brief spray personnel on the location of sensitive resources (streams, lakes, wetlands, sensitive plants) and to review operational details.
Annual treatment with herbicide under this EIS will be about 5,000 acres each year
The total land area treated with herbicide, by the end of the seven to ten year lifespan of the project, will not exceed 35,445 acres.
No spraying would be performed if precipitation is occurring or imminent.
No spraying would occur if air turbulence is sufficient to affect normal spray pattern.
No spray if snow or ice covers target foliage.
Herbicides would not be applied directly into streams, springs, rivers, ponds, lakes, or wetlands. Mixing and loading operations would occur in areas where accidental spills would not contaminate a stream or body of water before being contained.
Applicators would have an Herbicide Emergency Spill Response Plan (**FEIS Appendix B**) on-site during treatments. The plan would identify methods to report and clean up accidental spills. An emergency response spill kit containing clean-up equipment and materials would also be required on-site (or within spraying vehicles).
Sample areas would be monitored before and after treatment to determine effectiveness of treatments on target species.
Herbicide applications would be coordinated with adjacent landowners and individual range permittees in each project area as applicable.
Herbicides would be handled in accordance with the spill plan.
Application of herbicides would be performed by or directly supervised by a state-certified applicator.
Spray equipment would be calibrated prior to seasonal start-up and periodically throughout the season.
Herbicides would generally be applied one time per year; two times at least 30 days apart would be the maximum application.
Aerial Spray – General
Information and experience gained from each aerial treatment would be used to improve methodology for future applications. This adaptive approach would improve effectiveness and reduce impacts of future projects.
Adjacent landowners and affected permittees would be notified by letter at least 24 hours in advance of planned aerial herbicide treatments.
On-site wind monitoring devices (e.g., smoke bombs) would be deployed prior to aerial applications of herbicides.
Aerial application of herbicides would be performed when wind speeds are less than 6 mph and blowing away from sensitive areas.
Aerial herbicide application would be approximately 1,000 acres the first year and about 3,000 acres annually thereafter.
Buffers would be adjusted based on monitoring results. Drift cards will be analyzed, and if drift analysis indicates that the buffers are overly conservative, they would be reduced.
Aerial spray would not occur in advance of a predicted inversion.

Table 14 Environmental Protection Measures Alternative E-Modified
Weather conditions would be monitored on-site (temperature, humidity, wind speed/direction), and spot forecasts would be reviewed for adverse weather conditions before aerial spraying occurs.
Areas to be aerial sprayed would be marked so that boundaries and buffers are visible from the air
Aircraft used for aerial spraying would use a global positioning system.
Drift reduction agents and nozzles that create large droplets would be used for aerial spraying.
Temporary area and road closures would be used to ensure public safety during aerial spray operations

V. ALTERNATIVES CONSIDERED

The FEIS considered five alternatives in detail. Briefly, they are:

Alternative A (FEIS pg 2-4) – Treats weeds on up to approximately 35,445 acres, mostly with herbicides. Thirty-eight percent of the herbicide application is by helicopter, the remaining 62 percent by ground-based. Other methods of control are insects, mowing, and hand-pulling or grubbing.

Alternative B (FEIS pg 2-8) – Treats weeds on up to approximately 25,014 acres (less than Alternative A because of remote or steep terrain), mostly with herbicides. This alternative contains no aerial herbicide application. Other methods of control are the same as Alternative A. Additional environmental protection measures are included.

Alternative C (FEIS pg 2-10) – Treats weeds on up to approximately 1,524 acres. There is no herbicide use proposed. All acres would be treated through hand-pulling, topping, and mowing, supplemented with cultural methods such as seeding. The treatment acres are limited to what could be accomplished reasonably with these methods.

Alternative D (FEIS pg 2-13) – No action. No new acres would be treated beyond the current program and previously approved projects.

Alternative E (FEIS pg 2-13) – Treats weeds on up to 43,379 acres, mostly with herbicides. Twenty-six percent of the herbicide application is by helicopter, the remaining 74 percent would be ground-based. Other methods of control are insects, mowing, hand-pulling or grubbing, and grazing. This alternative contains more environmental protection measures than the other alternatives using herbicide.

VI. REASONS FOR MY DECISION

MEETING THE PURPOSE AND NEED

I evaluated Alternative E-Modified to determine how well it responds to the five items of the purpose and need for action. I found that Alternative E-Modified best achieves all aspects of the purpose and need of the proposed project for the following reasons (FEIS pp 2-33):

1) Preventing or discouraging the introduction and establishment of newly invading weed species on the Forest, particularly in areas at high risk due to recent fires.

Alternative E-Modified allows for the application of the widest selection of integrated weed management techniques in the project. It also is the only alternative that identifies over 7000 acres of inventoried weed-free grassland / sparsely timbered blocks of Forest land for protection.

Should new invasive species establish small clusters in the current weed-free sites, we would be able to use the appropriate herbicide to insure eradication of the new invasive plants through spot spraying a minimal amount of chemical.

2) Preventing or limiting the spread of established weeds into areas with few or no infestations on Forest land, particularly areas at high risk due to recent fires.

Alternative E-Modified allows for the application of the widest selection of integrated weed management techniques including the identification of almost 400 acres for the introduction of domestic sheep or goats under tight controls to evaluate the ability of grazing animals to reduce established infestations. Biological control agents could be released along roads, recreation sites and some trails outside the

Wilderness. It establishes a demonstration area for hand-pulling of taprooted invasive species.

3) Restoring native plant communities and improving forage on specific big game summer and winter ranges.

