Frank Church-River of No Return Wilderness Noxious Weed Treatments

FINAL SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT

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Abstract: This supplement to the 1999 Frank Church-River of No Return Wilderness Noxious Weed Treatments Environmental Impact Statement (SEIS) summarizes recent noxious and invasive weed inventories for the Frank Church-River of No Return Wilderness, and analyzes the effects of making minor modifications to the existing noxious and invasive weed management strategy.

Changes or Modifications from Draft SEIS to Final SEIS

There have been no changes in the scope of this analysis between draft and final publications. Cited page numbers have been added and miscellaneous typographical and punctuation errors have been corrected. Appendix O; Public Involvement, and Appendix P; Biological Assessments and Evaluations have been added.

The following clarifying statement has been added to the Alternative 2 description, Chapter 2 page 13:

"*The goal of the integrated weed management strategy presented in Alternative 2 is to focus treatment efforts on invasive weed species that have the potential to invade and spread into native communities on a landscape scale, such as rush skeletonweed and spotted knapweed. These species will dominate native plant communities and alter the natural processes within the wilderness if left unmanaged. Plant species that are opportunistic by nature, such as bull thistle and common mullein, may invade small areas of disturbance and compete with other vegetation for a short period of time. These species generally pose no real threat to the surrounding plant community and are not the intended target for treatment within the wilderness.*"

An error was noted in Table 4.2 of Chapter 4 (page 33). This table is now labeled as Table 4.3 b. The maximum label application rate for the herbicide Rodeo is actually 5.0 pounds a.i./acre, rather than 3.75 pounds a.i./acre. The Risk Quotient becomes 27, rather than 36, and the Level of Concern remains Low.

Table 4.3b. Aquatic Level of Concern assessment for herbicides currently used and proposed for use within the FC-RONRW[1]

Active Ingredient	Product Name	Typical Application Rate lb a.i./ac[2]	Max Label Application Rate Lb a.i./ac[2]	EEC (ppm)[4]	Toxicity 96-hour LC50 (mg/L)[5]	Safety Factor 1/20 LC50 (mg/L)	Species Tested	Risk Quotient and Level of Concern[6]
Glyphosate	Rodeo	0.5-2.0	5.0	1.84	1000	50	Rainbow Trout	27 Low

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INTRODUCTION

The occurrence of noxious/invasive weeds within the Frank Church River of No Return Wilderness (FC-RONRW) is a significant concern to managers and wilderness users due to the potential adverse ecological effects of these weed species. Many weed species have been present within the FC-RONRW for numerous years, with spotted knapweed identified along the Salmon River corridor in the late 1970's.

The problem of noxious weeds and nonnative invasive species threatens every aspect of ecosystem health and productivity, in forests and on rangelands, on public lands and private lands (USDA Forest Service 1998). Many exotic plants are aggressive and can invade new areas at an alarming rate because of explosive seed production and physiological adaptations to disturbed or droughty sites. Aggressive invasive species such as rush skeletonweed and spotted knapweed are capable of out-competing native plants and altering ecosystem conditions and processes. These weed species currently dominate many sites in the Frank Church River of No Return Wilderness, affecting native wildlife and plant species (refer to map in Appendix A).

In 1999, the Forest Supervisors of the Bitterroot, Payette, Nez Perce and Salmon-Challis National Forests signed a Record of Decision (ROD) to implement their selected alternative for noxious/invasive weed management (Alternative 2) as described in the FC-RONRW Noxious Weed Treatments Environmental Impact Statement (EIS), August 1999. This selected alternative for integrated weed management includes inventory, prevention, treatment, monitoring and restoration activities and specifically analyzes the effects of these practices on the environment.

The 1999 Record of Decision (Appendix L) specifies that noxious/invasive weed treatments will take place on 300 sites beginning in 1999 and continuing until the Frank Church-River of No Return Wilderness Management Plan Final Environmental Impact Statement is completed. The analysis does not specifically address how, where, or when non-treatment noxious/invasive weed management practices will occur. These components were to be addressed later in the Frank Church-River of No Return Wilderness Management Plan Final Environmental Impact Statement.

This Supplement to the 1999 Frank Church-River of No Return Wilderness Noxious Weed Treatments Environmental Impact Statement (SEIS) will 1) assess conditions that may have changed since the 1999 EIS was approved, 2) describe the integration of non-treatment noxious/invasive weed management practices with treatment practices and 3) analyze proposed modifications to the existing weed management strategy described in the 1999 EIS.

CHAPTER 1

Purpose and Need

There is a need to supplement the 1999 FC-RONRW Noxious Weed Treatments EIS (1999 EIS) due to changed conditions that include weed expansion and the threat of new weed species within the Wilderness. Implementation of the Integrated Weed Management program prescribed in the 1999 EIS and the results of monitoring following herbicide treatments indicate minor changes to the standards and guidelines would make treatment methods more effective.

The 1999 EIS discloses that 1775 acres on 293 sites were infested with noxious weeds at the time of the analysis. Inventories from 2002 indicated 4,222 acres on 471 sites within wilderness were weed-infested. Invasive weed inventories as of 2007 indicate 22,616 acres within wilderness are weed-infested (Appendix B). Inventories continue to reveal greater extent of invasive weeds as a result of actual expansion of weeds due to their physiological traits and favorable site conditions following large wildfires, and because of the general increased awareness of invasive weeds and increased efforts toward weed detection. This increase in size and number of known infestations within the Wilderness indicates a need to review our chosen weed treatment alternative to ensure treatment within this expanded area does not lead to adverse effects.

The Record of Decision for the 1999 EIS (Appendix L) documents the Forest Supervisors' selection of Alternative 2. The weed treatment decisions made as a part of this decision were initiated in the fall of 1999 and have continued for the past several years. The goal of the selected alternative from the 1999 EIS is to combine manual, biological, and chemical practices to treat weeds wilderness-wide as quickly as possible. The primary components of the selected 1999 alternative are as follows:

- Incorporate Integrated Weed Management and Wilderness Minimum Tool Concepts
- Initiate weed treatment practices, including a combination of hand pulling, the use of herbicides and the use of biological control methods
- Authorize treatment of all known weed sites within the wilderness
- Incorporate Adaptive Management to analyze and treat newly discovered infestations
- Monitor to determine treatment effectiveness and effects on other vegetation
- Recognize the importance of coordination, education, inventory and prevention practices, but defer the specific details of non-treatment practices to a future analysis

The results of implementation and monitoring of weed treatment activities during 1999 through 2003 indicate a need to clarify or modify certain standards and mitigations within the 1999 EIS. Specifically, we need to 1) clarify that the prioritization criteria for treatment of targeted weeds are intended to be guidelines, 2) clarify that the criteria for determining the type of treatment for specific weed infestations are intended to be guidelines, 3) clarify the use of jet boats as a "ground-based" application method, 4) modify the prescribed rate of approved herbicide application up to, but not to exceed, herbicide label rates, 5) clarify the purpose and

timing for consultations with EPA and other Regulatory Agencies, including NOAA-Fisheries and the US Fish and Wildlife Service, 6) clarify the role of calibration in herbicide application projects, and 7) clarify the integrated role and use of biological agents for noxious weed control.

An additional herbicide for use on annual grasses may benefit future restoration projects in the FC-RONRW. Cheatgrass, an exotic annual grass now dominates many areas within the wilderness. Restoration of these cheatgrass sites to native vegetation may be desirable and will require reducing the density of cheatgrass and other exotic annual grasses (Rice 2003). Herbicides presently authorized for use within the wilderness are not effective in control and management of annual grasses. Therefore, there is a need to analyze an additional herbicide that could be used to treat annual grasses as a component of future restoration projects.

The 1999 EIS deferred specific decisions related to non-treatment weed management practices to a later analysis, specifically the Frank Church-River of No Return Wilderness Management Plan, Final Environmental Impact Statement. The FC-RONRW Management Plan Final Environmental Impact Statement focuses on wilderness issues other than noxious weed management, and defers the analysis of weed management to this Supplemental EIS. The SEIS describes non-treatment weed management practices including prevention, education, coordination, and inventory, which are to be integrated into the weed management program for the FC-RONRW.

Decision to be Made

The scope of this decision includes the proposed modification of specific standards and mitigations associated with existing noxious weed treatments in the FC-RONRW and the proposed use of an additional herbicide (Plateau).

Decisions based on this analysis will be made and implemented through a Record of Decision (ROD).

CHAPTER 2

Introduction

This chapter summarizes the public involvement and issue development process from the 1999 EIS, and from this SEIS, used to produce and evaluate the alternatives. This chapter also describes the alternatives analyzed in this SEIS, including the proposed action and proposed mitigation measures.

Scoping and Issues

Results of public and agency scoping efforts from the 1999 EIS indicate people have concerns about the impacts of invasive weeds on the physical, biological, and ecological environment of the FC-RONRW and the potential effects of herbicides on people and the environment (1999 Record of Decision, Appendix L).

In November 2003, the public was invited to comment on the proposal to continue Integrated Weed Management initiated in 1999, with proposed modifications. A letter inviting comments about this proposed action was sent to those individuals and groups providing comments to the 1999 EIS, individuals and groups from the general mailing list for the Bitterroot, Payette, Nez Perce and Salmon-Challis National Forests interested in weed management, and individuals who had provided comments in the past regarding implementation of the FC-RONRW weed management program. The comments received during this current scoping indicate both support and concern over various aspects of this proposal. The majority of comments focused on elements of weed management that were analyzed in 1999. The comments received did not lead to the development of any new issues. The issues developed following review of public comments in 1999 are discussed in the 1999 Record of Decision (Appendix L) and are listed below.

Specific key issues:

1. Effects of weeds and treatments on cultural resources.
2. Effects of herbicide application on fisheries including Threatened, Endangered, and Sensitive fish species.
3. Effects on human health from the application of herbicides.
4. Effects of weeds and treatments on recreation.
5. Effects on vegetative diversity including (TES) plant species.
6. Effects on wildlife including (TES) wildlife species.
7. Effects on Wilderness and Wild and Scenic River values.
8. Visual effects of weed expansion.
9. Support for treatment, including biological control and manual/mechanical methods, but concerns over the use of herbicides.
10. Effectiveness of various weed control methods.
11. Issues addressed by adopting mitigation measures or design criteria

Alternative 1 (No Action)

Existing noxious and invasive weed treatments will continue to be implemented under Alternative 1. The selected alternative from the 1999 EIS forms the basis for this alternative. Details of the 1999 selected alternative can be found in the 1999 Record of Decision (Appendix L). The primary components of Alternative 1 are:

- Incorporate Integrated Weed Management and Wilderness Minimum Tool Concepts
- Initiate weed treatment practices, including a combination of hand pulling, the use of herbicides, and the use of biological control methods
- Authorize treatment of all known weed sites within the wilderness
- Incorporate Adaptive Management to analyze and treat newly discovered infestations
- Monitor to determine treatment effectiveness and effects on other vegetation
- Recognize the importance of coordination, education, inventory, and prevention practices, but defer the specific details of non-treatment practices to a future analysis

Specific details of this alternative include:

1) Treatment Priorities

Treatments are focused where they have the greatest effect on preventing or minimizing weed impacts to wilderness resources. Weed species to be managed include State-listed noxious weeds and non State listed invasive species. The delineation of plants with respect to treatment priorities is determined by (1) a weed species' ability to invade and displace native plants communities, (2) the potential rate of expansion, (3) the physical nature of the weed (a tall and thorny species verses a small and unobtrusive species), and (4) the extent and proximity of susceptible native plant communities. As financial and other resources become available for weed management, higher priority items would be addressed prior to addressing lower priority items (1999 EIS, page 21).

