FINDING OF NO SIGNIFICANT IMPACT
INVASIVE EXOTIC PLANT MANAGEMENT PLAN
FOR
ROCKY MOUNTAIN NATIONAL PARK

National Parks represent complex communities of native plants and animals. The ecological balance within these communities is currently threatened by the invasion of exotic plants. Controlling invasive exotic plants is a serious challenge facing National Park Service (NPS) managers, who are charged with the protection of natural and cultural resources. Over one hundred species of exotic plants occur in Rocky Mountain National Park (RMNP). Of these, 35 species are of particular concern because they are aggressive and invasive and have the potential to displace native vegetation.

To address the threat to the ecological balance within the park, RMNP prepared an Invasive Exotic Plant Management Plan and Environmental Assessment, which was released for public review in May 2003. The plan proposes a proactive approach to managing exotic plant infestations, including the use of mechanical, cultural, chemical, and biological control techniques to reduce invasive exotic plant populations. Of the 35 invasive exotic species identified for control in the management plan, natural and synthetic herbicides will be used on 15 of those species.

Citizens and environmental organizations have expressed concern about the use of synthetic herbicides. The EA reported on issues and options that were brought up during public scoping and during the review of an earlier management plan and EA that was released in 2000. The current EA focused on the potential effects on the environment and people from the use of synthetic herbicides. The EA also addressed the needs of some individuals who wanted to be notified about when and where herbicides were to be used within the park. Because of concerns that were raised during the review of the earlier EA, no synthetic herbicides have been used in the park for the last three years.

PREFERRED ALTERNATIVE

A preferred alternative was identified in the EA, which was selected after a careful review of resource and visitor impacts and public comment.

ALTERNATIVE 2 -- MECHANICAL, CULTURAL, LOW RISK METHODS INCLUDING NATURAL HERBICIDES, BIOLOGICAL AND SYNTHETIC HERBICIDE CONTROL.

The preferred alternative will implement the full range of Integrated Pest Management (IPM) techniques – mechanical, cultural, natural and synthetic chemicals, biological, and low risk methods – to eradicate or reduce current infestations and reduce the possibility of future infestations of invasive exotic plants. The control technique(s) would be selected based on minimizing environmental effects, cost effectiveness, and with the utmost attention to safety. Only the least toxic effective synthetic herbicides would be used as a last resort after making a good faith effort to control invasive exotics using other techniques.

The Preferred Alternative provides park managers with the broadest range of "tools" to manage invasive exotic plants, and can provide the greatest long-term protection to natural resources and native biodiversity.

OTHER ALTERNATIVES CONSIDERED

Other alternatives considered in the EA included:

- Continuation of current IPM practices: mechanical, cultural, low risk methods including natural biodegradable herbicides, and biological control (no synthetic herbicide control).
- No action (no invasive exotic plant control). Even though considered, this alternative is not consistent with the Park's enabling legislation to protect natural resources, the NPS Organic Act (1916), or the Federal Noxious Weed Act (1974). For this reason, this alternative was eliminated from further consideration.

The environmentally preferred alternative should be the one with the least impact to the "human environment." Section 1508.7 of the Council on Environmental Quality (CEQ) Regulations for Implementing the National Environmental Policy Act (NEPA) state that cumulative impacts are to be evaluated regardless of what other agencies (Federal or non-Federal) or persons might be involved. The NPS is required to consider the "absolute" impact the resource is experiencing.