Alternative E-Modified treats a high number of acres supporting degraded native plant communities and key big game foraging sites in decline. At the same time, it does the best job of protecting weed-free areas which support grassland habitat types with healthy native plant components. These weed-free sites also are important big game foraging areas.

4) Treating weeds near the Forest Boundary where adjacent landowners are interested in or are currently managing weeds.

Alternative E-Modified provides the most treatment of weed infestations along the Forest Boundary in conjunction with Ravalli County, adjacent private and public landowners and Cooperative Weed Management Area members.

5) Limiting spread of weeds into and within Wilderness areas.

Alternative E-Modified uses a variety of methods to control invasive weeds outside the Wilderness boundaries to prevent weed transport along trail corridors leading into the Wildernesses. It also schedules a number of the trails inside the Wilderness for treatment with herbicide or handpulling but not biological control releases.

In addition to directly meeting the purpose and need, Alternative E-Modified contains desirable features that improve the effectiveness and safety of the proposal by:

- Providing more environmental protection measures to safeguard water, air, wildlife, human health and non-target plants than any other alternative using herbicides. It requires an increased buffer zone for the use of picloram.
- Providing the most comprehensive monitoring program
- Reducing the amount of acres treated with aerially applied herbicide from the Proposed Action level (Alternative A).
- Providing for an increased level of public contact and notification.

I found that Alternatives B, C, and D do not meet the purpose and need. Although adequate in some respects, Alternative B would be considerably less successful in fulfilling the purposes listed because ground-based treatment alone effectively treats fewer acres than a combination treatment that includes aerial application of herbicide. Alternative C (no herbicide use) and Alternative D (no action) would not effectively accomplish weed treatment objectives or native plant protection and restoration at the scale needed on the BNF.

Alternatives A and E both met the purpose and need with Alternative E treating more acres than Alternative E-Modified. However, I found that Alternative E-Modified had the greatest merit of these three alternatives for the following reasons:

a) It addresses my concern that the program carefully focus the use of herbicides yet treat enough sites to make a difference in the ecological condition of the Forest's native plant communities. Alternative E-Modified accomplishes this by applying herbicide over a smaller area than Alternative E while responding to the invasives problem at an adequate scale

b) The 43,379 acre analysis area is the same for Alternatives E and E –Modified. While Alternative E-Modified reduces the actual treatment program to 35,445 acres, it retains the flexibility to seek out the highest priority sites within the larger analysis area. This larger operating space provides Alternative E-Modified a greater opportunity than Alternative A to utilize adaptive management principles and direct our limited weed-fighting resources to where they can do the most good.

c) Lastly, the smaller land area treatment in Alternative E-Modified, is expected to be closer to program funding levels for the Forest. This will enable the design of a more realistic and accurate outyear program which will not waste effort identifying priorities or sites that cannot be funded.

ISSUES AND PUBLIC COMMENT

Scoping was initiated with the publication of a Notice of Intent to prepare the EIS on April 20, 2001. A formal scoping letter was mailed to interested citizens on April 30, 2001. The public scoping period ended on May 31, 2001. During that period, the Forest received written responses from five individuals and six organizations. The DEIS was made available in March 2002, and the comment period ended April 30, 2002. Sixty-three comment letters were received. Many of the comments on the DEIS expressed opinions about which alternative

should be selected, environmental and human risks from the use of herbicides, or the quality of the science used for analysis.

In response to public comment, Alternative E was developed to maximize effective weed treatments while incorporating additional environmental protection measures and monitoring.

How the Decision Responds to the Key issues

Key issues were determined from public comment and used to develop alternatives (FEIS pg. 2-1). The key issues, an explanation of how each alternative addresses the issues, and my rationale for selecting Alternative E-Modified are discussed below.

I realize that we may not know all there is to know about the long-term effects of herbicides on humans and wildlife. However, we do know the effects of weeds on our native plant ecosystems. In my mind, the significant negative effects that the noxious weed infestations are having on the integrity of our ecosystems in the Bitterroot National Forest outweigh the few unknowns of herbicide application.

I feel it is a reasonable and prudent action to go forward with an integrated weed management strategy using the best information available on the effects of herbicides.

To implement a strategy that only deals in a passive way with the spread of noxious weeds through elimination of logging, grazing and off-road vehicle use is not an effective treatment alternative. Elements of this approach, however, are a part of an integrated weed management strategy, such as called for in Alternative E-Modified

1. Potential Effects of Herbicides on Human Health

Some people were concerned about the effects herbicide use would have on human health or that not enough is known about the effects of herbicides. Alternative C (which includes no herbicide use) was developed in response to these concerns. I mainly considered two aspects of this issue:

a. Would the use of herbicides as planned have a negative effect on human health?

The analyses for Alternatives A, B, and E (FEIS pg 2-33) show that the effects of herbicide use as planned will not affect human health. Some people are concerned with the cumulative effects of "all the toxins dumped into the environment" and their interaction. I have reviewed the scientific information available and am confident that human health will be protected with the types of herbicides used, application rates, mitigations, and environmental protection measures included in Alternative E-Modified. Compared to Alternative A, Alternative E-Modified contains more notification of the public, allowing people to avoid application areas; less aerial herbicide application, reducing the chances of drift; and wider stream buffers with monitoring, to help ensure that herbicides do not enter streams or groundwater.

Ground spraying has the potential for greater risk of exposure to applicators and the public under certain circumstances (FEIS 4-69), however, the standard mitigation steps employed along with routine safety procedures and personal protective equipment for operators, erase the health hazard distinction between the alternatives (FEIS 2-34, Table 2-29). The main reason I did not select Alternative B is because it failed to fully accomplish the purpose and need.

b. Are other treatment methods effective?