The following list gives the general priority for weed treatments:

1. Eradicate New Populations of Aggressive Weeds
2. Control Aggressive Weed Populations (Reduce populations through time)
3. Contain Aggressive Weeds (Hold populations to present size)
4. Monitoring and Follow up
5. Restoration
6. Eliminate New Starts of Less Aggressive Weeds
7. Control Less Aggressive Noxious Weeds (Reduce populations through time)
8. Contain Less Aggressive Noxious Weeds (Hold populations to present size)

2) Treatment Methods

Noxious weed management will incorporate the concept of using the "minimum tool." Managers use the minimum necessary methods to accomplish the management objectives. Parameters considered when selecting minimum tool include species biology, infestation size,

proximity to water and recreation sites, and extent of susceptible habitats adjacent to infestations. Methods include manual, biological, or chemical control. If all of these methods are equally effective in controlling a particular species or infestation, the method with the least impact will be employed (1999 EIS, page 23). The matrix "Treatments Incorporating the Minimum Tool Approach" describe treatment methods by weed species and priority category (Appendix C).

Effective biological control agents are not available for many exotic species and bio-controls are not effective on small isolated infestations. Biological control agents would be considered for weed species where other methods are known to be ineffective or inappropriate. Species considered for biological control include, but are not limited to, goatweed and larger infestations of mullein, sulphur cinquefoil, and spotted knapweed (1999 EIS, pages 17-18).

Biological control agents (insect or pathogen) are closely scrutinized for host specificity prior to approval for release. The USDA Animal and Plant Health Inspection Service (APHIS) screens new biocontrol agents for impacts to agricultural and rare plants. APHIS also prepares environmental assessments on the possible impacts of releasing those agents (1999 EIS, page 17). Only biological control agents approved by APHIS for use against specific target weeds will be released in the FC-RONRW.

3) Herbicide Application

Herbicide application is primarily limited to spot spraying with backpack pumps. Spraying from truck or four-wheeler mounted tanks may be occasionally done within some areas along the Main Salmon River or at major trailheads. The following table (Table 2.1) shows the application rates for the herbicides discussed in the 1999 EIS (pages 18-20).

Table 2.1 Chemical Application Rates (active ingredient)

CHEMICAL	gal/ac	lbs/gal	lbs/ac	fl oz/ac
Picloram	0.13	2.00	0.25	
Clopyralid	0.17	3.00	0.5	
2,4-D	0.25	4.00	1.00	
Glyphosate (Rodeo)	0.75	5.40	4.05	
Banvel	0.25	4.00	1.00	
Metsulfuron methyl				.5
Scythe	8			
WOW			430	

EPA will be consulted annually for new information about herbicides proposed for use. Recommendations will be followed to ensure the most safe and effective use (1999 Record of Decision, Appendix L, page 18).

The importance of calibrating herbicide applicators and their equipment is assumed, but not specifically discussed.

4) Non-treatment Practices

Noxious Weed Management within the FC-RONRW incorporates Integrated Weed Management (1999 Record of Decision, Appendix L, page 10). Treatment is only one part or element of the complete weed management picture. Other management attributes include coordination, information/education, inventory/early detection, and prevention. These non-treatment practices proceed in conjunction with treatments. The specific details describing these non-treatment practices will be developed in a future analysis (1999 Record of Decision, Appendix L, page 10).

5) Monitoring

Monitoring associated with Alternative 1 focuses upon (1) trends in weed infestation number, size and density, (2) the effect of noxious/invasive weed infestations on native vegetation and other wilderness resources, (3) the effect of treatments on target weeds and desirable vegetation, and (4) effectiveness of treatments as implemented. Data gathered through monitoring will determine if management strategies are retained or adjusted. If adjustments are necessary, they will be implemented as quickly as possible. Monitoring information will be disseminated to the public as effectively as possible, using such methods as mailings and the Internet. The Forest Service will work with researchers and interested partners in developing and implementing monitoring protocols (1999 ROD, Appendix L, page 12).

6) Mitigation Practices

Mitigation practices associated with this alternative are displayed in the ROD (Appendix L, page 14) and are listed below:

- Ground disturbances resulting from weed treatment activities would be revegetated with an appropriate, certified noxious weed-free native seed mix and fertilized as necessary.
- Provisions would be specified as needed for the prevention and control of weeds when new and existing special use permits (e.g. outfitter/guides) are issued/reissued.
- Weeds which are wind dispersed will be bagged and disposed of if they are hand-pulling during the flowering to seed-set stage.
- Adjacent landowners would be notified prior to treatment of noxious weeds on national forest lands.
- All weed treatment would be coordinated with forest botanists. Site-specific treatment guidelines, approved by the forest botanist, would be developed for infestations within or adjacent to known sensitive plant populations. All treatment sites would be evaluated for sensitive plant habitat suitability; suitable habitat would be surveyed as necessary prior to treatment.
- Treatment areas would be signed prior to and following herbicide applications within areas of special concern. In addition, information on where and when spraying and other treatments would occur would be available to the public at the local ranger district office.
- Application of any herbicides to treat noxious weeds would be performed by or directly supervised by a State licensed applicator.

- Procedures for mixing, loading, and disposal of herbicides outlined in Appendices I and J of the FEIS would be followed.

Herbicide Use – General

- EPA would be consulted annually for new information about herbicides proposed for use. Recommendations will be followed to ensure the most safe and effective use.
- If future development of herbicides results in products which promise to be more effective, their use will be evaluated for impacts to resources analyzed in the FEIS.
- All herbicide use will comply with applicable laws and guidelines.

Alternative 2 (Proposed Action)

The Salmon-Challis, Bitterroot, Payette and Nez Perce National Forests propose to continue authorization of Integrated Weed Management (IWM) components described in the 1999 Record of Decision for Noxious Weed Treatment in the FC-RONR Wilderness (Appendix L). For the most part, the IWM program being proposed is very similar to the decision of 1999 presently being implemented, summarized in Chapter 1, and described as Alternative 1. The goals and objectives for aggressive integrated noxious/invasive weed management throughout the wilderness continue to drive this alternative. The Adaptive Management Strategy, Minimum Tool Guidelines and the associated Decision Matrix described in the 1999 EIS are incorporated into this alternative (Appendices C and D).

The goal of the integrated weed management strategy presented in Alternative 2 is to focus treatment efforts on invasive weed species that have the potential to invade and spread into native communities on a landscape scale, such as rush skeletonweed and spotted knapweed. These species will dominate native plant communities and alter the natural processes within the wilderness if left unmanaged. Plant species that are opportunistic by nature, such as bull thistle and common mullein, may invade small areas of disturbance and compete with other vegetation for a short period of time. These species generally pose no real threat to the surrounding plant community and are not the intended target for treatment within the wilderness.

Specific details of this alternative include:

Clarify or modify specific standards, guidelines or mitigations associated with treatment practices.

The use of herbicides and associated herbicide additives, including surfactants and dye, are an important aspect of Integrated Weed Management as proposed in this alternative. The specific herbicide and additives to be used and the rate of application are dependent on specific site characteristics, species of targeted noxious/invasive weed, non-target vegetation, and land-use considerations. Environmental concerns make it critical to follow all label instructions, site directions, and safety precautions when using any herbicide. The existing mitigation measures described in the 1999 EIS and implemented as a part of the existing weed treatment program have been expanded to provide additional guidelines and safeguards. These Mitigation Measures (Appendix E) will be implemented to insure protection of wilderness resources and safety to the public and Forest workers.

1) Treatment Priorities

Treatment objectives and priorities by weed species identified in the 1999 EIS will continue to guide decisions related to sites and species selected for treatment, and the method of treatment to be incorporated. District Rangers may modify treatment priorities and will consider any recommendations from the Steering Committee for the FC-RONRW Cooperative Weed Management Area when establishing treatment priorities. In addition, new noxious/invasive weed species, and their relative priority, may be evaluated by the local District Ranger and

identified for treatment. Recommendations from the Steering Committee will be considered prior to treating new weed species.

2) Treatment Methods

The selected methods for treatment of noxious and invasive weeds will continue to incorporate the concept of "minimum tool." Managers will use the minimum necessary methods to accomplish management objectives. The matrix "Treatments Incorporating Minimum Tool Approach" prescribes treatment methods by weed species and priority category (Appendix C). This matrix will guide the selection of specific treatment methods.

Newly inventoried noxious/invasive weed sites and expansion of existing sites will be evaluated in accordance with the "Adaptive Management Strategy" described in the 1999 Record of Decision (Appendix L, page 12). Wilderness weed managers will strive for consistent application of "Adaptive Management Strategy" and analysis of new sites by using a common procedure for assessing new sites. A methodology for consistent assessment of new weed sites is displayed in Appendix F. The type of treatment for new noxious/invasive weed sites will be determined using the decision matrix "Treatments Incorporating Minimum Tool Approach" (Appendix C).

Biological control involves the introduction of an exotic weed's natural predator insect or pathogen to an established weed infestation. Biocontrol is one weed treatment method employed in the FC-RONRW. The objective of biocontrol is generally to suppress host weed populations by reducing vigor and reproductive capacity, but not actually eradicating weeds from the site. Biocontrol can be effective on extensive weed populations and also in remote areas where detection of new sites may be difficult, if the biological control agent is mobile.

This alternative proposes to expand the role of biocontrol as a component of Integrated Weed Management. Biocontrol will be used strategically in combination with other control measures. Biocontrol is not necessarily exclusive of other management options, but rather one tool to be used when and where appropriate.

3) Herbicide Application Methods

Application Techniques: Herbicide application will continue to be limited to "ground-based" methods. Aerial application has not been evaluated by this assessment and is not authorized in the FC-RONRW. "Ground-based" treatment methods include spraying with backpack pumps, hand sprayers, pumps mounted on pack and saddle stock, and properly mounted pumps in jet boats on the Main Salmon River.

The use of a pump and other spray apparatus properly mounted within a jet boat is considered "ground-based application." Actual spaying associated with a jet boat mounted system will be conducted by an applicator on land. All required buffer zones will be maintained. A certified applicator will operate and monitor the pump during the spray operation. Spray equipment properly mounted in a containment compartment within the hull of the jet boat is considered safe and effective double containment for the use of herbicide. Appropriate safety practices and

containment components are required for the use of jet boat mounted spray equipment (Appendix E). Mixing herbicides is allowed within the confines of a jet boat by a licensed applicator.

Application Rate: All pesticide label information and restrictions will be strictly adhered to for any herbicide and additive being applied. The rate of application of approved herbicides and associated herbicide additives, including surfactants and dye, may fully incorporate, but never exceed, label recommendations.

Forests will develop annual Pesticide Use Proposals to authorize the specific herbicides, application rates, and project specific environmental precautions. Pesticide Use Proposals will be reviewed by the NOAA Fisheries Service and US Fish and Wildlife Service to ensure compliance with agreed upon environmental safeguards.

Consultation with EPA: The 1999 EIS states, "EPA would be consulted annually for new information about herbicides proposed for use. Recommendations will be followed to ensure the most safe and effective use." Annual consultation with EPA is not a practical way in which to review the most current information regarding the safe and effective use of herbicides approved for use in the FC-RONRW. The 1996 Food Quality Protection Act amended the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) by requiring the EPA to revise risk assessments on all ingredients registered through EPA, including herbicides, by 2006. Risk assessments are currently being revised for some of the herbicides approved for use within the FC-RONRW, while others will soon be revised (personal communiqué with Gary McRae, EPA and George Robinson, IDA). Rather than annual consultation with the EPA, FC-RONRW weed managers will contact the Idaho Department of Agriculture to discuss the status of revised risk assessments and the details of completed assessments. In addition, IDA will be consulted regarding new information on the most effective treatment practices.

Calibration: The sequential assessment of the factors potentially influencing the rate of herbicide application is termed "calibration." Calibration insures both equipment and personnel are synchronized to provide the desired amount of herbicide on a specified area of treated ground. Various factors can significantly influence the actual rate of herbicide application. These factors include, the amount of herbicide mixed with each gal of water, the volume of herbicide/water mix delivered in a specified time (i.e., gallons per minute), nozzle size, pump pressure, the speed and technique of the applicator, and the amount of gaps and over-laps resulting from inconsistent application. The 1999 EIS assumes calibration will be performed by herbicide applicators; however, it does not mention calibration specifically. The importance of calibration will be emphasized to herbicide applicators within the FC-RONRW as a part of this proposed action. Documented calibration will be required at the initiation of a herbicide application project, and periodically during herbicide application. A methodology to document calibration is shown in Appendix F.