In this case, the environmentally preferred alternative is the same as the preferred alternative (Alternative 2). Alternative 2 seeks a balance between the most comprehensive and effective means of controlling invasive exotic plants while minimizing environmental risks and human health concerns from using the full range of IPM techniques. The environmentally preferred alternative is determined by applying the criteria suggested in the National Environmental Policy Act of 1969 (NEPA), which is guided by Council on Environmental Quality (CEQ) regulations. CEQ regulations provide direction that "[t]he environmentally preferable alternative is the alternative that will promote the national environmental policy as expressed in NEPA's Section 101. Generally, this means the alternative that causes the least damage to the biological and physical environment. It also means the alternative that best protects, preserves, and enhances historic, cultural, and natural resources." [Question 6a, "Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations" (40 CFR 1500-1508), *Federal Register* Vol. 46, No. 55, 18026-18038, March 23, 1981]. While the preferred alternative will cause some localized minor impacts due to the use of synthetic herbicides, it would provide maximum protection of park resources and values. With the implementation of the mitigation measures included in Chapter 7 of the plan, impacts to human health and safety and visitor use and enjoyment of Rocky Mountain National Park will be negligible.

After consideration of public comments that were received throughout the scoping and planning process, careful review of potential resource and visitor impacts, and the development of mitigation measures, the preferred alternative was determined to provide the best protection for the natural environment within Rocky Mountain National Park without posing a risk to human health and safety.

WHY THE PREFERRED ALTERNATIVE WILL NOT HAVE A SIGNIFICANT EFFECT ON THE HUMAN ENVIRONMENT

As defined in 40 CFR §1508.27, significance is determined by examining the following criteria:

Impacts that may be both beneficial and adverse
The preferred alternative will have no long-term adverse impact on geology and topography; threatened, endangered, candidate species or species of special concern; natural lightscapes; archeological resources, cultural landscapes, historic structures, and museum collections; prime and unique farmlands; ethnographic resources; socioeconomics of the park and nearby communities; or environmental justice. There would be short-term negligible to minor adverse impacts to soils and native vegetation; aquatic, wetland and riparian communities; natural soundscapes; wildlife; recommended wilderness; air quality; human health and safety; park operations; and visitor use when removing invasive exotic plants. Weed management activities will be an inconvenience and will intrude on some visitor's park experience. These impacts will be adverse, short-term, localized and minor. There would be long-term beneficial effects to soils and native vegetation; threatened, endangered, candidate species or rare species; aquatic, wetland and riparian communities; park operations; and visitor use. Mitigating measures proposed for the preferred alternative (refer to Chapter 7 on page 104 of the plan) will increase the safety margin for employees and park visitors. Visitors will have opportunities to view the park's scenery, hike and camp, but will be excluded from small, localized areas for up to 48-hours when synthetic herbicides are used. The other alternatives afforded less long-term protection of the Park's natural resources than the preferred alternative. Impacts of other alternatives varied and are described in the EA.

Degree of effect on public health or safety
There will be a net benefit to environmental resources in the park by using the full range of IPM techniques, including the use of synthetic herbicides. The plan and EA addressed public health and safety concerns and examined alternatives for controlling invasive exotic herbaceous plants and grasses, including the use of lower risk techniques such as scalding exotic plants with hot water (steam), and using biodegradable natural chemicals. The park would use the least toxic effective synthetic herbicide only after making a good faith effort to control invasive exotics using other control techniques, and after invasive exotic plants identified for synthetic herbicide control have exceeded defined threshold levels.

Because public health and safety is an important issue to those opposed to the use of synthetic herbicides, it was evaluated in the management plan. A thorough evaluation of potential human health effects due to synthetic herbicide exposure was conducted using current literature on the subject. The evaluation examined the results of toxicology, cancer and mutation and bioaccumulation tests in laboratory animals or from studies conducted on human health from chemical exposures. The risk assessment included a qualitative analysis of the risk of heritable mutation and synergistic effects. With the implementation of mitigation measures for the preferred alternative (refer to Chapter 7 on page 104 of the plan), it is unlikely that the general public or park employees would receive doses above "no observed effect." Human cancer risks from exposure to synthetic herbicides appear to be negligible based on the amount of herbicides proposed for use in the park. However, scientific uncertainty over cancer risks remains. Known risks to the general public are thought to be too low to detect in epidemiology studies. Given the synthetic herbicides and amounts proposed for use in RMNP, the potential for bioaccumulation or biomagnificantion

appears to be negligible. Humans and animals high in the food chain are not expected to receive concentrated doses of the synthetic chemicals by feeding on contaminated plants or animals. With the implementation of the mitigation measures in Chapter 7, which include employee safety measures and adequate notification of the public, there would be no cumulative impact to human health or safety for park visitors or park employees.

Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas

As described in the EA, no significant adverse effects to natural or cultural resources were identified for the preferred alternative. There are no prime farmlands, or wild and scenic rivers affected. By implementing a proactive approach to invasive exotic plant management, the preferred alternative will protect wetlands and ecologically critical areas within the park. The other alternatives would not be as effective and would not provide adequate long-term protection for wetlands or ecologically critical areas.

Degree to which effects on the quality of the human environment are likely to be highly controversial

The park's proposal to use synthetic herbicides raised concerns over the effect such use would have on the quality of the human environment. To alleviate those concerns, as described in the management plan, the park developed a full range of IPM techniques, including developing threshold levels for those species warranting synthetic herbicide control, and developed mitigating measures. RMNP has agreed to only use synthetic herbicides as a last resort.

When the previous management plan and EA was released in 2000, the Colorado Coalition for Alternatives to Pesticides stated their opposition to the use of synthetic herbicides. Through a collaborative effort with the Coalition, which resulted in substantial changes to the management plan, the Coalition now supports the preferred alternative. This is due in part to several provisions of the new plan:

- The current acreage that could potentially be treated with synthetic herbicides is small (65.25 acres)
- One of the plan goals is to reduce the use of synthetic herbicides and to make the park chemical free to the degree possible.
- The plan contains threshold levels for invasive exotic plants that warrant chemical control. When plant populations have been reduced below the threshold level, chemicals would not be used.
- The plan contains extensive mitigation measures that are designed to protect the natural environment, human health and the experience of park visitors.

Visitors, including children, elderly citizens and those with Multiple Chemical Sensitivity (MCS), will have opportunities to view most of the park's scenery, flora and fauna while synthetic herbicides are being used in localized areas. Most of the park will remain chemical free, and it is anticipated that the entire park can remain chemical free for years at a time once invasive plant species are brought below identified threshold levels. With the implementation of the mitigation measures, the potential impact of herbicide use on the human environment is expected to be negligible.

Degree to which the possible effects on the quality of the human environment are highly uncertain or involve unique or unknown risks

As previously described, risks involved with the preferred alternative relate to visitor and employee safety. As described in the Invasive Exotic Species Management Plan and

Environmental Assessment, a through evaluation was done on the synthetic herbicides proposed for use. The plan includes provisions that are intended to minimize unique, uncertain and unknown risks. These provisions include the use of synthetic herbicides only when invasive exotic plants exceed established thresholds, using the least toxic but effective herbicide, using chemicals only as a last resort after other IPM control techniques have been tried, and through the implementation of extensive mitigation measures. Humans and animals high in the food chain are not expected to receive concentrated doses of the synthetic chemicals by feeding on contaminated plants or animals within the park. Therefore, no highly uncertain, unique or unknown risks have been identified.

Degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration
The Invasive Exotic Plant Management Plan and EA evaluates the extent of the problem in RMNP and the proposed management actions, including the use of synthetic herbicides, to address the problem. The EA concludes that management actions will have negligible to minor impacts to natural resources, human health and visitor experience. The plan will not establish a precedent for future actions with significant effects.

The plan will not set a precedent within the National Park Service (NPS) as other park units within the National Park System already have active invasive exotic plant programs and many use synthetic herbicides to control invasive exotic plants. Synthetic herbicides are also used by other federal agencies, and by state, county and local agencies and private landowners.

Whether the action is related to other actions with individually insignificant but cumulatively significant impacts
The EA evaluated the potential cumulative impacts of the alternatives on park natural and cultural resources, human health and visitor experience. In areas proposed for exotic plant control, previous impacts were due to livestock grazing and haying, water diversions and irrigation, cultivation of grassland meadows, mining, settlements, lodges, camps and cabins, a downhill ski area, a nine hole golf course, hunting and park development activities. These disturbances varied considerably as to type, intensity, and duration and created habitat favorable for invasive exotic plants. Most of these earlier disturbances have been removed and the habitat restored to natural conditions. Previous invasive exotic plant control has resulted in negligible cumulative impacts. The combined impact of past and present actions and the implementation of the preferred alternative would result in minor cumulative impacts on park resources and negligible impacts to human health and visitor experience.