Alternatives C and D have no additional risk to human health from herbicides, but neither alternative would be effective in controlling or reducing weeds. Many of the comments received indicated a preference for Alternative C, but it is not practical for effectively accomplishing weed treatments at the scale needed on the Bitterroot National Forest. The existing weed problem is too large to be effectively controlled by mechanical and biological methods alone.

Some individuals criticized Alternative C for not treating enough acres with non-herbicide methods. However, at the recorded cost of $8,500/acre, hand-pulling would quickly use up money available for treatment. Other non-herbicide methods are only low to moderately effective (Table 1-1 on FEIS pg 1-15) or have severe limitation in their use.

2. Potential Effects of Aerial Application of Herbicides

Public concern was expressed about herbicides drifting from treatment zones into riparian areas, streams, and private land with unintended consequences. The specific concern was that aerial-applied herbicides could not be effectively controlled (FEIS pg 2-2). Concern was also expressed that atmospheric inversions had the potential to trap herbicides in the air for extended periods.

My main concern with this issue is whether aerial application of herbicides poses an unacceptable risk to the environment and human health.

Alternatives B, C, and D contain no aerial herbicide application. Alternatives C and D are not effective in weed treatment, so, although they eliminate potential impacts from aerial application, I did not select either of them. Alternative B also eliminates risks from aerial application, but it is much less effective than Alternatives A , E and E-Modified in controlling noxious weeds. We spent considerable effort in determining the effects and risk of drift using various modeling methods and environmental monitoring data (FEIS pg 4-78 though 4-80). The results indicate that even under adverse conditions (which are outside the established application methods), spray drift would not exceed 200 feet. In addition, drift deposits of herbicides measures less than 1% of the herbicide sprayed (FEIS pg 4-79). Drift detection measures will monitor aerial applications along treatment area perimeters and inside sensitive site buffers (FEIS pg 2-25).

I selected Alternative E-Modified because it contains more environmental protection measures to reduce non-target species exposure to herbicide through spray drift, including wind restrictions, buffering or covering sensitive areas, fewer acres of aerial treatment, restrictions on total annual acres treated, no aerial spraying in advance of predicted inversions, and boundary marking.

3. Potential Effects of the Proposed Action on Big Game, Other Wildlife, Native Plant Communities, Sensitive Plants, Fish, Water Quality, Soil, and Air Quality.

Some respondents expressed concern about effects of herbicides on water quality and biological resources, both on and off National Forest System land (FEIS pg 2-2).

Mitigation measures in all alternatives are expected to protect the environment from risks associated with herbicide applications. Alternatives C and D contain no herbicide use, so they have the least consequences from spraying. Unfortunately, they are ineffective in treating noxious weeds, which have documented negative effects on the resources listed. I want to protect these resources from the undesirable consequences of uncontrolled noxious weed spread.

Alternative B (no aerial application) reduces the already low risk from herbicides by eliminating spray drift and drastically reducing the number of acres treated. It is not as effective as Alternatives A and E in treating weeds and leaves more acres at risk for damage from weed invasion.

Alternative A poses the most risk to these resources, although the risk is extremely low. Alternative E-Modified contains more environmental protection measures than Alternative A. These measures further reduce the risk thereby protecting them from damage caused by noxious weed infestation.

4. Potential Effects of Proposed Treatments on Wilderness Values

Public concern was expressed regarding use of herbicides and non-native insects in wilderness areas. Some people feel that the proposed treatments are inconsistent with the 1964 Wilderness Act.

My view is that this issue is a case of short-term vs. long-term impacts. None of the alternatives proposed releasing non-native insects into Wilderness areas for weed control. Alternative D is the only alternative that does not contain additional weed treatments (herbicide, mechanical, or insect) within the Wilderness. Therefore, it has the least short-term impact. However, in the long-term, the spread of noxious weeds has the greatest potential to damage the wilderness values of natural integrity and apparent naturalness. Alternative C would not use herbicides in Wilderness, and also is not likely to be effective in reducing the long-term negative effects of noxious weeds.

The use of herbicides will help protect long-term natural integrity of Wilderness by reducing the unnatural and aggressive invasion of noxious weeds. Alternatives A, B, E and E-Modified have short-term and minimal effects on Wilderness values, but have long-term benefits by protecting natural integrity.

My selection of Alternative E-Modified supports my obligation to maintain the enduring resource of Wilderness stated in the Wilderness Act and Forest Service Manual.

Other Public Comment

I received many comments expressing a preference for one alternative over another. A number of people expressed opposition to the use of herbicides or other chemicals and want weed treatment to be only mechanical or biological. This approach is prohibitively expensive in comparison to the benefit

gained in weed control. Alternative C, with no herbicide control was rated as high cost, with an estimated price of $1,867 per acre, compared to $73/acre for Alternative A and $91/acre for Alternative E.

Both of the alternatives without herbicide treatments were rated as “low effectiveness” (FEIS pg 2-36).

OTHER FACTORS CONSIDERED IN MAKING THE DECISION

Many citizens, scientists, groups, and county, state and federal agencies recognize the need to incorporate certain specific features that are essential for the successful treatment of noxious weeds and the protection of native plant communities (FEIS 1-9 to 1-10). I found that Alternative E-Modified contains all of the important features (detailed below) that help the project fulfill the purpose and need along with addressing the key issues.

***a)* To Be Effective, We Must Take Vigorous Action**

Invasive weeds are expanding their presence in the wildlands of the Bitterroot Forest. A weak or inadequate weed control response will fail with severe consequences (FEIS pg 1-16).