Authorize Use of Additional Herbicide (Plateau)

Plateau (imazapic) is a herbicide proposed for use in the FC-RONRW to aid in future restoration projects. Plateau is particularly suited for restoration projects striving to reduce

annual grass and to increase the density of native bunchgrasses. Plateau acts on many species of broadleaf plants and grasses as a growth inhibitor. Many native forbs and grass species, including lupine, bluebunch wheatgrass and Idaho fescue, can be tolerant to Plateau at prescribed rate and may increase as a result of reduced competition. Certain target grass species and broadleaf weeds, including cheatgrass/downey brome, sandbur, thistle and toadflax are susceptible. Any future restoration projects, including the use of Plateau, will be analyzed for their potential site-specific environmental effects.

As technology advances, more effective and less toxic herbicides are being developed for specific uses. Additional herbicides may be considered for use within the FC-RONRW in the future. Only herbicides having a Human Health and Ecological Risk Assessment Final Report will be considered for use. Any proposed use of a new herbicide will be evaluated for its potential site-specific environmental effects and will be reviewed by the federal regulatory agencies (NOAA Fisheries Service and US Fish Wildlife Service) to insure no potential detrimental effects to threatened or endangered species.

4) Non-Treatment Practices, Including Prevention

Invasive weed treatment is only one element of the complete weed management picture. Other management attributes include coordination, information/education, inventory/early detection, and prevention. For treatments to be effective these attributes cannot operate independently. Prevention, coordination, education, and detection will proceed in conjunction with treatments.

Prevention: It is often more cost effective to prevent weeds from invading a site, than to treat weeds once they are established. Prevention is the first priority in the management of noxious/invasive weeds. A noxious/invasive weed prevention plan that incorporates various State laws, Forest Service regulations and policies, and general practices appropriate for the FC-RONRW has been developed (Appendix I). This Prevention Plan incorporates Forest Service Region 1 and Region 4 Management Direction for implementation of weed prevention measures (Appendix J). This Prevention Plan is intended to be a "work in progress" and will be revised periodically with pertinent information, recommendations, and guidance. Many prevention measures discussed in this plan have been, and continue to be, implemented in the FC-RONRW. Continued implementation of this weed prevention strategy will reduce the establishment of new invasive weeds into the wilderness and slow the spread of existing infestations.

Coordination: Activities associated with noxious/invasive weed management in the FC-RONRW have been coordinated among the four National Forests managing the wilderness since about 1995. Management priorities, treatment methods, and consistent documentation have been discussed and commonly agreed to by wilderness weed managers. A sharing of information and resources on the ground has enabled the Forests to attain many of their short-term weed management objectives and make advancements in long-term management goals.

The four National Forests managing the FC-RONRW have jointly established a wilderness-wide Noxious Weed Coordinator position to assist with effective and consistent noxious/invasive weed management planning and project implementation.

The coordination of noxious/invasive weed information, ideas and activities is critical for an effective management program. Information exchange among Forest Service managers, with other agencies, and with wilderness users is important. To fully realize this coordination, a Cooperative Weed Management Area has been established for the FC-RONRW. Primary goals of this CWMA are to promote coordination among weed management participants, strengthen relationships and broaden partnerships. Steering Committee participants include representatives from each of four counties, private landowners from both the Main and Middle Forks of the Salmon River, commercial and private wilderness user groups, conservation organizations, Idaho Department of Fish and Game and the four National Forests comprising the wilderness.

Education: The education of wilderness users, the general public, Forest Service managers and partners regarding the threat of noxious/invasive weed invasion is vital to accomplishment of weed management objectives. It is important to share ideas regarding practical steps people can take to help prevent establishment and spread of invasive plants in the wilderness. Treatment alone cannot keep pace with the unchecked spread of noxious/invasive weeds. We must solicit the aid of wilderness users to help slow weed expansion through widespread use of prevention practices.

Several education and outreach programs have been initiated to promote weed awareness in the FC-RONRW. These include noxious/invasive weed presentations to local schools, signing of weed prevention regulations at trailheads, weed prevention and orientation information given to river users at launch sites, the development of a portable noxious/invasive weed education display for use at county fairs, etc. Local Forest Service managers have written formal articles and given numerous presentations pertaining to the threat noxious/invasive weeds pose to wilderness resources and values, and detailing prevention practices to reduce weed spread within the FC-RONRW.

Volunteers, including the Student Conservation Association, have been utilized to assist in the development of a noxious/invasive weed education strategy. The Forest Service is currently developing a specific Invasive Plant Education and Awareness Plan for FC-RONRW. The Steering Committee for the FC-RONRW Cooperative Weed Management Area will assist in the completion of this education strategy.

Inventory and Detection: Surveys and inventories for new noxious/invasive weed infestations is an important aspect of the weed management program. Survey work completed since 1999 has documented substantially more noxious/invasive weed infested acres than had been reported prior to 1999. As with most Forest Service activities, the amount of inventories conducted in a given year is dependent largely upon funding. By working with existing volunteer groups and partners, such as the Student Conservation Association, and by seeking new partners and funding opportunities through the Cooperative Weed Management Area, inventory and invasive weed detection will remain a high priority.

The collection of noxious/invasive weed inventory information will be conducted in a consistent manner across the FC-RONRW. Noxious/invasive weed managers from each of the National Forests managing the FC-RONRW have agreed upon a common inventory methodology. This methodology will allow for consistent description of noxious/invasive weed infestations, and will comply with national data standards. The collection of specific weed inventory data and the process for data storage will adapt to new procedures as inventory information requirements and uses change over time.

5) Monitoring

Monitoring associated with the proposed action will continue to focus upon (1) trends in infestation number, size, and density, (2) the effect of noxious/invasive weed infestations on native vegetation and other wilderness resources, (3) the effect of treatments on target weeds and desirable vegetation, (4) the effects of treatments on desirable vegetation, and (5) effectiveness of treatments as implemented (1999 ROD, Appendix L, page 11). These monitoring components will continue to be the basis of the "Monitoring Strategy" (Appendix H) associated with the proposed action. This Monitoring Strategy describes methodologies and protocols to be used in conducting monitoring activities associated with noxious/invasive weed management. New or modified protocols will be based on interactions with researchers, the CWMA Steering Committee, and/or interested partners.

The location of 15 permanent monitoring sites established since 1999 are shown in Appendix A. These monitoring sites have been established to evaluate short-term and long-term effects of herbicide treatments to target weeds and non-target vegetation. Summarized monitoring results from these sites are included in Appendix I.

6) Mitigation Measures

As a component of the Proposed Action (Alternative 2), the existing mitigation measures described in the 1999 EIS have been expanded to provide additional guidelines and safeguards. These additional Mitigation Measures (Appendix E) will be implemented while planning and conducting invasive weed treatment activities. Additional mitigation measures include pre-treatment activities to plan for safe and effective projects, potential spill abatement measures, and application, transport, and mixing of herbicides in a safe and effective manner.

Features Common to Both Alternatives

1) Integrated Weed Management

Both alternatives will incorporate Integrated Weed Management (IWM), which is defined as "An interdisciplinary pest management approach for selecting methods for preventing, containing, and controlling noxious weeds in coordination with other resource management activities to achieve optimum management goals and objectives." IWM, based on an understanding of weed ecology, balances the economic and environmental cost of management with the environmental and social effects of the weeds. IWM uses a wide variety of management methods, including education, preventive measures, cultural practices, mechanical methods, herbicides, biological control agents, and general vegetation management techniques.

2) Adaptive Management

Both of the alternatives include an adaptive strategy for future treatment of new weed invasions and expansion of existing infestations. As additional infestations are discovered, each will be evaluated to determine if it fits within the scope of the 1999 EIS and/or this Supplemental EIS relative to the issues analyzed and then prioritized for treatment. Anticipating that additional infestations will be discovered, Chapter 4 of the 1999 EIS and Chapter 4 of this Supplemental EIS analyze herbicide effects on human health, fish, and wildlife for acreages greater than presently known within the Wilderness. Determining treatment methods for each new site will be similar to how existing infestations (weed species, infestation size, proximity to susceptible habitats, etc.) were evaluated. All mitigation measures described in Appendix E will apply to treatments occurring on new infestations.

3) Minimum Tool

Noxious weed management in the FC-RONRW will incorporate the concept of using the "minimum tool." This means that when planning necessary actions, managers will use the minimum necessary methods to accomplish the management objectives. Parameters considered when selecting minimum tool include species biology, infestation size, proximity to water and recreation sites, and extent of susceptible habitats adjacent to infestations. Methods will include manual, biological, or chemical control. For example, if all of these methods were equally effective in controlling a particular species or infestation, the method with the least impact would be employed. Hand pulling or grubbing is effective for some species but not for others, such as deeply rooted species. Effective biological control agents are not available for many exotic species. In many situations, herbicide use may be the only effective control, and thus the minimum tool.

4) Inventory and Detection

Weed inventory will be conducted as a part of both alternatives. Inventory will include the collection, documentation, and storage of information on the extent and location of invasive weeds within the wilderness and categorize changes in vegetation over time. Inventory will

provide necessary information for developing management objectives and prioritizing treatment actions. Early detection will strive to locate invasive weeds in the early stages of establishment. When detected early, infestations will be eradicated with less effort and minimum impacts to the environment.

5) Restoration Practices

Restoration practices will be evaluated, and if necessary, implemented on infestations following manual or herbicide treatments. These practices will purposefully enhance the growth of native vegetation following treatments. The type, extent, timing, and duration of restoration practices will vary by infestation site. The Forest Service will work with researchers and interested partners in evaluating and prescribing effective restoration practices.

Comparison of Alternatives

The following table (Table 2.1) compares several key components of the alternatives.

Table 2.1. Comparison of Alternatives (Summary)

	Alternative 1	Alternative 2
Determining Treatment Priority	General priorities for weed treatments are: * Eradicate new populations of aggressive weed species; * Control Aggressive Weed Populations; * Contain Aggressive Weeds; * Monitoring and Follow up; * Restoration; * Eliminate New Starts of Less Aggressive Weeds; * Control Less Aggressive Noxious Weeds; * Contain Less Aggressive Noxious Weeds	* Existing general priorities will continue to guide decisions. * Clarifies that Rangers may modify priorities and will consider recommendations of the CWMA Steering Committee
Selection of Treatment Method	* Determination of weed treatment methods is made according to the matrix "Treatments Incorporating Minimum Tool Approach" Appendix C * Biological control agents will be considered for weed species where other methods are known to be ineffective or inappropriate.	* Clarifies that the matrix "Treatments Incorporating Minimum Tool Approach" will guide selection of treatment methods * Use biocontrol strategically in combination with other control measures. Biocontrol is not necessarily exclusive of other management options, but rather one tool to be used when and where appropriate.
Herbicide Application Method	* Herbicides will be applied with ground-based sprayers. Application is limited primarily to spot spraying with backpack pumps. Spraying from truck or four-wheeler mounted tanks may be occasionally done. * Specific rates of herbicide application	* Clarifies application using pumps and apparatus properly mounted in jet boat, with spray nozzles operated by applicators on land is considered ground-based. * Herbicide application rates will incorporate but not exceed, label

	Alternative 1	Alternative 2
	are identified. Some rates are below label recommendations * Calibration of applicators and their equipment is assumed.	recommended rates. * Calibration of applicators and equipment will be conducted at the initiation of a herbicide application project, and periodically during herbicide application
Use of Additional Herbicides	Specific herbicides approved for use in the FC-RONRW include Picloram, Clopyralid, 2,4-D, Glyphosate, Banvel, Metsulfuron, Scythe, WOW	* Herbicides previously approved for use in the FC-RONRW will continue to be considered for use. * Plateau herbicide may be used to aid in future restoration projects, by treating and eliminating annual exotic grass species. Any future restoration projects, including the use of Plateau, will be analyzed for its potential site-specific environmental effects.
Incorporation of Non-Treatment Methods	* Non-treatment practices proceed in conjunction with treatments. The specific details describing these non-treatment practices will be developed in a future analysis	* A noxious/invasive weed prevention plan that incorporates various State laws, Forest Service regulations and policies, and general practices appropriate for the FC-RONRW has been developed (Appendix J) * Weed management coordination is taking place and will continue, including the establishment of a Cooperative Weed Management Area. * Education of wilderness users regarding noxious and invasive weeds is occurring and will continue. * Inventory and detection of noxious/invasive weeds is occurring in a coordinated manner and will continue

CHAPTER 3

Introduction

The conditions associated with invasive weeds, cultural resources, fisheries, recreation, vegetation susceptible to noxious weeds, threatened, endangered, and sensitive plant and wildlife species, and other wildlife species remain primarily unchanged since 1999. A description of the existing conditions can be found in the 1999 EIS, pages 31-57. Changed conditions since 1999 are described in this chapter.