Degree to which the action may adversely affect districts, sites, highways, structures, or objects listed on National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources.
If invasive exotic plants are not controlled, there would be a long-term negative effect on cultural resources including some historic districts. Implementing the preferred alternative along with the proposed mitigating measures would have a negligible impact on districts, sites, highway structures, objects listed on the National Register of Historic Places, scientific, cultural, or historic resources. Compliance with §106 of the National Historic Preservation Act was completed by the park archeologist and concurred by the SHPO who determined there would be no adverse affect.

Degree to which the action may adversely affect an endangered or threatened species or its critical habitat
The U.S. Fish and Wildlife Service (USFWS) Ecological Services, Colorado Field Office, was consulted in December 2002 regarding the Invasive Exotic Plant Management Plan. A letter from the USFWS was received on July 10, 2003 concurring with the park's determination that the preferred alternative will not likely have an adverse impact on the park's federally listed, candidate or rare species.

Whether the action threatens a violation of Federal, state, or local environmental protection law
This action violates no federal, state, or local environmental protection laws.

Impairment
In addition to reviewing the list of significance criteria, the National Park Service has determined that implementation of the Invasive Exotic Plant Management Plan will not constitute an impairment to Rocky Mountain National Park's resources and values. This conclusion is based on a thorough analysis of the environmental effects described in the Plan/EA, public comments received, relevant scientific studies, and the professional judgement of the decision-maker guided by the direction in NPS *Management Policies* (December 27, 2000). Although the Plan will result in some negative impacts, in all cases these adverse impacts are negligible to minor in intensity.

PUBLIC INVOLVEMENT

The environmental assessment was made available for public review and comment during a 37-day period ending June 13, 2003. Nine responses were received. All responses clearly stated a preference or strongly supported the preferred alternative. Three of the responses included reservations or were opposed to the use of certain, but not all, synthetic herbicides.

The responses included three letters from agencies (State of Colorado, the regional IPM coordinator for the National Park Service, and Grand County). Three letters were sent by organizations (2 from conservation organizations, and 1 from a land trust). Three letters were sent by individuals. Of the nine responses, all were from Colorado. Substantive comments centered on two topics: editorial comments related to the plan and environmental and safety risks related to the use of synthetic herbicides. These concerns resulted in minor changes to the text of the Plan/EA. Substantive comments are addressed in Attachment A – Response to Public Comments. The FONSI and attachments will be sent to all individuals and agencies that commented on the Plan/EA.

CONCLUSION

The preferred alternative does not constitute an action that normally requires preparation of an environmental impact statement (EIS). The preferred alternative will not have a significant effect on the human environment. Negative environmental impacts that could occur are negligible to minor in intensity and temporary in effect. There are no unmitigated adverse impacts on public health, public safety, threatened or endangered species, sites or districts listed in or eligible for listing in the National Register of Historic Places, or other unique characteristics of the region. No highly uncertain or controversial impacts, unique or unknown risks, cumulative effects, or elements of precedence were identified. Implementation of the action will not violate any federal, state, or local environmental protection law.

Based on the foregoing, it has been determined that an EIS is not required for this project and thus will not be prepared.

Recommended: Vaughn Baker — Superintendent — 8-29-03 — Date

Approved: — Intermountain Regional Director — 9/3/03 — Date

ATTACHMENT A
Response to Public Comments
on the
Invasive Exotic Plant Management Plan
for
Rocky Mountain National Park

Substantive comments centered on two topics: editorial comments related to the plan and environmental and safety risks related to the use of synthetic herbicides. The topics, which are addressed below, resulted in minor changes to the text of the environmental assessment. Comments that resulted in a change to the EA are noted.