Two reasons explain why. First, our wildlands do not appear able to resist the more aggressive invasive plant species without human intervention in a variety of ways. Secondly, an inadequate response to the invasive weed threat will contribute to the advance of weeds over the landscape because the more aggressive weed species will not stand still (FEIS pp 4-52 to 4-53). They will continue to spread over our habitats unless they are controlled by strong integrated actions of land managers and the general citizenry.

The fires of 2000 added to the susceptibility of the Forest to invasion by certain weed species (FEIS pp 3-33 to 3-34).

People interested in the ecological health of the National Forest appreciate the fact that the threat does not end with spotted knapweed. There are invasive plant species even more tenacious and destructive to native habitats, such as leafy spurge, purple loosestrife, goatweed and yellowstar thistle, that have arrived or are close by. These species are in only the early stages of infestation when they are most easily and inexpensively controlled.

Alternative E-Modified allows the Forest to take the immediate and aggressive action necessary to eradicate new invaders and to reduce the hold of knapweed on certain key areas. I believe these actions will protect and invigorate the native plant populations that are at risk currently.

***b)* We Need to Look Ahead and Deal with the Problem on the Appropriate Larger Scale**

The 1987 Bitterroot Forest Plan identified noxious weed control as an important Forest-wide goal (FEIS pg 1-9). However, in the last seventeen years, spotted knapweed and other species have increased on many of our roads, trails, key winter ranges and grasslands (FEIS pp 1-5 to 1-6 and 3-29 to 3-34).

Until now, our effort has been relatively small and piecemeal, relying on several small-scale herbicide use decisions in conjunction with biological control methods and prevention measures such as the interstate weed free feed requirement (FEIS pp 1-6 to 1-7).

Alternative E-Modified gives the Forest the variety of tools needed to start dealing with this large scale problem in a more effective way and fulfill the direction and intent of the Forest Plan.

c) Our Neighbors Have Expressed a Growing Interest in Our Cooperation in Controlling Weeds:

Montana has eight laws dealing with weed management. The Forest Service also operates under several legal mandates to control invasive weeds (FEIS pp 1-18 to 1-19).

This decision allows the Bitterroot Forest to link arms with local citizens, Ravalli County, the State of Montana, other National Forests and federal agencies in a direct and meaningful action to stem the invasive noxious weed tide.

For example, Ravalli County is enlisting an increasing number of citizens in Cooperative Weed Management Areas. Some of these areas adjoin National Forest lands identified in this document. The County also developed it’s own noxious weed management plan in 2002 that is tiered to the State plan.

We need to be able to cooperate with and support the County and adjacent private landowners by controlling invasive weeds on the National Forest side of the boundary line. Alternative E-Modified identifies specific cross-boundary cooperative areas for treatment (FEIS pg 2-16).

Alternative E-Modified also fulfills our obligation to do our share to protect the flanks of other National Forests and Counties around us that have implemented effective noxious weed control programs.

d) **Recognize the Importance of Integrated Weed Management and Use the Full Toolbox to Combat the Problem of Invasive Weeds.**

The cornerstone of this project is the application of the principles of integrated noxious weed management. The concept was developed to address larger scale threats of invasive plant infestations (FEIS pp 1-10 thru 1-15).

With invasive weeds, there is no magic bullet, similar to a vaccine against human disease, that can inoculate landscapes against the damage caused by non-native plant species. However, we do have a number of effective tools that we know can prevent and reduce the domination by invasive weeds of our wildland valleys and mountainsides.

I want our Forest land managers to be able to use all of these tools. Alternative E-Modified allows them to do that.

Integrated noxious weed management looks at all aspects of the control effort. This includes: prevention education with schools and users; detailed inventory work that identifies the locations, extent and species of problem plants; prioritizing treatment areas for the most control benefit; making all treatment methods available as best fit the situation including: biological controls; a selection of appropriate herbicides; mowing; seeding and planting desirable species; and handpulling weeds.

For example, to date we have used biological control agents as much as funding and insect availability has allowed. This document will permit us to continue to increase our use of biological control over a larger portion of the Forest.

Biological control is a valuable tool and a young developing science. However, our use of the technology has been limited by the availability and number of effective organisms, and by the lack of general knowledge about the best way to apply biological controls on a broader scale. I intend to continue to pursue this option as much as possible within our overall strategy.

I recognize also the importance of prevention in the integrated response to the invasive weed threat. Prevention tactics come in many forms. Some of them have been in effect prior to this decision, such as: the 2001 Regional Forester's decision to restrict cross-country travel by off-highway vehicles; the standard clause in timber sale contracts that requires the thorough washing down of harvest equipment; and our Region One Noxious Weed manual direction on Integrated Weed Management (FEIS Appendix E).

Other techniques will be improved and enhanced as part of this decision such as a more aggressive prevention education effort, increased public involvement in early detection of new invaders, and a more extensive survey effort as outlined in the FEIS prevention plan (FEIS pp 2-26 to 2-27 and ROD 27 to 28)

e) Proceeding With Caution and Modifying Our Tactics Through Adaptive Management to Improve Our Effectiveness.

Alternative E-Modified dictates a conservative implementation approach by phasing in and closely monitoring activities such as aerial applications, biological controls and grazing demonstrations.

With this alternative, I am limiting the annual herbicide treatment area to about 5,000 acres in any one year (ROD Table 14).

This decision will allow us to adjust our actions as we learn more through implementation. The adaptive management approach in the document permits us to select from a menu of invasive weed control techniques in order to improve our effectiveness. For example, we can enhance the use of sheep or goats, reseeding or install emergency travel closures in order to better achieve weed containment and control (FEIS pp 2-23 to 2-26).