Noxious and Invasive Weeds

The 1999 FC-RONRW Noxious Weed Treatment EIS identified 1,775 acres of known noxious/invasive weed infestations within approximately 293 inventoried sites. Since that time, the number of inventoried weed infested acres and sites have increased, due in part to favorable weed habitat resulting from wildfire, and also completion of more thorough inventories. Inventories have identified 4,222 acres of noxious weeds within the FC-RONRW (refer to Map in Appendix A and Tables in Appendix B). Due to the sheer size of this wilderness and the difficulty of conducting inventories, managers believe there are even more undetected weed infested sites within the wilderness.

Favorable conditions for noxious/invasive weeds within the FC-RONRW continue to increase due in part to large wildfires. In the year 2000 alone, over 435,000 wilderness acres were burned by wildfires. Many of these sites were considered high intensity burns. Following wildfire, especially areas burned with high intensity, the potential for noxious/invasive weed invasion increases (Asher et al. 2001). Weed managers within the FC-RONRW have observed significant spread of noxious/invasive weeds into burned areas, especially in areas adjacent to existing weed sites.

Weed detection and inventory remains an important component of integrated weed management in the FC-RONRW. As a result of new surveys, the noxious/invasive weed inventory database continues to be revised and enlarged (refer to map in Appendix A and Table in Appendix B). The following Table is a summary of current inventory information regarding the major noxious/invasive weeds within the FC-RONRW. For a complete list of the 2007 weed inventory, refer to Appendix B.

Table 3.1 Inventory of Major Noxious/Invasive Weeds within the FC-RONRW

Noxious/invasive Weed Species	1999 Inventory Sites	1999 Inventory Acres	2002 Inventory Sites	2002 Inventory Acres
Spotted knapweed	216	510	276	1,311
Rush skeletonweed	79	170	140	2,865
Sulfur cinquefoil**	38	800		

*** Sulfur cinquefoil, though not officially designated as a "noxious" weed in the State of Idaho, has become established on hundreds of acres within the FC-RONRW. It has become widespread within the FC-RONRW and formal inventory records have not consistently been kept.*

In addition to established species of noxious/invasive weeds in the FC-RONRW, invasive species not previously known to occur in the wilderness have been detected in or adjacent to the wilderness. Leafy spurge is a noxious weed that is very difficult to control once it becomes established. Leafy spurge is now known to occur on private lands adjacent to the wilderness and can easily move downstream by way of the Main and Middle Forks of the Salmon River. Hoary alyssum (*Berteroa incana*) is another invasive species recently detected within the FC-RONRW on the Middle Fork and Main Salmon River.

Cultural Resources

Conditions associated with Cultural Resources in respect to the management of noxious and invasive weeds have not changed significantly since 1999. A description of the existing conditions for Cultural Resources can be found in the 1999 EIS, pages 46-47.

Fisheries

Habitat conditions for fisheries have not changed significantly since the 1999 EIS. The 1999 EIS, page 47, concludes that fisheries habitat within the FCRONR Wilderness is in natural or near natural condition.

Current management of fisheries habitat is similar to fisheries management described in the 1999 EIS. One specific change in the management of fisheries/aquatic resources is the designation of streams identified as having "limited" water quality [303(d)]. The Environmental Protection Agency (EPA) and the states maintain a listing (303(d) list) of water bodies believed to be water quality limited.

Nine stream segments on seven streams within the FC-RONRW have been designated as 303(d) water bodies (Appendix K). Primary concerns within these specific 303(d) listed streams are elevated levels of sedimentation. Natural sediment-producing events most commonly occur following stand replacement forest fires and high intensity storms. These impacts are generally short-term, and over time are self-correcting.

The Forests of the FC-RONRW use Management Indicator Species (MIS) to quantify effects of management actions on forest habitats and fish and wildlife species. MIS are key species identified to represent selected habitats. They are used to detect changes in habitat conditions, major habitat components, economically or socially important species, ecological indicators, and monitoring capability. There have been changes made to the list of MIS with respect to the fisheries within FC-RONRW since the 1999 EIS. Table 3.2 illustrates the fisheries MIS by Forest for both 1999 and 2004. The Bitterroot and Nez Perce National Forests have no changes to their fish MIS list. The Boise, Payette and Salmon-Challis National Forests have amended their lists to identify the Bull Trout as the only MIS for aquatic systems on those Forests.

Table 3.2 Management Indicator Fish/Aquatic Species by Forest and Year

National Forest	1999 Fish MIS List	2004 Fish MIS List
Bitterroot	Westslope Cutthroat Trout	Westslope Cutthroat Trout
Boise	Chinook Salmon, Steelhead, Redband Rainbow Trout (Cascade RD only – Bull Trout)	Bull Trout (2003 Forest Plan Revision)
Nez Perce	Westslope Cutthroat Trout, Spring Chinook Salmon, Summer Steelhead	Westslope Cutthroat Trout, Spring Chinook Salmon, Summer Steelhead
Payette	Chinook Salmon, Steelhead, Bull Trout, Westslope Cutthroat Trout, Redband Rainbow Trout	Bull Trout (2003 Forest Plan Revision)
Salmon	Salmon and Steelhead, Trout, Aquatic Macroinvertebrates	Bull Trout (2004 Forest Plan Amendment)
Challis	Anadromous Fish, Resident Fish, Aquatic Macroinvertebrates	Bull Trout (2004 Forest Plan Amendment)

Recreation

Conditions associated with Recreation Resources in respect to the management of noxious and invasive weeds have not changed significantly since 1999. A description of the existing conditions for Recreation Resources can be found in the 1999 EIS, pages 48-49.

Vegetation (Susceptible to Invasive Weeds)

A key environmental component influencing the potential invasion and expansion of invasive plants is type and integrity of plant communities. Plant communities within the FC-RONRW are described in the 1999 EIS, page 49-50. Plant community diversity has not changed significantly since 1999. Large wildfires within the wilderness since 1999 have resulted in site conditions that favor the establishment of invasive plants. This is especially true in areas that burned with greater intensity and burned areas that are in close proximity to existing weed infestations.

Threatened, Endangered, and Sensitive Plant Species
The 1999 EIS, pages 50-51, addresses three federally listed "threatened" plant species, Macfarlane's four o'clock (*Mirabilis macfarlanei*), water howellia (*Howellia aquatilis*) and Ute Ladies'-Tresses (*Spiranthes diluvialis)* which were thought to have potential habitat in the FC-RONW. Numerous surveys conducted for water howellia (*Howellia aquatilis*) and Ute Ladies'-Tresses (*Spiranthes diluvialis*) on the Nez Perce and Payette National Forests found no habitat for these plants. As the result of these plant surveys, USFWS no longer requires formal analysis and consultation for these two species. Habitat for howellia (*Howellia aquatilis*) and Ute Ladies'-Tresses (*Spiranthes diluvialis*) has not been identified on the Bitterroot or Salmon-Challis. Neither species requires consultation with the USFWS.

Since 1999, one new threatened plant species, Spalding silene (*Silene spaldingii)* and one candidate species, slender moonwort (*Botrychium lineare*) were added to the Nez Perce and Payette National Forests sensitive species list requiring consideration or consultation with the

USFWS. Neither plant was added to the Bitterroot nor Salmon-Challis National Forest list, as no known habitat occurs in these areas.

The 1999 EIS, page 54, identifies twenty sensitive plant species potentially found within the FC-RONRW and describes habitat conditions for these species. Four sensitive species, Payson's milkvetch (*Astragalus paysonii*), Bank monkeyflower (*Mimulus clivicola*), Lemhi penstemon (*Penstemon lemhiensis*), and Puzzling halimolobos (*Halimolobos perplexa* var. *perplexa* and var. *lemhiensis*) are identified as occurring within or near weed infestations.

Currently, twenty-eight sensitive or proposed sensitive plant species occur within the FC-RONRW, three of the additional eight sensitive species (identified since the 1999 EIS) are known to occur within or near weed infestations to be treated. The three additional sensitive or proposed sensitive plants found within or near weed infestations are:

- Davis stickseed (*Hackelia davisii*) with occupied habitat in the Middle Fork of the Salmon River,
- Pored lungwort (*Lobaria scrobiculata*) with occupied habitat on the Main Salmon River and,
- Borsch's stonecrop (*Sedum borschii*) with occupied habitat on the Main Salmon.

Table 3.3 below briefly describes the habitat for the eight additional sensitive plant species found in the FC-RONRW since 1999.

Table 3.3 Additional Sensitive and Proposed Sensitive Plant Species Found in the FC-RONRW since the 1999 EIS.

Species Name (known to occur or with potential habitat in FC-RONRW)	Habitat or Plants Present in Treatment Areas	Geographic Distribution	Habitat or Community Type	Elevation (ft)	Succession Stage	Phenology
***1.Astragalus vexilliflexus* var.*vexilliflexus* Bent flowered milkvetch**	No	Disjunct	Openings in subalpine forests.	7,000-9,000 in Idaho	Early-mid	Flowers late June to August
***2. Botrychium simplex* Least Moonwort**	No	Circumboreal	Shaded moist sites under various conifers; dry to mois meadows.	1,500-6,000	mid-late	Leaves June - August
***3. Hackelia davisii* Davis stickseed**	Yes	Local endemic	Shady cool rock and cliffs in river canyon	1,000-2,000	Early-mid	Flowers April -June
***4. Helodium blandowii* Blandow's helodium moss**	No	Circumboreal	Wetlands and riparian area.	4,000-7,300	Late	NA
***5. Lewisia kelloggii* Kellogg's bitterroot**	No	Regional Endemic	Rock outcrops and decomposed grantics	4,000- 8,000	Early-mid	April - July
***6. Lobaria scrobiculata* Pored lungwort**	Yes	Circumboreal	Forest understory on rocks and moss in moist areas	600-1750	mid-late	NA
***7.Ribes wolfii* Wolf's currant**	No	Disjunct	Forest understory in moist area	3,000-7,000	mid-late	Flowers May- July
***8. Sedum borschii* Borsch's stonecrop**	Yes	Sparsely distributed	Rock talus and scree	2,000-5,000	mid-late	Flowers April-July

Wildlife (Including Threatened, Endangered and Proposed Species)

Habitat conditions for wildlife have not changed significantly since the 1999 EIS. The 1999 EIS, page 55, concludes that wildlife habitat remains in a near pristine state.

Federally listed and forest designated sensitive species with habitat within the FC-RONRW remain the same as those listed in the 1999 EIS, except that lynx was proposed for federal listing in 1999 and is now listed as a threatened species, and peregrine falcons are now considered sensitive species, rather than threatened (USFWS 1999). In addition, populations of gray wolf, designated as "experimental, non essential" continue to increase within the wilderness.

The existing habitat condition for wildlife has remained relatively stable since the 1999 EIS. Large wild fires during the years 2000 – 2003 have altered structural and spatial wildlife habitat components in some areas of the wilderness. In the year 2000 alone, over 435,000 acres within the FC-RONRW were burned by wild fire.

