SUMMARY

INTRODUCTION

Forest and Regional direction calls for having aggressive integrated weed management program. There is strong public support for taking action towards the invasive weed problem. Unfortunately, weeds will not go away by themselves.

This Draft Environmental Impact Statement (DEIS) discloses potential effects of implementing specific invasive weed treatments on approximately 13,260 acres invasive plants that have been mapped on the Gallatin National Forest in 2002. These mapped acreages consist of 10,600 gross acres of Federal, State or County designated noxious weeds, 1,995 acres of invasive species and some 665 acres of concern tall larkspur. Tall larkspur, even though native can be very poisonous to cattle where dense concentrations occur. Acreages of some of the more prevalent invasive plants include:

- Dalmatian toadflax 3,336
- cheatgrass 1,930
- Canada thistle 1,774
- houndstongue 1,723
- spotted knapweed 1,485
- musk thistle 903
- yellow toadflax 570
- oxeye daisy 313
- leafy spurge 208
- common tansy 103

The rate of spread of invasive weeds may be as much as 8-12 percent per year where no form of control is in place (Asher 1998). This rate of spread maybe even higher where disturbance factors such as large wildfires occur. An estimated 500,000 acres of the Gallatin National Forest are currently susceptible to invasive weed invasion based on acres of rangeland and forested areas with less than 35 percent tree canopy coverage. Future activities or events that reduce tree canopy cover could increase the acres susceptible to invasive weed invasion.

This DEIS addresses concerns about noxious weeds increases, and impacts of herbicides. Because the concerns are largely about herbicides most of the documentation focuses on that aspect. Biological control is a long-term process with a short history on the Forest. Prevention and education are an established piece of existing treatment program and are not dealt with in detail in this DEIS but are recognized as a critical element.

PROJECT AREA

The Gallatin National Forest encompasses approximately 1,800,000 acres in south central Montana within Carbon, Gallatin, Madison, Meagher, Park, and Sweet Grass Counties. The project area consists of land within the boundaries of the Gallatin National Forest. Proposed treatments would occur throughout the Forest, on National Forest System lands.

PURPOSE AND NEED FOR ACTION

Resource damage is occurring where invasive weeds are allowed to establish root systems, seed sources and total acreage. Aggressive, yet flexible strategies are necessary in an attempt to manage these undesirable species. Invasive weeds can crowd out native plants and diminish productivity, bio-diversity, and appearance of land. Although only a small portion (0.7 percent) of the Gallatin National Forest is now infested with invasive plants, experience shows weeds become epidemic when an aggressive weed control program is delayed (Lolo, Bitterroot, Flathead, and Idaho Panhandle National Forests). Infested acres continue to increase because all identified infestations cannot be effectively treated under the existing integrated weed management program.

The purpose of this project is to provide for implementation of a more responsive and flexible integrated weed management program that is better able to provide for native plant community needs and provides options for dealing with tall larkspur poisoning. This program is meant to broaden the existing 1987 environmental analysis for control of invasive weeds. Specifically, there is a need to:

Control Invasive Weeds

New weed sites and species are being found on the Gallatin National Forest each year. The need exists to be able to deal with newly listed species as well as new weed sites quickly in an attempt to eradicate them before they become established. Where herbicides are required it would also be desirable to utilize the most weed specific compounds and efficient methods available that has the least impact on non-target vegetation, thus, promoting for healthy native plant cover.

Control Tall Larkspur Sites

Tall larkspur, a native species, sometimes grows in such abundance that livestock poisoning results. Tall larkspur is considered the leading cause of livestock deaths throughout much of the western United State ranges. The need exists to be able to treat tall larkspur on site specific areas where livestock loss is likely with no action. Permitting herbicide control would provide an additional option for achieving control and promoting a more desirable vegetative composition.

Treating Remote Areas

Large invasive plant infestations continue to occur and expand on the more remote areas of the Gallatin National Forest. Due to difficult access and increasing size of the infestations more cost-effective and safer methods are needed to control those sites, such as aerial treatment.