It includes sites for aerial spraying on selected steep grassland / open timber sites with specific objectives to halt the advance of spotted knapweed and to recover select blocks of critical winter range forage for our elk herds. It allows for the proactive ground application of herbicides by backpack, mule mounted equipment, ATV or truck on roads, trails and open sites with the objective of eradicating new invasive weeds and pushing back the extent of existing weeds.

The decision focuses the treatment actions by defining specific objectives that are consistent with the Forest Weed Strategy for each treatment site and target species present (FEIS 1-16, 1-17, 2-15 to 2-18). The project will tailor the treatment objectives to match the different species and sizes of infestations. For example, we will target small, localized infestations of new invasive plants for eradication. Large infestations of established noxious weeds are slated for containment so they don't spread beyond the existing infestation perimeter.

If we total all the potential acres on which herbicide might be applied in any one year of this project, herbicide application may occur on only about three

tenths of one percent (3/10 of 1%) of the Bitterroot Forest land area.

If we extend our view to include the lifetime of this project (about seven to ten years), the percentage of land area of the total Forest receiving herbicide application would still be proportionally very low (less than 3%).

With over one sixth (>16%) of the Bitterroot Forest affected by invasive weeds, I am confident that this decision judiciously focuses our herbicide use on the highest priority sites.

Alternative E-Modified represents an effective invasive weed management program that is cautious and relatively conservative in the use of herbicide.

f) Staying Effective Through Follow-up Monitoring.

Through Alternative E-Modified, I am intensifying the direction to establish an improved, more comprehensive system for tracking our successes and identifying new problems as well as finding, mapping and prioritizing occurrences of the species of concern.

I will establish a citizen monitoring team that will have the opportunity to participate in monitoring weed treatment projects. I intend to make project implementation information and survey/tracking data available to them for their review. Annual monitoring results and evaluations also will be made available to the public.

SUMMARY OF RATIONALE

Each of the alternatives considered has benefits and drawbacks relative to the purpose and need, issues, and public comments. The purpose and need was developed through direction in the Forest Plan and other National and Regional laws and policies, as well as environmental monitoring results.

Although adequate in some respects, Alternative B does not meet the purpose and need in significant areas, i.e., restoring native plant communities and improving forage on specific big game summer/winter ranges and treating weeds near the Forest boundary. Alternatives C and D are not effective in treating noxious weeds, which would have long-term negative effects on the Forest. Therefore, I do not believe Alternatives C and D are consistent with Forest Service land management policies.

Alternatives A ,E and E-Modified are effective in meeting all aspects of the purpose and need. I believe that Alternative E-Modified best addresses issues raised with the proposed action because it contains the necessary environmental protection measures, monitoring plans, and features to assure me that human and environmental health will be protected, while noxious weeds are controlled and overall forest health is improved.

I feel it is a reasonable and prudent action to go forward with an integrated weed management strategy using the best information available on the effects of herbicides.

Legally required findings

Numerous laws, regulations, and agency directives require that my decision be consistent with their provisions. To the best of my knowledge, my decision is consistent with all laws, regulations, and agency policy relevant to this project. The following discussion is not an all-inclusive listing, but is intended to provide information on the areas raised as issues or comments by the public or other agencies.

NATIONAL FOREST NOXIOUS WEED MANAGEMENT POLICY (FSM 2080-2083)

Alternative E-Modified is consistent with the National Forest Noxious Weed Management Policy, which requires District Rangers to prevent the introduction and establishment, and provide for the containment and suppression, of noxious weeds; and to cooperate with State agencies. The policy is consistent with the Federal Noxious Weed Act of 1974, as amended (7 USC 2801 et seq.)

ENDANGERED SPECIES ACT (ESA)

The BNF Wildlife Biologist, Fisheries Biologist, and Botanist have evaluated Alternative E with regard to threatened and endangered animal and plant species. Findings are summarized in Chapter 4 of the FEIS and in the Biological Assessments and Biological Evaluations (PF-Wildlife, Fish and Plant BE/BA). These same findings apply to Alternative E-Modified.

US Fish and Wildlife Service concurrence with the findings of the analysis of the project was received on March 6, 2003 for fisheries and aquatic resources. The determination was that the selected alternative is not likely to affect the threatened bull trout (*Salvelinus confluentus*).

The determination on terrestrial species was that the selected alternative will have no effect the endangered gray wolf (*Canis lupus*), the threatened

grizzly bear (*Ursus arctos horribilis*), the threatened bald eagle (*Haliaeetus leucocephalus*), the threatened Canada lynx (*Lynx Canadensis)* or threatened plants Spalding's catchfly (*Silene spauldingii),* Ute's ladies tresses *(Spiranthes diluvalis),* Water howellii *(Howellii aquatilis)* and not likely to jeopardize the continued existence of the nonessential experimental gray wolves. It will have no effect on the proposed mountain plover (*Charadrius montanus*)

SENSITIVE SPECIES

Federal law and direction applicable to sensitive species include the National Forest Management Act and the Forest Service Manual (2670). The Regional Forester has developed the sensitive species list—those plants and animals for which population viability is a concern (Chapter 3, Wildlife, Fish and Vegetation sections). In making my decision, I have reviewed analyses and projected effects on all sensitive species listed as occurring or possibly occurring on the BNF (FEIS Chapter 4, Wildlife, Fish and Vegetation sections). These findings support the conclusion that Alternative E-Modifed will have no long-term adverse impacts on sensitive species.