1. *The use of the terms inorganic and organic herbicides is confusing. Synthetic vs natural may be a better way to express those categories.*

   We agree. The word "organic" was changed in the Plan to *natural*, and the word "inorganic" was changed to *synthetic* for clarification.

2. *It is not clear from your appendices that you will be using "organic" herbicides on any of the weeds you will be treating. Nor is it clear from your IPM definition of "chemical" that the "organic" chemicals even come under that category.*

   In Appendix C (page 125) we list the 15 species we propose to manage by using the full range of IPM techniques. Appendix C does indicate which species will be controlled using natural biodegradable chemicals. The plan makes a distinction between "organic" [*natural*] and "inorganic" [*synthetic*] chemicals, but some invasive exotic plants may be treated with both types of chemicals depending on the location of the plant, type of soil and other environmental parameters. The park's preference is to use natural herbicides before synthetic herbicides if they are effective in controlling problem plants.

3. *There is concern about acid deposition in the pristine waters of RMNP. Thus it is important to delineate the bounds for use of acetic acid (Burn Out).*

   We will not use Burn Out within 100 feet of water.

4. *Page 30, action 7 – informing the public includes a variety of approaches. Providing a decontamination station so that folks transporting equipment and camping gear from other possible camping sites may shake out their equipment to rid it of weed seeds might be something to consider.*

   We are installing boot brushes and signs at some trailheads to inform the public about how to minimize spreading invasive exotic plants in backcountry areas of the park, but do not find it feasible at this time to establish decontamination stations. We do offer minimum impact camping information about how to prevent spreading exotic plants. We also offer informational brochures at visitor centers on our concerns regarding invasive exotic plants, and Park Rangers give interpretative talks that include environmental impacts from invasive exotic plants.

5. *Page 95 suggests that sprayed areas may be closed to the public for a period of time and that yellow signs would be posted at those sites. This should be referenced on page 30, under the Action 7 summary.*

   Wording was added to page 30 regarding posting yellow signs.

6. *Page 99 suggests no cancer links for glyphosate although a Swedish study implicates Roundup with causing leukemia.*

   On page 99, we cite the Swedish study.

7. *Any identification of the appearance of a new exotic species whether known to be invasive, or not, should be actively eradicated. Action 4, page 29, suggests that this kind of aggressive control will be implemented on those "sensitive areas of the park."*

   We plan to be aggressive not only in sensitive areas of the park, but throughout the park to locate and control new invasive exotic species. As described in the plan, surveying the park for new infestations will occur every summer. When new infestations are found, they will be aggressively controlled to prevent their spread.

8. *Regardless of the technique or approach taken to eradicate or suppress invasive exotic plants within the Park, eventual revegetation of disturbed or treated areas using native plants with local origins (preferable Park) should occur in every instance.*

   When invasive exotic plants are controlled, each site is evaluated, for either natural restoration (allowing succession to restore the site) or active restoration (planting locally collected seed or plants germinated from seed or plant parts). The park uses Best Management Practices and a GO-NO-GO checklist to determine what is appropriate for each site. Monitoring indicates that many sites where invasive exotic plants are removed restore naturally without any additional planting. A few sites require revegetating. The park has an active revegetation program and its own greenhouse and nursery where thousands of native plants are grown each year. We have a crew working full time during the spring, summer and early fall revegetating disturbed areas to prevent the establishment of invasive exotic plants.

9. *We recommend the exploration of the use of organic fertilizers (liquid foliar type) along with either organic [natural] or inorganic [synthetic] herbicides to increase the efficacy of the herbicide used.*

   We will explore the option of using organic fertilizers.