PROPOSED ACTION

The Gallatin National Forest proposes to implement an aggressive invasive weed management program on, but not limited to, the 13,260 acres of invasive species previously mapped:

- 5,179 acres ground herbicide application;
- 255 acres aerial herbicide application;
- 4985 acres biological control (herbicide treatment will be used along the perimeter and small patches to contain the weeds);

- 41 acres pulling (herbicides may be used to reduce plant density to low levels, then pull isolated plants);
- 2135 acres cultural (herbicides or grazing may be used to reduce plant density then plant more desirable vegetation);
- 665 acres of larkspur control through herbicide, fertilizing, mineral supplement, sheep grazing, and supplementing native biological control agents.

Herbicides

Chemical treatments would include both ground and aerial herbicide applications. Ground applied herbicide treatments would occur in areas where there is good access, a manageable size of infestation, and available funding. Chemical applications would take place at the appropriate time of year for the targeted species and environmental considerations such as proximity to water, plant growth stage, and adjacent sensitive plants or amphibians. Equipment such as helicopters, trucks, all-terrain vehicles (ATVs), horse, and backpack sprayers would be used. New herbicides are being developed which are more species specific and less persistent or less mobile in soil. Newly registered water-soluble herbicides displaying toxicity, leaching, and persistence characteristics less than or equal to picloram may be used. Rotating herbicide use on a site from one year to the next would be considered especially where weeds may be developing herbicidal resistance. Herbicide use would follow labeled requirements.

Areas with aerial applications would also include ground applications, to treat buffer areas and skipped areas. These areas are estimated at 5 to 10 percent of the aerial treatment acres. Depending on monitoring results, follow-up aerial and ground treatments may occur on third and fifth years after initial treatment, as portions of the dormant seed or root system propagate. Based on previous experience with weed treatments, it is likely that the treatment areas would then enter "maintenance mode" where spot treatments of infestations would continue to occur until weeds are eradicated. Aerial application will not be in designated wilderness areas, research natural areas, or near sensitive area (such as near water or sensitive plants). Sites identified for aerial treatment are not accessible by roads (previous roads have been decommissioned) or have steep slopes that make walking difficult.

Improper aerial application will not be allowed. All herbicide applicators, whether Forest Service or contract employees, will adhere to the label instructions. A field inspector will be on-site during all aerial applications to monitor drift and compliance with label specification. Label information is available in the Project File and at http://infoventures.com/e-hlth/, http://npic.orst.edu/tech.htm, a National Pesticide Information Center website.

Ground applied herbicide treatments are proposed in the Absoroka and Beartooth Wilderness areas.

Surfactant adjuvant would be used in certain situations to increase efficacy, primarily on target species with a waxy cuticle (especially toadflax), or when temperature and humidity are not optimal (but still within label and more restrictive locally-prescribed limits) yet other conditions (such as plant phenology) are ideal. Surfactants may be used during periods of drought. Surfactants used would be a silicone-blend type and added to tank mixes. Surfactant adjuvant would be used in accordance with label requirements for both the herbicide and the surfactant products. The use of colored dyes might also be used where it's difficult keeping track of what was sprayed or not.

Biological Controls

Biological controls, primarily insects, would continue to be introduced where appropriate and newly approved agents would be considered for use where environmental conditions support.

Grazing

Grazing of livestock such as sheep or goats would be permitted where supplement control of such plants as leafy spurge, Dalmatian toadflax and spotted knapweed is needed. Grazing may be done on a contractual basis, under high-intensity and short duration, and with animals specially conditioned to graze invasive species. Mitigations that reduce conflict with predation and disease transfer between domestic animals and wildlife will be followed.

Mechanical Treatment

Mechanical treatment such as handpulling or grubbing would occur on sensitive areas or in very small infestations.