CLEAN WATER ACT AND MONTANA WATER QUALITY STANDARDS

Based on the measures outlined in the FEIS to protect soil and water resources (FEIS pg 2-28 to 29) and the Soil and Aquatics Analysis in Chapter 4, I believe Alternative E-Modified meets the intent of the Clean Water Act. In response to public concern, buffers for aerial application around open water were increased (FEIS page 2-28).

Section 313 of the Montana Clean Water Act (CWA) requires Federal Agencies to comply with all substantive and procedural requirements related to water quality. This decision complies with those requirements as addressed in the FEIS, Fisheries and Water Quality on page 4-47.

Prior to implementation, a Montana Pollutant Discharge and Elimination System (MPDES) permit may be required. Consultations with the Montana Department of Environmental Quality and U.S. Environmental Protection Agency will determine whether a permit is needed.

THE NATIONAL FOREST MANAGEMENT ACT OF 1976 (PL-94-588)*:* The National Forest Management Act and accompanying regulations require that several other specific findings be documented.

Forest Plan Consistency – Management activities are to be consistent with the Forest Plan [p16 USC 1604 (i)]. The Forest Plan guides management activities [26 CFR 219.1 (b)]. Consistency with the Forest Plan is discussed in FEIS - Chapter 4 as appropriate by resource.

Resource Protection – the following 12 statements address resource protection requirements of NFMA:

1. Alternative E-Modified conserves soil and water resources and does not allow significant or permanent impairment of the productivity of the land (FEIS 4-2 through 4-7; 4-11 through 4-20).

2. Within the scope of the project and consistent with the other resource values involved, activities will minimize risks from serious or long-lasting hazards (ROD Table 14).

3. The purpose of this project is to prevent or reduce serious, long-lasting hazards, and damage from pest organisms, utilizing principles of integrated pest management (FEIS 1-10).

4. Alternative E-Modified will protect bodies of water (ROD Table 14)

5. Alternative E-Modified will provide for and maintain a diversity of plant and animal communities by reducing displacement of native plant species (FEIS 1-3 and 4-48), and by aggressively treating invader species (ROD pg 34).

6. Alternative E-Modified will maintain sufficient habitat for viable populations of existing native vertebrate species (FEIS 4-31 through 4-40).

7. The FEIS assesses potential physical, biological, aesthetic, cultural, engineering, and economic impacts of Alternative E-Modified and is consistent with multiple uses planned for the Forest.

8. Alternative E-Modified prevents the destruction or adverse modification of critical habitat for threatened and endangered species (Biological Assessments and Letters of Concurrence in Project File)

9. There are no right-of-way corridors needed to accommodate the project.

10. There is no road construction associated with this project.

11. No temporary roads will be built.

12. Applicable Federal, State, and local air quality standards will be met.

    Riparian Areas, Soil and Water – All riparian areas, soil and water will be protected as described in the FEIS and ROD (ROD Table 5).

    Diversity – The purpose of this project is to preserve and enhance the diversity of plant and animal communities by reducing and limiting the spread of noxious weeds (FEIS 1-16 to 1-17). Alternative E-Modified is consistent with this objective.

THE FEDERAL LAND POLICY MANAGEMENT ACT OF 1976 (PL 94-579)

This Act authorizes control of weeds on rangeland. The decision is consistent with this law.

ENVIRONMENTAL JUSTICE AND CIVIL RIGHTS

Executive Order 12898, issued in 1994 ordered Federal Agencies to identify and address any adverse human health and environmental effects of agency programs that disproportionately impact minority and low-income populations. At this time, no minority or low-income communities have been identified in southwest Montana. This project does not disproportionately impact any human populations.

The Civil Rights Act of 1964 provides for nondiscrimination in voting, public accommodations, public facilities, public education, federally assisted programs, and equal employment opportunity. Title VI of the Act, Nondiscrimination in Federally Assisted Programs, as amended (42 U.S. C. 2000d through 2000d-6) prohibits discrimination based on race, color, or national origin.

While the alternatives may have differing effects on wildlife and fish, as described in the FEIS, Chapter 4, none of the alternatives would alter opportunities for subsistence hunting and fishing by Native American tribes. Tribes holding treaty rights for hunting and fishing on the Bitterroot National Forest are included on the project mailing list, and had the opportunity to (and did) provide comments on this project.

CLEAN AIR ACT

The basic framework for controlling air pollutants in the United States is the 1970 Clean Air Act as amended in 1990 and 1999 (42 USC 7401 et seq.) The primary concern with this project in regard to air quality impacts is with the ground and aerial application of herbicides. Since impacts will be distributed across the Forest and over time, concentrations of air contaminants will not accumulate to the point of violating air quality standards for any area (FEIS 4-8).

MIGRATORY BIRD TREATY ACT

I believe the techniques and mitigation measures in Alternative E-Modified provide adequate conservation measures for migratory birds. Overall impacts on land birds and waterfowl are expected to be minimal (FEIS 4-36).

THE NATIONAL HISTORIC PRESERVATION ACT OF 1966

Alternative E-Modified would result in the lowest loss of biotic heritage resources. Aerial spraying will not occur near archeological or historic sites and mechanical treatment (mostly hand pulling of weeds) is limited to 1,100 acres. Of the known historic sites on the BNF, none are located in areas of weed infestation proposed for that type of treatment. Mechanical treatment would have no effect on the qualities that make the sites eligible for the National Register of Historic Places

EXECUTIVE ORDER 13112, INVASIVE SPECIES, FEBRUARY 3, 1999

Alternative E-Modified complies with this order directing Federal Agencies whose actions may affect the status of invasive species to (i) prevent the introduction of invasive species, (ii) detect and respond rapidly to, and control, populations of such species in a cost-effective and environmentally sound manner, as appropriations allow.