The Forests of the FC-RONRW utilize Management Indicator Species (MIS) to quantify effects of management actions on forest habitats and fish and wildlife species. MIS are key species identified to represent selected habitats. They are used to detect changes in habitat conditions, major habitat components, economically or socially important species, ecological indicators, and monitoring capability. There have been changes made to the list of MIS with respect to wildlife within FC-RONRW since the 1999 EIS. Table 3.4 illustrates the wildlife MIS by Forest for both 1999 and 2004. The Bitterroot and Nez Perce National Forests have no changes to their wildlife MIS list.

Table 3.4 Management Indicator Wildlife Species by Forest and Year

National Forest	1999 Wildlife MIS List	2004 Wildlife MIS List
Bitterroot	Pine Marten, Pileated Woodpecker, Elk	Pine Marten, Pileated Woodpecker, Elk
Boise	Pileated Woodpecker, Yellow Warbler, Mountain Chickadee, Mule Deer/Elk, Meadow Vole, Red-backed Vole	Pileated Woodpecker, Whiteheaded Woodpecker (2003 Forest Plan Revision)
Nez Perce	Pileated Woodpecker, Elk, Bighorn Sheep, Shira's Moose, Goshawk, Fisher, Pine Marten, Wolf, Grizzly, Bald Eagle, Peregrine Falcon	Pileated Woodpecker, Elk, Bighorn Sheep, Shiras Moose, Goshawk, Fisher, Pine Marten, Wolf, Grizzly, Bald eagle, Peregrine Falcon
Payette	Pileated Woodpecker, Vesper Sparrow, Williamson Sapsucker, Elk	Pileated Woodpecker, Whiteheaded Woodpecker (2003 Forest Plan Revision)
Salmon	Elk, Mule Deer, Bighorn Sheep, Mountain Goat, Pine Marten, Pileated Woodpecker, Vesper Sparrow, Yellow Warbler, Ruby-crowned Kinglet, Yellow-bellied Sapsucker, Pygmy Nuthatch, Brown Creeper, Mountain Bluebird	Spotted frog, Pileated Woodpecker, Sage grouse (2004 Forest Plan Amendment)
Challis	Elk, Mule Deer, Bighorn Sheep, Mountain Goat, Red Squirrel	Spotted frog, Pileated Woodpecker, Sage grouse (2004 Forest Plan Amendment)

CHAPTER 4

Introduction

This chapter summarizes the potential effects of changed conditions which were not evaluated in 1999 (Alternative 1), and also analyzes the environmental effects of additions and/or modifications to current the current weed management program (Alternative 2).

Alternative 1 (No Action) is a continuation of the existing FC-RONRW Integrated Weed Management program. The potential environmental effects of this IWM program were evaluated in the 1999 EIS and are summarized in the 1999 Record of Decision (Appendix L). The continued application of this IWM program will have no additional effects on the biological, physical, or cultural environment. Changed conditions since 1999 may have potential environmental effects that were not analyzed in 1999. These potential effects will be addressed in this section.

The components of Alternative 2 (Proposed Action) that are a modification to the existing Integrated Weed Management program will be analyzed in this section.

Noxious and Invasive Weeds

Initial evaluation of information from established monitoring sites indicates successful reduction of noxious/invasive weeds at these monitoring sites, while adverse effects to non-target vegetation were minimal and within expected levels (Summarized Monitoring Results in Appendix H).

Favorable conditions for noxious/invasive weeds within the FC-RONRW continue to increase, due in part to large wildfires. In the year 2000 alone, over 435,000 wilderness acres were burned by wildfires. Many of these sites were considered by managers to be high intensity burns. Following wildfire, especially areas burned with high intensity, the potential for noxious/invasive weed invasion increases (Asher et al. 2001). Weed managers within the FC-RONRW have observed significant spread of noxious/invasive weeds into burned areas, especially in areas adjacent to existing weed sites.

The existing prescribed application rate of authorized herbicides (Alternative 1) is depicted in Chapter 2, Table 2.1. This prescribed rate of application in some cases is significantly less than herbicide label recommendations. For example, the prescribed application rate for Picloram (Tordon 22 K) for all weed species as described in the 1999 EIS is 0.25 lbs active ingredient per acre (approximately 1 pt/ac). The recommended application rate from the EPA approved label is 1 to 2 pts for treatment of spotted knapweed and 2 to 4 pts for treatment of rush skeletonweed.

Treatment of rush skeletonweed within the FC-RONRW at the rate of 1 pt/ac Tordon 22 K has resulted in less than optimal weed mortality. Observations from field crews indicate this authorized application rate of Tordon 22 K, which is ½ to ¼ the recommended label rate, has resulted in ineffective treatment of both rush skeletonweed and spotted knapweed. While a predominant proportion of the target weeds may die at this rate of application, many weeds at

the site may not die. As in the case with bacteria and antibiotics, survival of a portion of the population may actually result in artificial genetic selection towards individual weeds more resistant to the herbicide being applied. Application of herbicides at less than the label recommended rates results in increased costs associated with re-treatment, or if sites are not re-treated in a timely manner, may result in the expansion of the weed infestation. One desirable attribute of Tordon 22 K is the residual effect of inhibiting weed seed germination into the next growing season. The lighter rate of application prescribed by Alternative 1 does not generally result in effective residual properties. Alternative 2 proposes to allow herbicide application up to label rates which will significantly improve the treatment effectiveness on "hard to kill weeds" such as rush skeletonweed.

Since invasive weeds are typically opportunistic pioneers of open sites, practices that favor retention or introduction of desirable plants that compete with exotic plants serve as a prevention measure for noxious weeds. Following manual or herbicide treatments, treatment sites are evaluated for implementation of potential restoration practices. Such restoration practices would purposefully enhance the growth of native vegetation following treatment. Proposed restoration practices would be analyzed for site-specific environmental effects. In many sites occurring in the low elevations of the FC-RONRW, non-native annual grass species will continue to dominate a site once the target weed has been treated. Desired restoration to native perennial vegetation may require the use of a herbicide, such as Plateau, to kill annual grasses within the site. The use of Plateau herbicide, as proposed under Alternative 2, will significantly improve the success of restoration projects.

Table 4.1. Weed Effects Summary by Alternative – Noxious Weed Expansion

Alternative 1	Alternative 2
* Integrated Weed Management will maintain and protect existing native plant communities. * The extent of noxious and invasive weed invasion and expansion is largely dependent upon the availability of resources to combat weeds and implement prevention and education measures. * The effectiveness of treatments can significantly influence the attainment of Integrated Weed Management objectives. The prescribed rate of application (less than label recommendations) and constrained use of biological control may impede attainment of treatment goals.	* Integrated Weed Management will maintain and protect existing native plant communities. * The extent of noxious and invasive weed invasion and expansion is largely dependent upon the availability of resources to combat weeds and implement prevention and education measures. * Alternative 2 is very similar to Alternative 1, but strives to improve effectiveness of treatments, which will result in significantly greater mortality of noxious and invasive weeds, i.e. allows up to label recommended rate of herbicide application and expanded role of biological control.

Cultural Resources

Continued implementation of the existing noxious/invasive weed management program (Alternative 1) will have no effects to cultural resources in addition to those described in the 1999 EIS, pages 60-61. The 1999 EIS concludes that prescribed treatment of noxious/invasive weeds will have far less potential impact to recreation and cultural resources than would uncontrolled and rapid expansion of noxious/invasive weeds.

Alternative 2 (Proposed Action) proposes minor modifications to existing treatment practices and to allow the use of Plateau herbicide. Alternative 2 will have no effects to cultural resources in addition to those described in the 1999 EIS, pages 60-61.

Table 4.2. Weed Effects Summary by Alternative – Cultural Resources

Alternative 1	Alternative 2
* Far less potential impact to cultural resources than would uncontrolled and rapid expansion of noxious/invasive weeds.	* No effects to cultural resources in addition to those described for Alternative 1.

Fisheries (Including Threatened, Endangered and Sensitive Species)

The potential environmental effects of implementing the prescribed integrated weed management program in the FC-RONR in relation to fisheries is described in the 1999 EIS, pages 61-66. The 1999 EIS summarizes the effects of prescribed treatment of noxious/invasive weeds on fish and their habitat as follows:

- Impacts of herbicide application (with appropriate mitigation measures) will be minimal.
- Effects on aquatic organisms under normal use scenarios should not be detectable.
- A spill may result in localized fish mortality, especially to young fingerlings, or mortality to the early developmental stages of other aquatic organisms. However, adherence to mitigation measures will reduce the likelihood of such a spill event.

Alternative 1 is a continuation of the existing weed management program. Therefore, the effects of Alternative 1 on fisheries will be the same as those described in 1999 EIS, pages 61-66.

Alternative 2 (Proposed Action) will improve the effectiveness of existing weed management practices, including weed treatment. Alternative 2 proposes label rates of herbicide application, and the potential future use of Plateau herbicide for restoration projects. The potential effects of manual/cultural and biological control actions proposed in Alternative 2 is similar to those described for Alternative 1, and discussed in the 1999 EIS, pages 61-66. An increase in the scope and/or intensity of these treatment methods is expected as more acres are detected and treated. It is also expected that annual acreage treated by herbicide control methods will increase as new infestations are detected. Both the risks and benefits associated with herbicide control of noxious weeds will incrementally increase.

While risk of spills may increase proportional to the expansion of weed infestations and their detection and treatment, existing herbicide handling guidelines (Alternative 1) and proposed herbicide handling guidelines (Alternative 2) will keep the probability of a spill event low (Appendix E). Additional beneficial effects to watershed health through reduction of noxious weeds and establishment of native vegetation are dependent on the efficiency of treatments.

Additional calibration documentation requirements identified for Alternative 2 will further assure that herbicides are being used in accordance with label directions (Appendix F).

Although specific Management Indicator Species (MIS) have changed since 1999 (Table 3.2), conclusions drawn regarding the potential effects of Alternative 1 on identified MIS have not changed. "Effects on aquatic organisms under normal use scenarios should not be detectable" (1999 EIS, page 66).

The potential effects to FC-RONRW Management Indicator Species, and 303(d) listed waters resulting from implementation of the proposed action (Alternative 2) will be similar to those described for Alternative 1.

Presently, noxious weed infestations in the FC-RONRW are having little effect on sediment yields because the sites occupy a relatively small portion of the total land area. Effects of the current noxious weed treatment program on 303(d) streams within the wilderness are dependent upon the location of existing infestations. Successful noxious weed treatment in sediment-listed 303(d) drainages will reduce existing and potential soil erosion and sedimentation rates and therefore benefit Management Indicator Species.

Although spills of herbicides that reach live waters in sufficient quantity and concentration may negatively impact TES or MIS species, Weed Prevention Measures and mitigations applied under Alternative 2 will keep the probability of such a spill low.

A hypothetical worst-case scenario involving the use of herbicides is described and analyzed in the 1999 EIS, pages 63-66. This worse-case scenario calculates the potential extent of herbicide contamination in two drainages within the FC-RONRW, and assumes that a maximum of 1 percent of the applied herbicide reaches an adjacent stream within 24 hours following a major storm. Calculations based on .25 lbs/ac of Picloram and the size infestations known at that time (plus 30%) yielded worst-case potential contamination of about .0013 mg/L would occur within the adjacent stream. This concentration is about 423 times lower than the 0.55 ppm No-Observable-Effect-Level (NOEL) for fish (Picloram Aquatic Risk Assessment, USDA Forest Service, July 1999 (SERA TR 99-21-15-ofl)). If these same calculations were made using the labeled rate of Picloram (Alternative 2) for use on rush skeletonweed (1 lb/ac) and acreages were increased due to further expansion of weed sites (100%), the worst-case potential concentration reaching the adjacent stream may be 0.008 ppm, about 70 times lower than the NOEL of 0.55 ppm.

In a report prepared for the USDA-FS (SERA TR 99-21-15-ofl) under section 4.4.1, Risk Characterization, states [that] "Longer term water concentrations associated with the normal application of Picloram at an application rate of 1 lb (a.i.)/acre are likely to be in the range of 0.01 to 0.06 mg/L in areas with substantial rainfall or as the result of applications in which some initial incidental contaminations of water occurs. All of these concentrations are substantially below concentrations that have been shown to impact aquatic plants or animals. At the highest plausible application rate...Even at the highest estimated concentrations, however, no effects would be anticipated in aquatic animals..." (USDA Forest Service Weed Management FEIS, Lolo National Forest, July 2001).