Cultural Treatments

Cultivation and/or seeding would occur where natural recovery of native species is inadequate to provide needed competition to prevent reinvasion by invasive species. On some sites, use of non-native cultivars that are not known to be spreaders might be used on an interim basis until more suitable native seed sources become available. While treatment would focus primarily on cheatgrass dominated sites, other sites void of perennial vegetation or having undesirable cultivars would also be considered.

Adaptive Management

The most effective time to treat new infestations or new species is when they are first discovered, especially if the plants haven't established extensive root systems or produced viable seed. Adaptive management strategies are proposed that support early detection and eradication of weeds, expanding the aerial application program where specific conditions support, using newly approved herbicides and biological control agents, and adding new weeds to stay in compliance with State or County noxious weed laws. To quickly and effectively treat newly discovered weed infestations, the following decision tree based on site characteristics, weed species, and location would be used to select treatment methods:

These measures would be allowed so long as State and Federal mandated direction, such as Endangered Species Act, Clean Water Act, Gallatin Forest Plan Standards, etc. are adequately addressed and the overall outcome not compromised. Using an adaptive management approach allows for treatment of new sites or new species without a lengthy delay, while still addressing other resource concerns.

New technology, biological controls, herbicide formulations, and supplemental labels are likely to be developed within the next 15 years. These new treatments would be considered when there are indications that they would be more weed-specific than methods analyzed here, less toxic to non-target vegetation, or less persistent and less mobile in the soil. Newly registered, water-soluble herbicides that display toxicity, leaching, and persistence characteristics less than or equal to

picloram may be used. The Adaptive Management Strategy would allow incorporation of these new treatment methods:

- New herbicides or formulations registered and approved by the US Environmental Protection Agency would be applied according to label specifications;
- Application methods and environmental protection measures described above would be used;
- The decision by the line officer to use a new treatment method would be driven by an interdisciplinary review to confirm that the new treatment is within the scope of the analysis in this DEIS, and the above decision tree modified as determined necessary.
- New biological control agents that are approved and certified by the Animal Plant Health Inspection Service; and
- Cost effect mechanical methods of treatments are developed. These methods would be reviewed before use to determine if other resource quality standards can be maintained.

SCOPE OF THE DECISION

The scope of this analysis is limited to the effects of weeds, and weed control treatments (as proposed in this document) on different resources within the Gallatin National Forest boundary.