36 CFR SUB A, SEC 222.8

All alternatives comply with this direction: "…The Chief, of the Forest Service, will cooperate with County or other local weed control Districts in analyzing noxious farm weed problems and developing control programs in areas which the National Forests and National Grasslands are a part."

FEDERAL NOXIOUS WEED ACT OF 1974 (SEC 9)

Alternative E-Modified complies with this authorization for the Secretary to cooperate with other Federal and State Agencies or political subdivisions thereof, and individuals in carrying out measures to eradicate, suppress, control or prevent the spread of noxious weeds.

PUBLIC LAW 90-583 (CARLSON-FOLEY ACT, OCTOBER 17, 1968).

Cooperative agreements described in the FEIS (pp2-26 to 2-27) are in compliance with this law that authorizes and directs heads of Federal Departments and Agencies to permit control of noxious plants by State and local governments on a re-imbursement basis in connection with similar and acceptable weed control programs being carried out on adjacent non-Federal land.

THE STATE OF MONTANA COUNTY NOXIOUS WEED MANAGEMENT ACT

This Act provides for designation of noxious weeds within the State, and directs control efforts. Provisions are made for registration of pesticides, licensing of distributors and applicators, and enforcement of State statutes. An enforcement responsibility for the control of noxious weeds within Montana is delegated to County Commissioners through weed management District weed boards.

PERMITS REQUIRED

Prior to implementation, a Montana Pollution Discharge and Elimination System (MPDES) permit may be required. Consultations with the Montana Department of Environmental Quality and US Environment Protection Agency will determine whether a permit is needed.

THE ENVIRONMENTALLY PREFERABLE ALTERNATIVE

Alternative E-Modified has been identified as the environmentally preferable alternative. This alternative is the most effective at reducing noxious weeds (which have negative environmental impacts) on the Forest, while protecting public health (FEIS pp 4-68 to 4-69), water quality (FEIS pg 4-11), wildlife (FEIS pg 4-21), fish (FEIS pp 4-47 to 4-48), and plant populations (FEIS pp 4-48 to 4-53) and soils (FEIS pp 4-2 to 4-3).

IMPLEMENTATION DATE

This project is subject to administrative appeal and review. If no appeal is filed, implementation of this decision may occur on, but not before, 5 business days from the close of the appeal filing period. If an appeal is filed, implementation may not occur for 15 days following the date of appeal disposition.

ADMINISTRATIVE REVIEW OR APPEAL OPPORTUNITIES

My decision is subject to appeal under 36 CFR 215.7. Appeals must be postmarked or received within 45 days of the date of legal notice in the Ravalli Republic newspaper and submitted to:

Appeal Deciding Officer, Regional Forester
USDA Forest Service, Northern Region
ATTN: 1570 APPEALS
200 East Broadway
PO Box 7669
Missoula MT 59807

Any written notice of appeal of this decision must be fully consistent with 36 CFR 215.14 ‘‘Content of an Appeal’’, including the reasons for the appeal and how the decision fails to consider comments previously provided. It is the responsibility of those who appeal a decision to provide the Regional Forester sufficient written evidence and rationale to show why my decision should be changed or reversed. The written notice of appeal must:

- State that the document is a Notice of Appeal filed pursuant to Title 36 CFR Part 215;
- List the name, address, and if possible, a telephone number of the appellant;
- Identify the decision document by title and subject, date of the decision, and name and title of the Responsible Official;
- . Identify the specific change(s) in the decision that the appellant seeks or portion of the decision to which the appellant objects; and

- State how the decision fails to consider comments previously provided, either before or during the comment period specified in Title 36 CFR 215.6 and, if applicable, how the appellant believes the decision violates law, regulation, or policy.

CONTACT PERSON

For further information on this project and implementation, contact Ken Hotchkiss, Project Team Leader at (406) 363-7187, or Gil Gale, Forest Rangeland Management Specialist at (406) 821-2318 or write to: Bitterroot National Forest, Supervisors Office, 1801 N. First, Hamilton, MT 59840-3114.

SIGNATURE AND DATE

David T. Bull

DAVID T. BULL
Forest Supervisor, Bitterroot National Forest

March 18, 2003
Date

APPENDIX A: RESEARCH NATURAL AREAS (RNAS)

Appendix A provides additional analysis, lacking in the FEIS, concerning the effects of proposed actions on the Research Natural Areas mentioned in the FEIS.

Introduction

The Forest Service Manual (FSM 4063) defines research natural areas as "part of a national network of ecological areas designated in perpetuity for research and education and/or to maintain biological diversity on National Forest system lands. Research natural areas are for nonmanipulative research, observation, and study." When practical, natural processes are maintained without human intervention. However, there are cases when deliberate manipulation may be used to maintain the natural conditions and processes for which the RNA was established (FSM 4063.05).

Two Research Natural Areas (RNAs) are included in the Noxious Weed Treatment Project FEIS/ROD: the Sawmill Creek and Bitterroot River RNAs, both located on the Stevensville Ranger District. Aerial herbicide treatments are proposed for the Sawmill Creek RNA and the Poker Joe grazing demonstration area lies inside the Bitterroot River RNA.

In order to conduct activities within research natural areas written approval is necessary from the RNA Station Director in Ft. Collins, Colorado. The Forest Service Manual (FSM 4063.24) states that "The Station Director, with the concurrence of the Forest Supervisor, may authorize management practices that are necessary for noxious weed control or to preserve the vegetation for which the research natural area was created. These practices may include grazing, control of excessive animal populations, or prescribed burning." Such approval was obtained prior to conducting the ground-based weed treatments, thinning and prescribed burning on the Sawmill RNA described below.