Plateau: Alternative 2 proposes to authorize the use of the herbicide Plateau (imazapic) for potential restoration projects in the future. As part of the aquatic analysis for herbicide application, a risk quotient was developed for each herbicide product that may be used to treat noxious weeds within the FC-RONRW. The risk quotient was calculated from a no adverse effect level, derived from known toxicity values for rainbow trout (Table 4.1) divided by an "Expected Environmental Concentration" (EEC). The EEC, expressed in parts per million (ppm), was derived from a direct application of the active ingredient to an acre pond (one-foot deep) using the maximum rate specified on the label (Urban and Cook 1986). The EEC is an extreme level that is unlikely to occur during implementation and should be viewed as a worst-case situation. The risk quotient (Table 4.2) provides a reference from which a possible worst-case situation can be viewed. If the risk quotient is greater than 10, the level of concern is categorized as "Low." If the risk quotient is between one and 10, the level of concern is "Moderate." If the risk quotient is less than one, the level of concern is "High." Only herbicides identified as having a low or moderate level of aquatic concern are utilized for noxious weed treatment within the FC-RONRW.

Table 4.3a. Toxicology profile of herbicides currently used and proposed for use within the FC-RONRW [1]

Toxicology	*Transline*[2] *Clopyralid*	*Weedar 64*[3] *2,4-D*	*Rodeo*[4] *Glyphosate*	*Escort*[5] *Metsulfuron Methyl*	*Tordon 22K*[6] *Picloram*	*Banvel*[7] *Dicamba*	*Plateau*[8] *Imazapic*
Rainbow Trout (96 hr LC50) (mg/L)	103	250	>1000	>150	5.5-19.3	>1000	>100
Daphnia (96 hr LC50) (mg/L)	232	184	930	>12.5 (48 hr)	68.3	>100	>100
Bio-accumulates	No	No	No	No	No	No	No
Persistence in soil[9]	40 Days (Moderate)	10 Days (Low)	47 Days (Moderate)	30 Days (1-4 Wks) (Low)	90 Days (20-300) (Mod-High)	7-42 Days Low-Mod	7-150 Days (Low-High)
Mobile in soil	No	Yes, but degrades quickly	No	No	Yes	Yes	No

1 Currently used herbicides: Clopyralid, 2,4-D, Glyphosate, Picloram, Dicamba; Additional herbicides proposed under Alternative 2: Imazapic

2 USFS 1999a. Clopyralid Risk Assessment – Final Report.

3 USFS 1999b. 2,4-Dichlorophenoxyacetic Acid Formulations Risk Assessment – Final Report.

4 USFS 1999c. Glyphosate Risk Assessment.

5 USFS 1999d. Metsulfuron Methyl Risk Assessment-Final Report

6 USFS 1999e. Picloram Risk Assessment – Final Report.

7 USFS 1995. Dicamba Pesticide Fact Sheet.

8 USFS 2001a. Imazapic Risk Assessment – Final Report.

9 Soil half-life values for herbicides are from Herbicide Handbook (Ahrens, 1994) Pesticides that are considered non-persistent are those with a half-life of less than 30 days; moderately persistent herbicides are those with a half-life of 30 to 100 days; pesticides with a half-life of more than 100 days are considered persistent.

Table 4.3b. Aquatic Level of Concern Assessment for Herbicides Currently Used and Proposed for Use Within the FC-RONRW [1]

Active Ingredient	Product Name	Typical Application Rate lb a.i./ac [2]	Max Label Application Rate Lb a.i./ac [3]	EEC (ppm) [4]	Toxicity 96-hour LC50 (mg/L) [5]	Safety Factor 1/20 LC50 (mg/L)	Species Tested	Risk Quotient and Level of Concern [6]
Clopyralid	Transline	0.1-.375	0.5	0.184	103	5.2	Rainbow Trout	28 Low
2,4-D amine	Amine 4, Weedar 64	0.5-1.5	3.0	1.103	250	12.5	Rainbow Trout	11 Low
Glyphosate	Rodeo	0.5-2.0	5.0	1.84	1000	50	Rainbow Trout	27 Low
Metsulfuron-methyl	Escort	0.25-0.75	2.0 oz	0.046	150	7.5	Rainbow Trout	163 Low
Picloram	Tordon 22K	0.125-0.5	1.0 [3]	0.368	19.3	0.965	Rainbow Trout	2 [7] Moderate
Dicamba	Banvel	0.25-4.0	4.0	1.47	1000	50	Rainbow Trout	34 Low
Imazapic	Plateau	0.06-0.2	0.75	0.276	100	5.0	Rainbow Trout	18 Low

1 Currently used herbicides: Clopyralid, 2,4-D, Glyphosate, Picloram, Dicamba; Additional herbicides proposed under Alternative 2: Imazapic

2 Application rates are based upon typical and maximum label rates unless otherwise noted.

3 Maximum application rate for Picloram is 1 lb per acre; Rates may be higher for smaller portions of the acre, but the total use on the acre cannot exceed 1 lb a.i./ac/yr.

4 Hazard Evaluation Division, Standard Evaluation Procedure – Ecological Risk Assessment (Urban and Cook 1986). Concentrations derived from Table 2 (Page16) based upon application rate (lbs a.i./ac) and one foot water depth.

5 Rainbow Trout LC50 values from Herbicide Handbook, Seventh Edition (Ahrens 1994) and individual USFS Pesticide Fact Sheets and Risk Assessments (see Table 9 footnotes).

6 The Risk Quotient and Level of Concern for a mixture of herbicides would reflect the values associated with the mixture's most toxic component. For example, the Level of Concern for a mixture of 2,4-D amine and Picloram would be Moderate, reflecting calculations based upon the higher toxicity of Picloram.

7 Risk Quotient values for Picloram reflect the range of LC50 toxicity value of 5.5 to 19.3 mg/L identified by various observers. Level of Concern would be Moderate for LC50 values above 7.3 mg/L, including the midpoint value of 12.4 mg/L. Level of Concern would be high based upon LC50 values from 5.5 to 7.3 mg/L.

As indicated in Table 4.2, imazapic ranks as a "low risk" herbicide, classed in the same category as the currently-used 2,4-D, glyphosate, clopyralid, dicamba, and metsulfuron-methyl. The additional use of imazapic as a chemical treatment option under Alternative 2 would not produce any additional effects or risks to fisheries or aquatic habitats relative to

the existing group of herbicides currently authorized for noxious weed treatment within the FC-RONRW.

A Risk Assessment prepared for the Forest Service indicates that aquatic organisms appear to be relatively insensitive to imazapic exposure, relative to both direct toxicity and reproductive effects (USFS 2001a, USFS 2001b). Spill risks associated with imazapic use are similar to, and within the range of, risks identified for other herbicides currently utilized in FC-RONRW weed treatment. As Plateau (imazapic) is not an aquatic-certified herbicide, application guidelines will limit its use to sites at least 50 feet removed from live waters.

Cumulative Effects: Continued implementation of the existing Integrated Weed Management Program (Alternative 1) and implementation of the proposed action (Alternative 2) will not result in any significant influences on the scope or magnitude of cumulative effects beyond those described in the 1999 EIS for the current program. Potential cumulative effects associated with the use of Plateau (imazapic) herbicide are within the range of potential effects analyzed in the 1999 Noxious Weed Treatment EIS, and no additional effects are anticipated as a result of incorporation of this chemical as a noxious weed treatment tool. No additional cumulative effects would be anticipated through application of Adaptive Management program strategies or implementation of the Noxious Weed Prevention Plan.

Table 4.3c. Weed Effects Summary by Alternative – Fisheries

Alternative 1	Alternative 2
* Impacts of herbicide application (with appropriate mitigation measures) will be minimal. * Effects on aquatic organisms under normal use scenarios should not be detectable. * A spill may result in localized fish mortality, especially to young fingerlings, or mortality to the early developmental stages of other aquatic organisms. However, adherence to mitigation measures will reduce the likelihood of such a spill event.	* Impacts of herbicide application (with appropriate mitigation measures) will be minimal. * Effects on aquatic organisms under normal use scenarios should not be detectable. * A spill may result in localized fish mortality, especially to young fingerlings, or mortality to the early developmental stages of other aquatic organisms. However, adherence to mitigation measures will reduce the likelihood of such a spill event. * An increase in the scope and/or intensity of treatment methods is expected as more acres are detected and treated. It is also expected that annual acreage treated through herbicide control methods will increase as new infestations are detected. Although risks are anticipated to be minor, both the risks and benefits associated with herbicide control of noxious weeds will incrementally increase as treated acres increase.

Human Health

Continued implementation of the existing noxious/invasive weed management program (Alternative 1) will result in no additional human health concerns or effects in addition to

those described in the 1999 EIS, pages 69-72. The 1999 EIS concludes that human health impacts from prescribed treatment of noxious/invasive weeds will be insignificant and small.

The proposed alternative (Alternative 2) will authorize the use of an additional herbicide, imazapic (trade name Plateau). The potential effects associated with the use of Plateau are further discussed. All other components of this proposed noxious/invasive weed management strategy pose no additional potential threats to human health over and above those effects described in the 1999 EIS.

The potential health risks of a variety of herbicides were analyzed in the 1999 EIS. This 1999 analysis reviewed and incorporated several documents related to herbicide safety, including Risk Assessment for Herbicide Use in Forest Service Regions 1, 2, 3, 4, and 10 and on Bonneville Power Administration Sites, Human Health Risk Assessment for Herbicide Application to Control Noxious Weeds and Poisonous Plants in the Northern Region, and the Risk Assessment Guidelines of 1986-8/87 (EPA Guidelines 1986). This SEIS also incorporates Imazapic Human Health and Ecological Risk Assessment Final Report (Appendix N).

Toxicology: Toxicology studies for Plateau have determined the toxic effect levels that would be injurious to human health. Exposures and doses that might occur as a result of projects are estimated for workers and members of the general public. The toxic effect levels established are compared to dose levels to determine the potential for human health impacts.

Plateau does not bioaccumulate or biomagnify. Animals high on the food chain (humans, eagles, wolves) are not expected to acquire concentrated doses of this chemical by feeding on contaminated plants or animals. It is water soluble, not lipid soluble (will not concentrate in fatty tissues), and is excreted quite rapidly.

A No-observed-effect level (NOEL) is the highest dose in a particular test that did not result in adverse health impacts to the test organism. Extrapolating a NOEL from an animal study to humans is an uncertain process. The US EPA compensates for this uncertainty by dividing NOEL's from animal tests by a safety factor (typically 100) when deciding how much pesticide will be allowed on various foods. This adjusted dose level is referred to as the Acceptable Daily Intake (ADI) and is presumed by the EPA to be a dose that is safe even if received every day for a lifetime. The ADI is a convenient comparison point for determining the significance of doses that people might receive from these weed-control projects. All doses to members of the general public would be below the ADI for the herbicides proposed except for the possibility to persons who gather and eat more than one-half pound of wild food that has been directly sprayed with herbicide. This is very unlikely because wild foods such as raspberries and huckleberries typically do not occur within noxious/invasive weed infestations. If edible fruits did occur within a weed population, application would only be directed onto the weed plants and would probably occur several months prior to fruit ripening. If fruit bearing plants were unintentionally sprayed, they would not develop fruit that season. If spraying occurred within popular locations where wild foods may occur, the area would be signed to warn against consumption. Weed infestations growing at locations where people are known to commonly harvest wild plants for consumption, will be treated

using non-herbicide methods. In the unlikely event people were exposed to the chemical imazapic, health risks would be minimal.

Worker doses for imazapic are likely to be below the ADI if reasonable safety precautions are used. There is the possibility of idiosyncratic responses such as hypersensitivity in a small percentage of the population. Such persons are generally aware of their sensitivities since they are typically triggered by a variety of natural and synthetic compounds. These persons should not be permitted to work on the spray crews.