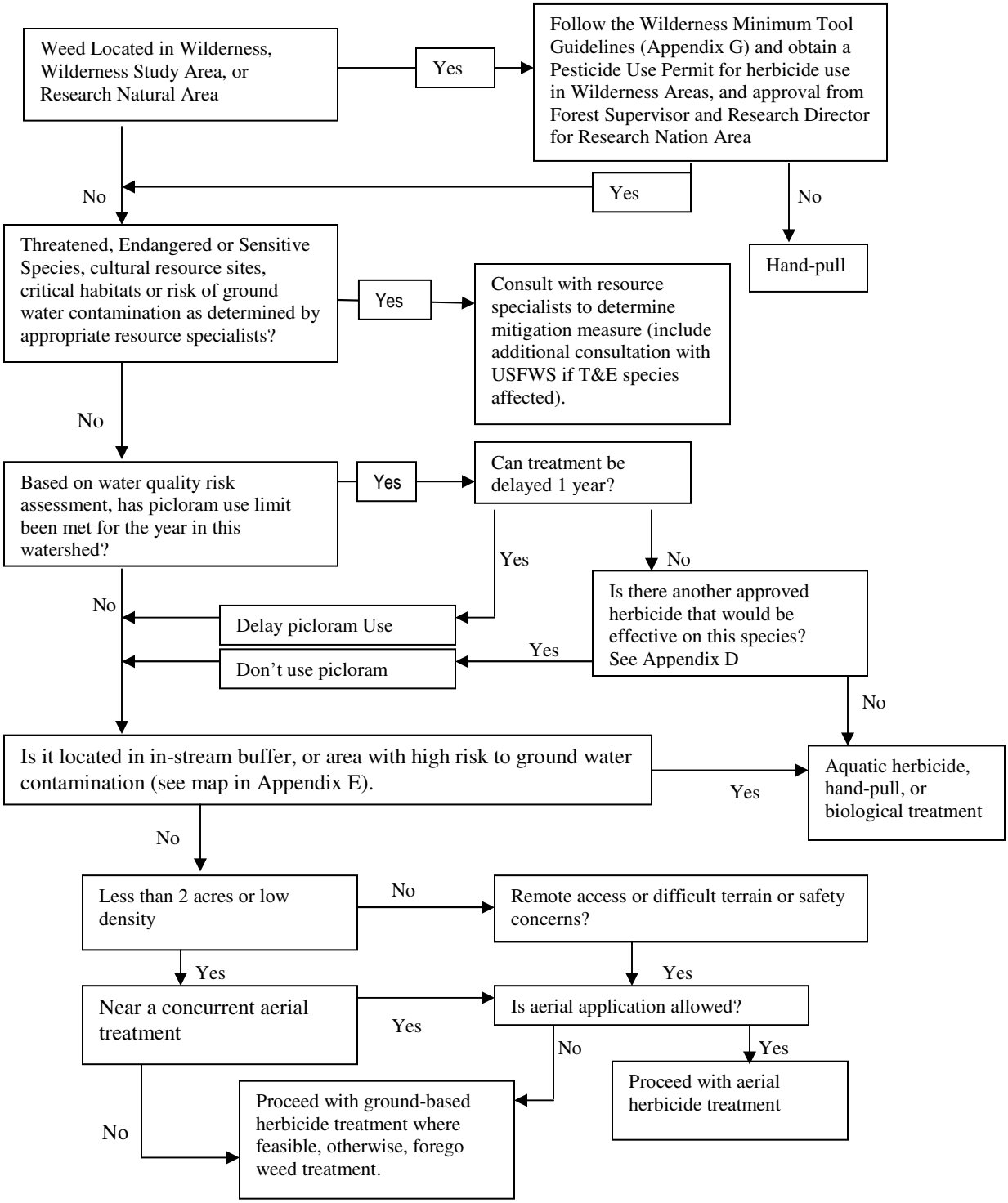
Geographic Scope

Treatments would occur on National Forest System land within the Gallatin Forest only. For each resource an analysis area was determined that could be used to adequately measure cumulative effects of the proposed alternatives. Unless otherwise stated, the cumulative effects area is the same as the project area.

Temporal Scope

The timeframe for project implementation is 5 to 15 years. Direct, indirect, and cumulative effects, if any, would occur during that period. For cumulative effects analysis, an additional 10 years past the final implementation year is included in the analysis. In some cases, longer-term effects are also discussed.

Table 1. Decision Tree for New Weed Locations.



SIGNIFICANT ISSUES

Comments from the public and the Gallatin National Forest Interdisciplinary Team (IDT) members were used to determine issues of concern that could result from implementing the Proposed Action.

Potential Effects of Herbicides on Human Health

A letter received from The Ecology Center was concerned with potential impacts on human health from the use of herbicides to control weed infestation. More specifically they were concerned about the acute toxicity, the carcinogenicity and the effects of low-level exposure. They were also concerned about the amounts and combination of herbicides and the synergistic effects of herbicide combinations. Also, they wanted to know how people who are sensitive to herbicides would be protected.

Potential Effects of Aerial Application of Herbicides

The Ecology Center expressed concern about herbicide drifting from treatment areas into riparian areas, streams, and other lands with unintended consequences. The specific concern was that aerial applied herbicides could not be effectively controlled. Aerial application has a greater risk for drift and collateral damage to non-target species.

Potential Effects of Herbicides on Aquatic Resources

Both the Ecology Center and the Environmental Protection Agency expressed concern about effects of herbicides used for weed control on water quality and aquatic organisms (fisheries, insects and amphibians).

Potential Effects of Herbicides on Wildlife

The Ecology Center expressed concern about the effects of herbicides on wildlife, and the risk of bio-accumulation of herbicides within the environment.