SAWMILL CREEK RNA

Affected Environment

The Sawmill Creek RNA was established in 1992 to represent the following habitat types: ponderosa pine/Idaho fescue *(Pinus ponderosa/Festuca idahoensis),* Douglas-fir/bluebunch wheatgrass *(Pseudotsuga menziesii/Pseudoroegneria spicata {Agropyron spicatum}),* Idaho fescue/bluebunch wheatgrass, and rough fescue *(Festuca scabrella)*/Idaho fescue. The latter type is one of the most intact rough fescue/Idaho fescue plant communities on the Bitterroot Forest. The Sawmill RNA consists of 270 acres.

The Sawmill Creek RNA is one of the few lower elevation grasslands or forests left in western Montana that haven't been severely altered by development, grazing, timber harvest and noxious weed competition. However, since most of these activities have occurred in the RNA at some time in the past, there are noxious weed present in the grasslands. Without intervention the spread of these noxious weeds threatens to alter the native plant communities of the RNA.

Management activities that have occurred on the RNA to control weed spread and maintain natural conditions have included herbicide treatments, release of biological controls, hand-pulling, and road closures. All herbicide applications were by hand using a backpack sprayer or ATV. Targeted weeds were spotted knapweed, sulfur cinquefoil, leafy spurge, and St. Johnswort. In addition to the herbicide treatments, sulphur-winged knapweed root moths (*Agapeta zoegana)* and knapweed root weevils (*Cyphocleaonus achates)* were released in 1996 and 1997 for long-term spotted knapweed suppression. Finally, houndstongue and musk thistle plants have been dug on an annual basis and isolated St. Johnswort and dalmation toadflax plants have periodically been pulled or flowering tops cut off to prevent seed production. Road access to the RNA has been closed except for research purposes in order to reduce the spread of weeds and to discourage recreational use.

Monitoring plots were established in 1995 and have been read annually. Results show improved conditions for the native plant communities (see FEIS I-8, 9). Since 2000 non-commercial thinning and prescribed burning were also implemented to help restore fire to the swales and forested communities in the RNA. Additional herbicide

treatments may be necessary in these areas if weeds respond to the open canopy and ground disturbance.

Environmental Effects

The effects of herbicide treatments on the Sawmill RNA have been addressed in the Environmental Assessment prepared in 1995 for the "Use of Herbicides to Control Noxious Weeds in the Sawmill Creek Research Natural Area". A discussion of the effects of the proposed aerial and/or ground-based spraying can be found in the current FEIS/ROD. These herbicide treatments are proposed as follow-up treatments to deplete the weed seed bank in the soil. Since aerial herbicide application differs from the 1995 weed treatment project, the RNA Station Director in Ft. Collins, Colorado (with concurrence of the Bitterroot Forest Supervisor) will need to approve these treatments prior to implementation (see "Introduction"). Such treatments are within the scope of the management direction for RNAs as described in the Forest Service Manual (4063.32): "If exotic plants or animals have been introduced into an established research natural area the Station Director and the Regional Forester shall exercise control measures that are in keeping with established management principles and standards to eradicate them, when practical."

BITTERROOT RIVER RNA

Affected Environment

The Bitterroot River RNA was established in 1992 to preserve and maintain a segment of a major western Montana river in which natural processes are allowed to function. Although the RNA is only 40 acres in size, the Lee Metcalf National Wildlife Refuge forms the eastern and southern boundaries, providing continuity with several thousand acres managed for its natural qualities. The RNA encompasses part of the Bitterroot River and bottomland vegetation types associated with the flood terraces of major rivers in western Montana. Seventy percent of the RNA is dominated by riparian and upland communities. The remaining 30 percent consists of the riverbed and sand/gravel bars in the river. Riparian plant communities represented include: ponderosa pine/red-osier dogwood *(Pinus ponderosa/Cornus stolonifera),* black cottonwood *(Populus trichocarpa)*/red-osier dogwood, sandbar willow *(Salix exigua),* Bebb's willow *(S. bebbiana),* and beaked sedge *(Carex utriculata).* The RNA also contains noxious weeds, the most prolific being common tansy. Also known to be present are spotted knapweed, oxeye daisy, Canada thistle, and leafy spurge. Other exotic species present are reed canarygrass *(Phalaris arundinacea)*, cheatgrass, common timothy (*Phleum pratense),* and Kentucky bluegrass *(Poa pratensis).* The Bitterroot River RNA is accessed through the Poker Joe Fishing Access on Highway 93.

Thirty percent of the RNA burned in 1990 when fire on adjacent private land escaped. The fire was mostly confined to the ground, consuming shrubs, forbs and grasses and reducing the litter layer depth. A recent field trip to the site revealed that large areas in the RNA are dominated by common tansy, possibly a result of the 1990 fire (Rinehart 2003). Many of the swales are predominately vegetated with reed canarygrass that is also choking out native vegetation.

Environmental Effects

The FEIS/ROD proposes to treat noxious weeds on the Bitterroot River RNA by grazing goats or sheep under close supervision. The use of grazing animals for such purposes is allowed under RNA direction (see "Introduction") but approval will be needed by the RNA Station Director in order to proceed with this grazing proposal. Any grazing in the RNA would be closely monitored to protect native vegetation.

REFERENCES

Rinehart, Susan. 2003. Assistant Regional Botanist. Personal communication. USDA Forest Service Northern Region, Missoula, MT.