Cancer: Some people have expressed concern about the delayed effects of low levels of chemical exposure, particularly the risk of cancer. Imazapic is not listed as an OSHA, NTP or IARC carcinogen. EPA carcinogenicity classification is "Evidence of Non-Carcinogenicity" (Lolo NF Burned Area Weed Mgt. EIS 2001).

Synergistic Effects: Concerns are occasionally raised about the synergistic interactions of the pesticides and other chemicals in the environment. Synergism is a special type of interaction in which the cumulative impact of two or more chemicals is greater than the impact predicted by adding their individual effects. These include the interaction of the active ingredients in a pesticide formulation with its inert ingredients, the interactions of these chemicals with other chemicals in the environment, and the cumulative impacts of spraying proposed here and other herbicide spraying to which the public might be exposed. The low, short-lived doses that would result from spraying Plateau (imazapic) and other associated herbicides for noxious/invasive weed management in the FC-RONRW are very small. For these relatively small doses, a synergistic effect is not realistically expected. EPA has concluded that synergistic affects are rare and certainly not the norm (Lolo Noxious Weed Management EIS 1991).

Inert Ingredients: In the process of formulating pesticides for commercial use a variety of surfactants, emulsifiers, dilatants, and other so-called inert ingredients may be added. The toxicological properties of these additives have come under increased scrutiny. EPA has issued two lists of inerts requiring further regulation or testing. The first list of about 55 chemicals groups the "Inerts of Toxicological Concern" and a second list of 60 chemicals are "Potentially Toxic Inerts/High Priority for Testing." Plateau does not contain any of these listed inert ingredients, (Personal communiqué with Dan Watts, BASF Corporation, September 4, 2002). The LD50 values for the pesticide formulations are typically higher than those of the active ingredient, indicating that the formulations are less toxic. Unfortunately, chronic tests (exposure over long periods of time) of pesticide formulations are not available and interactive effects on cancer rates or other health effects cannot be ruled out absolutely.

Cumulative Effects: The potential cumulative effects of imazapic are within the range of potential effects analyzed in the 1999 EIS. No additional cumulative effects are anticipated.

The 1999 EIS states that noxious/invasive weed populations occur on ten private property inholdings along the Main Salmon River and on several inholdings along the Middle Fork. If these infestations on private lands were chemically treated by the private property owners

concurrently with herbicide treatments on adjacent Federal lands, the additive human health risk to spray crews and the public visiting the Wilderness would still be very small. For example, a worker who sprays herbicides on non-Forest Service projects and is also a resident in the vicinity of Forest Service projects might expect, under worst case conditions, an increase in herbicide dose of about 1 percent over his worker dose. Typically, the increase would not be measurable.

The total doses to members of the general public from all sources of herbicides are unlikely to be higher than those estimated in these analyses. The dose to "maximum-exposed" residents assumes that the greatest portion of their diet came from spray-impacted foodstuffs. Any substitution of food from other sources (e.g., food markets) would lessen the dose.

Major Accident Scenarios: Major accidents involving herbicide application projects are extremely rare. The possibility of accidents in the future cannot be completely discounted, however. Worst-case scenarios involve spills from tank trucks with mixed herbicide loads into drinking water reservoirs. The 1999 EIS analyzed potential for herbicide spills associated with the implementation of prescribed weed treatments. Various accident scenarios, including spills of concentrated herbicide formulations onto people or into drinking water reservoirs, were reviewed in the Northern Region Health Risk Analysis. Spills of concentrate onto people could cause acute effects including nausea, trembling, headache, etc., depending on the degree of exposure, time to cleanup, and individual factors. The calculated probabilities for these accidents are quite low. For the entire Northern Region (assuming 1,220 projects per year), truck spills involving herbicides had calculated probabilities ranging from five every 1,000 years to one in 2,400 years. The probability of such accidents involving drinking water reservoirs were conservatively calculated at one accident every 34,000 years. Risk within the FC-RONRW would be far less than one in 34,000 years because even under the proposed action, annual projects would number far fewer than 1,220, and tank trucks are excluded from the Wilderness.

In summary, we would reasonably expect that the human health impacts from herbicide applications as described in Alternative 2, would remain virtually un-detectable and insignificant.

Table 4.4. Weed Effects Summary by Alternative – Human Health

Alternative 1	Alternative 2
* Human health impacts from prescribed treatment of noxious/invasive weeds will be insignificant and small, even under a worst case situation. * Workers applying 2,4-D who failed to use protective equipment would be at the greatest risk, although this risk would still be very small.	* Human health impacts from prescribed treatment of noxious/invasive weeds including application of herbicides at recommended label rates, and the additional use of Plateau herbicide, will be insignificant and small. * The potential cumulative effects of herbicide treatment to people, including the use of imazapic, are within the range of potential effects analyzed for Alternative 1.

Recreation

Continued implementation of the existing noxious/invasive weed management program (Alternative 1) will have no effects to recreation resources in addition to those described in the 1999 EIS, pages 72-74. The 1999 EIS concludes that anticipated effects from the treatment of noxious/invasive weeds to recreation resources will primarily be beneficial. However, recreationists could encounter dead or dying vegetation for short periods of time.

Alternative 2 (Proposed Action) proposes minor modifications to existing treatment practices and to allow the use of Plateau herbicide. Alternative 2 will have no effects to recreation resources in addition to those described in the 1999 EIS, pages 72-74.

Table 4.5. Weed Effects Summary by Alternative – Recreation

Alternative 1	Alternative 2
* Reductions of noxious weed populations will enhance recreation sites and the recreation experience. * Recreationists may encounter treatment crews and witness evidence of chemical and physical treatment such as wilted plants and weed piles.	* No significant effects to recreation resources in addition to those described for Alternative 1. * Protected or restored native plant communities resulting from more effective weed treatment will further enhance recreation sites and the recreation experience.

Plant Community Diversity (Including Threatened, Endangered, Sensitive, and Proposed Sensitive Plants)

The 1999 EIS concludes that prescribed treatment of noxious/invasive weeds with implementation of specific mitigation measures will have far less potential impact on native plant diversity and to threatened, endangered or proposed sensitive plant species than will uncontrolled and rapid expansion of noxious/invasive weeds.

Alternative 1 is a continuation of the existing weed management program; therefore, the effects of this alternative on plant community diversity would be the same as those described in the1999 EIS (pages 74-76).

Alternative 2 (Proposed Action) will improve the effectiveness of existing weed management practices, including weed treatment. The 1999 EIS draws the following conclusions regarding the prescribed weed treatments;

- Un-infested native plant communities will remain intact and infested communities will be reclaimed.
- Ecosystem protection and enhancement will be greatest under the proposed action.
- The impacts on plant diversity from herbicides tend to be localized and short-term. Plant diversity has been found to recover to pre-treatment levels within three years after treatment (Rice et al.1992).

It is expected, therefore, that the proposed measures associated with Alternative 2, which are intended to improve the effectiveness of weed management, will allow for better long-term protection and maintenance of native plant diversity and stability of plant communities.

The proposed action (Alternative 2) includes the potential future use of the herbicide Plateau (imazapic) to reduce exotic annual grass density on low elevation sites. The use of Plateau could contribute significantly to the success of restoration and rehabilitation projects. Successful restoration of native plant communities is a goal of Integrated Weed Management.

Threatened, Endangered, Sensitive, and Proposed Sensitive Plants
The potential effects of the existing weed treatments (Alternative 1) on threatened, endangered, sensitive, and proposed sensitive (TES) plant species are analyzed in Chapter 4 of the 1999 EIS, pages 76-90. The 1999 EIS concludes that impacts from treatment methods (most notably herbicides) on native vegetation, including TES plants, could occur. However, impacts would be of short duration and minimized by mitigation measures.

Since 1999, one new threatened plant species, Spalding silene (*Silene spaldingii)* and one candidate species slender moonwort (*Botrychium lineare*) were added to the Nez Perce and Payette National Forests threatened, endangered, sensitive, and proposed sensitive species list requiring consideration or consultation with the USFWS. Treatments associated with Alternative 1 and 2 will not affect either of these species. Habitat for Spalding silene occurs on the lower Salmon River outside the FC-RONRW. Slender moonwort habitat, which may occur in the FC-RONRW at moderate to high elevations in spruce and lodge pole pine habitat, typically occurs outside the proposed treatment areas of grasslands, Douglas fir and ponderosa pine communities. Habitat for the threatened plant species, Spalding silene (*Silene spaldingii*) and candidate species slender moonwort (*Botrychium lineare*) as not been identified on the Bitterroot or Salmon-Challis. Neither species requires consideration or consultation with the USFWS.

Surveys since 1999 have found occupied habitat for three additional sensitive or proposed sensitive plant species within or near weed infestations. They include: Davis stickseed (*Hackelia davisii*), pored lungwort (*Lobaria scrobiculata*), and Borsch's stonecrop (*Sedum borschii*). These species are found in the ponderosa pine and Douglas-fir-grasslands communities of the river canyons on the Payette NF. Davis stickseed occurs on the Middle Fork of the Salmon River and pored lungwort and Borsch's stonecrop occur on the Main Salmon River.

Effects to the three additional sensitive or proposed sensitive plants were not analyzed in the 1999 EIS. All species occupy habitat that is highly susceptible to invasion by spotted or diffuse knapweed. Use of the herbicides, Picloram and Clopyralid (Alternative 1 and 2) may impact Davis stickseed, a member of the borage family (Boraginaceae), pored lungwort, a member of the Lobariaceae family and Borsch's stonecrop, a member of the stonecrops (Crassulaceae). While herbicide treatments (Alternative 1 and 2) may impact individuals plants or habitat, treatments will not lead to federal listing primarily because the mitigation measures developed in the 1999 EIS will continue to protect these plants from treatments.

A total of seven sensitive or proposed sensitive plant species are known to occur within or near weed infestations that may be treated with herbicide. Alternatives 1 and 2 may impact individual sensitive plants or habitat, but will not lead to Federal listing. Potential habitat for these sensitive species will be maintained through control of invasive weeds, and protective mitigation measures will be implemented to protect individual plants by surveying habitat, identifying treatment buffers and/or treatment options prior to project implementation.

The proposed action (Alternative 2) includes the potential future use of the herbicide Plateau (imazapic) to reduce exotic annual grass density on low elevation sites. The following is a description of sensitive plants affected by the use of Plateau herbicide:

Payson's milkvetch. This species is in the Pea family (Fabaceae). The native plant species lupine (*Lupinus*), which is also in the Pea family, is tolerant to Plateau both pre and post emergence in mixed grass and forb stands (Plateau herbicide label, BASF 2000). It is possible that Plateau herbicide, applied at the label rate of 2 to 4 ounces per acre, would not necessarily harm individual plants of Payson's milkvetch, if any were present.

Puzzling halimolobos. This species is in the Mustard family (Brassicaceae). According to the label for Plateau (BASF 2000), the herbicide can be used to control species of mustards (*Brassica).* Therefore, Plateau herbicide, applied at the label rate of 2 to 4 ounces per acre, could possibly adversely affect individual plants of puzzling halimolobos, if any were present. However, pre-treatment surveys as required by mitigation would preclude this.

Lemhi penstemon and bank monkeyflower. These species are both in the Figwort family (Scrophulariaceae). Plateau herbicide, applied at the label rate of 2 to 4 ounces per acre, could adversely affect individual plants of these species, if any were present. However, pre-treatment surveys as required by mitigation would preclude this.

Davis stickweed. This species is in the borage family (Boraginaceae). Effects to this plant family are not specified for the herbicides analyzed in the 1999 Weed EIS, or for Plateau herbicide. These herbicides could adversely affect individual plants, if any were found to be present in the treatment areas. However, pre-treatment surveys as required by mitigation would preclude negative effects to individuals and populations.