Other Concerns

In addition to the key issues identified earlier other concerns were expressed and mitigation measures were developed that reduces their significance. These concerns are also analyzed in Chapter 4, and include the following:

- Effects of herbicide use on soils and groundwater quality;
- Effects of weeds and weed treatment on native grasses, forbs, shrubs, and trees; and
- Effects of weed treatment on wilderness, wilderness study areas, inventoried roadless areas, wild and scenic rivers, and research natural areas.

ISSUES AND ALTERNATIVES NOT STUDIED IN DETAIL

A few issues raised during the scoping period were not analyzed in detail because: 1) there are no direct or indirect effects from the proposed action; 2) the issue is outside of the scope of decision; or 3) past research and analysis show no significant effects for similar actions.

Several alternatives for the proposed project were considered but eliminated from detailed analysis. Reasons for their dismissal include not meeting project purposes and needs; not meeting CEQ (NEPA) guidelines of being reasonable, feasible, and viable; not differing substantially from other alternatives being analyzed in detail; being beyond the scope of the EIS; and/or not complying with current laws, regulations, policies, and Forest Plan direction.

Prohibit All Activities That Spread Weeds

An alternative that would alter or eliminate activities that provides vectors for weed infestation and spread, was identified by the public during scoping for consideration as an alternative to be analyzed in the EIS. The intent of the alternative is to address and take action on human activities that promote the spread of weeds, specifically, close roads, modify authorized livestock grazing permits, and alter or eliminate existing timber, mining and recreational Off Highway Vehicle activities. These human uses and activities are authorized through previous decisions made in the Record of Decision for the Gallatin National Forest Plan, which incorporates requirements of several public land laws and regulations authorizing multiple uses on National Forest Systems lands. Taking action on activities, authorized under existing public laws, regulations, permits, and the Gallatin Forest Plan, which may contribute to the spread of weeds, is beyond the scope of this EIS and will not be considered further.

No Weed Treatment

An alternative that discontinues the current weed management program was considered but eliminated from detailed analysis because it does not meet any of the project purposes and needs, does not comply with the Forest Service's Integrated Pest Management program, is inconsistent with Forest Service policy that noxious weeds and their adverse effects be managed on National Forests, and violates federal and state laws and executive orders. It also would be irresponsible of the Forest Service to ignore weeds on the Gallatin National Forest when their presence may impact weed control on adjacent private and public lands.

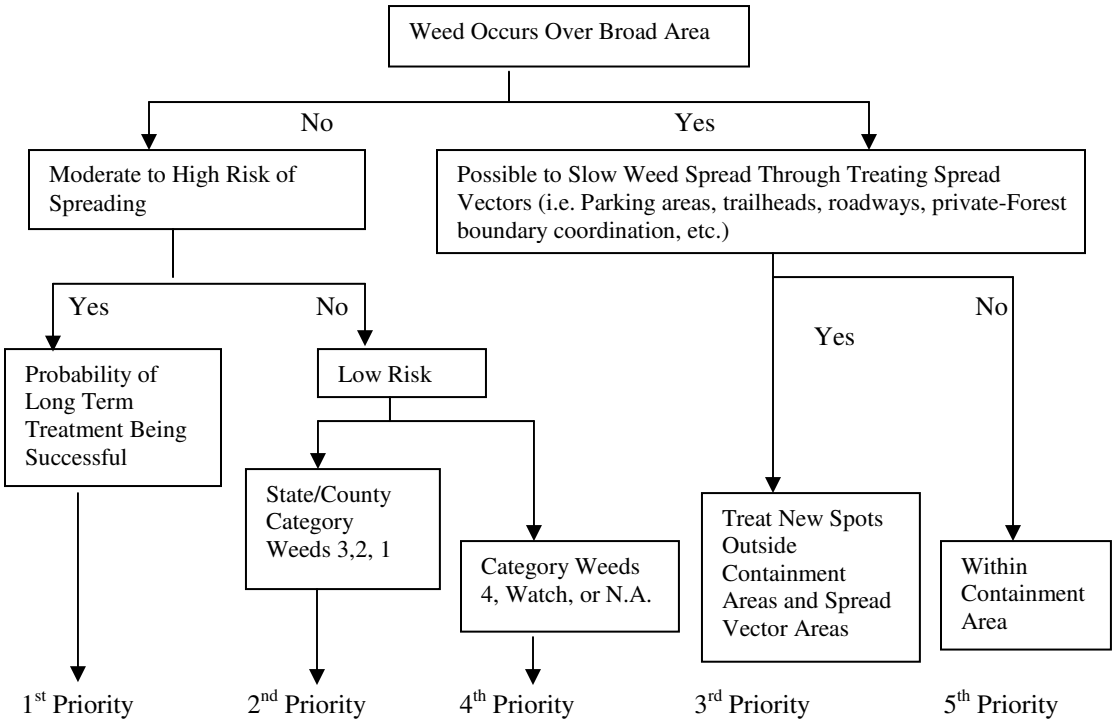
Use herbicide Only After Other Treatment Methods Failed