10. *We recognize that there is another factor affecting the potential establishment and spread of invasive exotic plants, that is overgrazing and over-browsing of individual native plants and/or entire plant communities by an excessive elk population. Weakened native plant communities make it easier for non-native plants to become established.*

    There is no ongoing or completed research in the park that indicates overgrazing or over-browsing by elk is affecting the spread of invasive exotic plants. However, research in the west has documented that overgrazing of rangeland by livestock favors the establishment and spread of invasive exotic plants. Research, as presented on page 23 of the management plan, reveals

that areas within the park with significant native plant diversity often contain more invasive exotic species than areas that have less biodiversity. This finding is contrary to other research regarding overgrazing. It is not clear why exotic plants are becoming established in these "hot spots" of biodiversity. RMNP is developing an Elk and Vegetation Management Plan and Environmental Impact Statement that will address the issue of overgrazing and over-browsing of native plant communities.

11. *Even without the invasion of exotic plants, excessive grazing may reduce, even eliminate certain native plants from within their respective communities. Whether endangered or threatened, or not, they should still be maintained within the communities in which they naturally and historically existed.*

    We agree.

12. *The plan should be used to attack new species of invasive exotic plants quickly to prevent their initial spread and to implement emergency contingency efforts to prevent and/or minimize the unexpected spread of currently identified species which pose new threats to sensitive park resources.*

    We agree.

13. *On page iv, it states: "The preferred alternative will have no adverse impact on…threatened or endangered species…" Research indicates that chemical pesticides, like some of the herbicides planned for use at RMNP, can have sub-lethal effects on wildlife; therefore, this statement is inaccurate and misleading and should be removed.*

    We agree that the types of herbicides we plan to use could have sub-lethal effects on wildlife under some circumstances, but disagree that our statement in the management plan is inaccurate and misleading. Adverse means unfavorable, and on page 68 of the plan, we state there could be short-term minor impacts to threatened or endangered species. We do not consider the impacts to be unfavorable (adverse) long-term impacts. There would be unfavorable long-term impacts if invasive exotic plants are not controlled. We recognize the risk of using synthetic herbicides, but we believe that risk is outweighed by the benefit to wildlife that occurs when ecosystems are maintained in their natural state without the presence of invasive exotic plants. The areas where we plan to use herbicides are not used by any listed threatened or endangered species. The area that is proposed for treatment using synthetic herbicides is 65.25 acres, which is 0.025 percent of the total acreage within RMNP. The mitigating measures we list in Chapter 7 will minimize any impacts to listed species. There is a state listed vulnerable species, the Northern goshawk, that hunts in areas we plan to treat with synthetic herbicides. Impacts to this specie are discussed on pages 68 and 69 of the plan. The U. S. Fish and Wildlife Service (USFWS) has concurred with our determination that the preferred alternative will not likely have an adverse affect on any threatened, endangered or candidate species (please refer to page 148 in the plan for the concurrence letter from the USFWS).

14. *The Park cannot accurately claim that use of chemical herbicides will have only "short-term" effects on the environment, wildlife, other animals, and especially humans. No only is this not true, but this phraseology gives the impression the herbicides planned for use are "safe," which is covertly making false claims about the "safety" of pesticides planned for use, a violation of federal and state law.*

We disagree. Chapter 5 thoroughly analyzes the environmental risks of using synthetic herbicides, and the mitigating measures covered in Chapter 7 are designed to minimize the risks of using these herbicides. Because of the small acreage proposed for treatment, the amounts of herbicides we propose to use, and the goal of being chemical free within three years, we believe the impacts will be short-term and localized. Our plan fully complies with the state and federal policies and regulations listed on page 19 of the plan.

Monitoring within the park, and research occurring inside and outside of the park, indicate that some of the invasive exotic plants currently cannot be effectively controlled without the use of synthetic herbicides. We will continue to read new research reports as they become available, and will utilize any new effective control techniques that pose less risk than synthetic herbicides. We encourage research, and currently have several research projects ongoing in the park related to invasive exotic plants. As discussed on pages 20, 27, 56 and other places thoughout the plan, we state we will only use synthetic herbicides as a last resort.