Pored lungwort lichen. This lichen is in the Lobariaceae family. Effects to this plant family are not specified for the herbicides analyzed in the 1999 Weed EIS, or for Plateau herbicide. These herbicides could adversely affect individual plants, if any were found to be present in the treatment areas. However, pre-treatment surveys as required by mitigation would preclude negative effects to individuals and populations.

Borsch's stonecrop. This plant is a member of the Stonecrop family (Crassulaceae). Plateau herbicide, applied at the label rate of 2 to 4 ounces per acre, could adversely affect individual plants of these species, if any were present. However, pre-treatment surveys as required by mitigation would preclude negative effects to individuals and populations.

Cumulative Effects The predominant threat to plant community diversity within the FC-RONRW, including threatened, endangered and sensitive plant species, is the unimpeded expansion of exotic and invasive plants. Noxious and invasive weed management associated with Alternative 1 and 2, including the prescribed use of herbicides, will have no adverse effects that accumulate with other impacts to cause a significant detriment to plant community diversity or TES plant species.

Table 4.6. Weed Effects Summary by Alternative – Vegetative Diversity

Alternative 1	Alternative 2
* Impacts on native vegetation including TES plants from treatment methods, most notably herbicides, may occur. However, impacts will be of short duration and minimized by mitigation measures. * Ecosystem protection and enhancement will improve under this alternative.	* Impacts on native vegetation including TES plants from treatment methods, most notably herbicides, may occur. However, impacts will be of short duration and minimized by mitigation measures. * The proposed measures associated with Alternative 2, which are intended to improve the effectiveness of weed management, will allow for greater long-term protection and maintenance of native plant diversity and stability of plant communities. * The use of Plateau herbicide may contribute significantly to the success of future rehabilitation projects aimed at restoring native vegetation.

Wildlife (Including Threatened, Endangered and Sensitive Wildlife Species)

The potential environmental effects of implementing the prescribed integrated weed management program in the FC-RONRW in relation to wildlife, is described in the 1999 EIS, pages 80-86. The 1999 EIS summarizes the effects of prescribed treatment of noxious/invasive weeds on wildlife and their habitat as follows:

- Existing plant communities would remain intact and infested sites would be reclaimed. Subsequently, this alternative provides the greatest protection to wildlife habitat, including TES.
- Potential risks of herbicides affecting wildlife species health is greatest as the need for herbicide application increases. However, this risk would be very small.
- Toxicity of the herbicides approved for use in the FC-RONRW at potential doses associated with noxious/invasive weed treatment, even under worst-case scenarios, is fairly non-toxic to test animals and thus their wild counterparts.

Alternative 1 is a continuation of the existing weed management program. Therefore, the effects of Alternative 1 on wildlife will be the same as those described in the 1999 EIS, pages 80-86.

Alternative 2 (Proposed Action) will improve the effectiveness of existing weed management practices and therefore have the greatest potential to maintain wildlife habitats.

The 1999 EIS reviewed the toxicity rates of various herbicides (LD50) with the sensitivity of selected domestic animals representing similar wild species determined through laboratory studies. This analysis concluded that the toxicity of the herbicides approved for use in the FC-RONRW at potential doses associated with noxious/invasive weed treatment, even under worst case scenarios, are fairly non-toxic to test animals and thus their wild counterparts.

The level of toxicity of Picloram (Tordon 22K) ranges from 540 mg/Kg of body weight for large herbivores, such as cattle and elk, to > 2,000 mg/Kg of body weight for smaller mammals including mice, mallards and rabbits (Lolo Noxious Weed Management EIS 1991). The smaller the LC50 value, the higher the level of toxicity to that particular species. Picloram is more toxic to elk than to smaller animals such as mice, rabbits or mallards. Alternative 2 allows the use of Picloram at the Label recommended rate of 2–4 pints/acre (1 lb a.i./ac). This rate of application could result in the worst-case consumed dose of herbicide by an herbivore the size of an elk of 18 mg/Kg of body weight.

According to a study done by Hoerger and Kenaga (1972 from USDA Lolo EIS 1991), an application rate of one pound per acre results in a herbicide concentration on range grass of 125 mg/Kg. Assume that at one pound per acre application rates (Alternative 2), the concentration would be 125 mg/Kg and that the animals feed immediately after spraying and on nothing but sprayed vegetation. The worst-case dose calculations for cattle and elk are as follows:

Cattle. Assuming that a steer eats 75 pounds of green forage/day (35 Kg/day) and weighs 1000 lbs. (450 Kg), the dosage is 125 mg/Kg x 35 Kg/steer x steer/450Kg = 9.7 mg/Kg. This figure is only 1.8 percent of the LD50, so Picloram at prescribed rates can thus be considered to be fairly non-toxic to cattle.

Elk. Assuming that an elk eats 36 pounds of green forage/day (16.4 Kg/day) and weighs 500 lbs. (230 Kg), the dosage is 125 mg/Kg x 16.4 Kg/elk x elk/230 Kg = 8.9 mg/Kg. This figure is only 1.7 percent of the LD50, so assuming that elk have an LD50 comparable to cattle, Picloram at prescribed rates can be considered fairly non-toxic to elk.

The potential dose of herbicide obtained from a predator, such as a coyote or wolf, ingesting contaminated meat from the above toxicity exercise involving elk, is much less, about .01 mg/Kg of body weight.

The Human Health Risk Assessment indicates these herbicides including Picloram, are quickly excreted by exposed animals. Therefore, effects on predators such as wolves or on raptors such as bald eagles or peregrine falcons are not expected. Because these herbicides do not bioaccumulate, the cumulative impacts of spraying sites inside and outside the Wilderness would be insignificant.

Imazapic (Plateau) is essentially non-toxic to terrestrial mammals, birds, amphibians, aquatic invertebrates and insects. It degrades by soil microbial metabolism. It does not

bioaccumulate in animals and is excreted in urine and feces. The oral LD50 of imazapic is greater than 5,000 mg/Kg of body weight for rats and 2,150 mg/Kg for quail, indicating relative non-toxicity by ingestion. The LD50 for honeybees is greater than 100 mg/bee, indicating imazapic is non-toxic to bees. Imazapic is non-irritating to eyes and skin, even in direct applications. The inhalation toxicity is very low. Chronic consumption in rats for two years and in mice for 18 months elicited no adverse effects at the highest doses administered. Chronic consumption by dogs for one year caused minimal effects (Tu et al. 2001).

A herbicide spill could result in concentrations hundreds of times greater than that occurring in treated areas. Potentially, if an animal were to feed exclusively within a spill area for an extended period of time, the LD50 could be exceeded. It's assumed, however, that spills of concentrated herbicide will be immediately treated as a toxic waste spill, that the area impacted will be small, and that animals will be largely excluded due to human activity in the area. Weed Prevention Measures and mitigations applied under Alternative 1 and 2 will keep the probability of such a spill low. Consequently, spills do not comprise a significant risk to wildlife populations. Additionally, the number of animals affected by such an event would be small due to the limited and local nature of such events.

The list of Forest Service wildlife Management Indicator Species (MIS) has changed since the 1999 EIS (see Chapter 3). Wildlife species, including wildlife MIS, are analyzed in the 1999 EIS by extrapolating effects from similar-sized domestic animal dosage studies. Many wildlife MIS reside or utilize habitats that will not be affected by treatment activities or herbicides. Although sage grouse was not analyzed in 1999, this species does not inhabit the Frank Church River of No Return Wilderness and does not require further analysis. Weed treatments associated with Alternatives 1 and 2 are not expected to have effects to wildlife MIS in addition to those effects to wildlife described in the 1999 EIS, pages 80-85.

Threatened, Endangered and Sensitive Wildlife Species
Implementation of Alternative 2, with proposed modifications, including the potential use of Plateau herbicide may potentially affect bald eagles, lynx, wolves, or grizzly bears, but is not expected to adversely affect these species. Individual animals of these species considered threatened or sensitive may be impacted by the implementation of Alternative 2, but a loss of population viability or a trend towards further federal listing is not expected.

Table 4.7. Weed Effects Summary by Alternative – Wildlife

Alternative 1	Alternative 2
* Existing plant communities will remain intact and infested sites will be reclaimed. Subsequently, this alternative provides protection to wildlife habitat, including TES. * Potential risks of herbicides affecting wildlife species health are very small.	* Existing plant communities will remain intact and infested sites will be reclaimed. Subsequently, this alternative provides protection to wildlife habitat, including TES. * At the prescribed label rates of herbicide application, potential risks of herbicides affecting wildlife species health are very small. * Measures to improve the effectiveness of existing weed management practices will have the greatest potential to maintain wildlife habitats.

Wilderness and Wild and Scenic River Values

Continued implementation of the existing noxious/invasive weed management program (Alternative 1) will have no effects to wilderness and wild and scenic river values in addition to those described in the 1999 EIS, pages 86-90. The 1999 EIS recognizes that the use of herbicide may reduce the wilderness experience for some wilderness users, but that active treatment provides the best protection of wilderness values. This analysis also concludes that the release of approved biological control agents (insects and pathogens) assists in the protection of wilderness values and does not violate wilderness direction and mandates.

Alternative 2 (Proposed Action) proposes minor modifications to existing treatment practices and to allow the use of Plateau herbicide. Alternative 2 will have no effects to wilderness and wild and scenic river values in addition to those described in the 1999 EIS, pages 86-90.

The somewhat expanded role of biological control to that of an activity used in combination with other treatments will enhance the effectiveness of existing treatments. The approved use of Plateau will allow for greater flexibility and effectiveness in implementing restoration projects. Restoration of weed sites to a native plant community is the ultimate expression of "preserving natural conditions."

Clarifying the intent of "ground-based" application methods to portray the use of pumps and sprayers mounted in jet boats may seem to be an infringement on the "wilderness" experience of some users not anticipating this activity. Jet boat use is clearly an approved activity recognized in the Central Idaho Wilderness Act, Public Law 96-312, July 23, 1980. Following implementation of the management decisions associated with the 1999 EIS, river users have been impressed and supportive of the herbicide application activities. Some of the herbicide application has involved using the Forest Service jet boat on the Main Salmon River below Painter Bar. Positive support of this program by the river users is anticipated to continue as the weed treatment program progresses.

Table 4.8. Weed Effects Summary by Alternative – Wilderness and Wild and Scenic Rivers

Alternative 1	Alternative 2
* Halting the spread of and reducing existing exotic plant populations will best protect wilderness values as defined in the Wilderness Act and CIWA. * Treatment of noxious weeds, particularly with herbicides, may reduce the wilderness experience for some users.	* Halting the spread of and reducing existing exotic plant populations would best protect wilderness values as defined in the Wilderness Act and CIWA. * Treatment of noxious weeds, particularly with herbicides, may reduce the wilderness experience for some users. * The somewhat expanded role of biological control to that of an activity used in combination with other treatments will enhance the effectiveness of existing treatments. * Restoration of weed sites, including the proposed use of Plateau herbicide, will better

	achieve the management goals of "preserving natural conditions." * Clarifying the intent of "ground-based" application methods to portray some use of pumps and equipment mounted in jet boats may seem to be an infringement on the "wilderness" experience of some users not anticipating this activity.

Visual Quality

Continued implementation of the existing noxious/invasive weed management program (Alternative 1) will have no effects to visual quality in addition to those described in the 1999 EIS, pages 90-91. The 1999 EIS concludes that following treatments, the predominance of natural appearing landscapes enhance the visual quality to some individuals or user groups. Short-term visual effects of treatment may adversely affect the experience of other individuals.

Alternative 2 (Proposed Action) proposes minor modifications to existing treatment practices and to allow the use of Plateau herbicide. Alternative 2 will have no effects to visual quality in addition to those described in the 1999 EIS, pages 90-91.

Table 4.9. Weed Effects Summary by Alternative – Visual Quality

Alternative 1	Alternative 2
* The predominance of natural appearing landscapes will enhance the visual quality to some user groups. Visual effects of treatment may adversely affect the experience of others.	* No significant negative effects to visual quality in addition to those described for Alternative 1. * Protected or restores native plant communities resulting from more effective weed treatment will further enhance the visual quality to some user groups.

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