Other alternatives also eliminated from detailed analysis included mechanical, vegetative, biological, and combinations of treatments followed by herbicides application only if other treatments are unsuccessful. This alternative was eliminated because there is concern that if the non-herbicidal treatments fails and some time passes before this failure is determined, the subsequent weed infestation may have expanded substantially beyond the original acreage, thus further impacting forest resources. The need for increased follow-up herbicide treatments would then have greater potential impacts than the original action. Such an occurrence would not be consistent with meeting project purposes and needs.

BREIF DISCUSSION OF ALTERNATIVES

Each of the alternatives would utilize the following prioritization process for ranking weed treatment.

Table 2. Gallatin National Forest Weed Treatment Priority Rating System.



Four alternatives were examined in detail. A summary of the different treatment types for each alternative follows:

Table 3. Treatment Acres for all Alternatives.

Alt.	Biological control*	Cultural*	Mechanical*	Herbicide	Aerial	Tall Larkspur	No Treatment
1	4985	2,135	41	5,179	255	665	0
2	7,622	2,017	130	0	0	665**	2,826
3	535	0+	281+	346	0	0	11,538
4	5,086	2,135	41	5,179	0	665	153

* For all alternatives except Alternative 2, herbicides will be used in conjunction with biological, culture and mechanical control methods.

+ In the 1987 Noxious Weed EIS cultural treatments were grouped with mechanical treatments, as they are here.

** No herbicides or fertilizers would be allowed but Silent Herder® mineral supplement and native biological control supplementation would be permitted.

Alternative 1 – Proposed Action

This alternative is described by the Proposed Action (above) and is considered in detail in the DEIS.

Alternative 2 – No Herbicide

This alternative was requested by the public and describes a weed control program that does not use herbicides. Under Alternative 2 the following activities would occur: 130 acres of mechanical

treatments (hand pulling), 2,017 acres cultural treatments (grazing and seeding with native plants), 7,622 acres with biological control agents, and 665 acres tall larkspur controlled with Silent Herder ® mineral supplement and biological control agents. This alternative would also result in 2,826 acres not being treated for the following reasons: (1) there is not an approved biological control agent; (2) the weed patch is too large and can not be hand pulled because of lack of resources; and/or (3) the plant spreads via roots and extensive soil disturbance is not acceptable.

The effectiveness of these treatments is diminished because weed density will not be controlled with herbicides. Mechanical treatments will only occur in areas with low weed density (a few weeds per acres) for maximum cost effectiveness. Cultural treatments, such as seeding native plants without removing the weeds will cause a decrease in seedling survival due to plant competition. Biological control agents that are currently available will only reduce the plant density of a few weed species (most agents have not been effect as of yet) and will not prevent the weeds from spreading into new areas.

Alternative 3 – No Action, No Change from Current Weed Treatment

This alternative is the same as current management practices covered by previous NEPA decisions. No additional herbicide treatment would occur outside of those areas identified in the 1987 Gallatin National Forest Noxious Weeds Control EIS and the 1992 East Dam Spotted Knapweed Infestation EA. Alternative 3 would only treat spotted knapweed and leafy spurge on 346 acres with herbicides (only 2,4-D and picloram), treat 281 acres using mechanical and cultural treatments (the 1987 Noxious Weeds EIS combined these activities), and treat 535 acres with biological control agents. This Alternative would not treat 11,433 acres because they were not covered in previous environmental analysis.

Alternative 4 - No Aerial Treatment

This alternative is the same as Alternative 1 except that the aerial treatment sites will not be treated. Alternative 4 would treat 5086 acres with biological control, 2,135 acres using cultural treatments (grazing and seeding), 5,179 acres using herbicide treatment, and 41 acres using mechanical treatment. This alternative would not treat 153 acres because biological control insects are not available for the weeds present on the site, and access is too difficult for ground application of herbicide.

ENVIRONMENTALLY PREFERRED AND AGENCY PREFERRED ALTERNATIVE

Alternative 1 is both the environmentally and the agency preferred alternative because it best protects native species and habitat diversity with mitigations adequate to protect other resource value.

SUMMARY COMPARISON OF ALTERNATIVES

The tables below provide a summary of comparison of the four alternatives analyzed and their relationship to the Purpose and Need, the extent to which they address significant issues, and the extent to which they address public concerns.

Table 4. Summary of Trade-offs and Potential Impacts Between Alternatives.

Issue or Concern	Potential Impacts			
	Alt. 1- Proposed Action	**Alt. 2 – No Herbicides**	**Alt. 3- No Action**	**Alt. 4 – No Aerial**
Impacts of weeds: • Loss of native plant community; • Loss of sensitive plant populations; • Human Health (e.g. allergies, asthma)	- Maximizes protection of native plants -Low risk, effective mitigation - Decrease weed impact	- High loss of native plants -High risk (weeds out compete rare plants) - Increased allergies	- High loss of native plants from weeds -High risk (weeds out compete rare plants) - Increased allergies	- Some loss of native plants in remote areas. -Low risk, effective mitigation - Decrease weed impact
Impacts of using herbicides: • Human health; • Fish and animals; • Non-target plants; • Water quality	-Low risk, effective mitigation -Low risk, effective mitigation -Low risk, effective mitigation -Low risk, effective mitigation	- No risk - No risk - No risk - No risk	-Low risk, effective mitigation -Low risk, effective mitigation -Moderate risk, picloram injury -Low risk, effective mitigation	-Low risk, effective mitigation -Low risk, effective mitigation -Low risk, effective mitigation -Low risk, effective mitigation
Additional risks of aerial spraying: • Human health; • Fish and animals; • Non-target plants.	-Low risk, effective mitigation -Low risk, effective mitigation -Low risk, effective mitigation	N/A – no aerial herbicide application	N/A – no aerial herbicide application	N/A – no aerial herbicide application
Effectiveness of control actions: • Limit spread, or eliminate existing infestations • Percent area treated based on current budget.	Very Effective 23.7%	Not Effective 15.8 %	Effective on limited area 7.0%	Very Effective, except remote areas. 23.7 %
Constraints to users of National Forest	Temporary closure during treatment. Warning signs posted when near developed recreation areas.	No additional constraints required.	No Treatment of weeds in developed recreation areas	Warning signs posted when treating developed recreation areas
Wilderness Character: • Natural Integrity • Solitude and Remoteness	-Maximizes natural integrity -Minor short-term effects when recreational users encounter weed control crews.	- Some loss of natural integrity with increasing weeds -Short-term effects, hand control crews spend more time treating weeds, increased chances for encounters with humans.	- Some loss of natural integrity with increasing weeds -Minor short-term effects when recreational users encounter weed control crews.	-Improves natural integrity on areas accessible by ground crews. -Minor short-term effects when recreational users encounter weed control crews.