15. *Use of the word "eradicate" in the Plan is problematic. It is not stated clearly in the Plan that eradication of an invasive species is only a feasible goal in the case of new invaders. Eradication of a species in a region is not feasible once established.*

We partially agree that eradication of a species in a region may not be feasible once it is well established, but we believe we can eradicate most of the 35 species from the park. Appendix B, page 120 of the plan lists the plants we believe we can eradicate, contain, or suppress in the park. We believe we can eradicate 20 of the 35 species from the park, but eradicating these species within a region requires coordinated efforts from other federal, state, county, city and private landowners. We only manage habitats within RMNP. In RMNP, we have different examples of eradication. One example is controlling diffuse knapweed. Each year, we eradicate by digging or hand pulling all known diffuse knapweed plants within the park before they produce seed. However, each year we find new plants because diffuse knapweed is well established in the Estes Valley, and during the winter seed blows into the park and germinates in the spring, or seed is brought into the park by visitors.

Larimer and Boulder Counties are "hot spots" in Colorado for diffuse knapweed, whereas elsewhere in the state, it does not exist. We will continue to work closely with state, federal and county agencies, the towns of Estes Park and Grand Lake, and adjacent landowners to try to control and eventually eradicate knapweed.

A different example of eradication is common St. Johnswort. We found one patch of this plant growing on a road shoulder in 1989 and eradicated it. Although we look each year, we have not found any more, but expect that someday a new patch will be found. With park visitation exceeding three million visitors a year, it is expected that new infestations of invasive exotic plants will periodically appear when visitors inadvertently bring invasive exotic seed into the park.

There is a new Colorado Weed Law that address the issues of eradication, containment or suppression by dividing invasive exotic species into the following categories:

Category A - Rare exotics (new infestations). This could be rare to the state, a county or park, but have the potential to become wide spread. Control of these species would be

mandatory. These species should be the highest priority to control with the goal of eradication from the area. Examples include orange hawkweed and yellow starthistle.

Category B – These are species whose distribution is well enough delineated that coordinated efforts to eradicate, contain, and suppress them will stop continued spread. There is mandatory control for some local governing bodies and land managers depending upon occurrence/rarity. Examples include bull thistle and Dalmatian toadflax.

Category C - Individual counties, parks, or local governments should identify the extent of an invasive exotic species for which management will be required or encouraged. Control is optional for all land managers for widespread and well-established species that may no longer be feasible to eradicate or contain. An example is Canada thistle.

Category D - Invasive exotic plants may exist in small patches or numbers for many years waiting for the right climatic conditions or other variables that provides the opportunity for rapid expansion. Dame's rocket and deptford pink are examples of Category D plants. Species in Category D should be identified and controlled.

Our approach to eradicating new infestations of invasive exotic plants in the park is proactive and aggressive and complies with Colorado's new weed law. Appendix B in the management plan lists species we will contain first then eradicate. For some of the 35 species we will be managing, our goal is to contain or suppress, not eradicate.

16. *Please be aware that those suffering from MCS are not the only sector of the population affected by exposure to pesticides. Children, pregnant women and the elderly are especially prone to adverse reactions. I propose that the Park remove the focus on the chemically sensitive as a reason to be concerned about herbicides used at the Park by rewording its reasoning to reflect commitment to protect the health of ALL visitors, workers, and wildlife living at the park.*

    Chapter 5 adequately evaluates impacts to all segments of the population. By focusing on the segment of the population who are chemically sensitive, we are also committing to protecting the health of all visitors and workers. As for protecting wildlife, Chapter 5 adequately addresses environmental impacts, and the mitigating measures included in Chapter 7 will minimize the impacts to wildlife.

17. *While I applaud the Park's inclusion of nonchemical methods as part of its Plan, the Plan is flawed in that it does not promote such methods as the first line of defense in controlling invasive plants. Integrated pest management (IPM), as it was originally intended, utilizes least-toxic alternatives FIRST, then includes chemical tools only on a limited basis, AND after compete analysis of the impact of chemical use. TRUE IPM is NOT a mixture of methods and products, but a philosophy based on scientific site- and species-specific information…. Instead, discussion of nonchemical methods in the RMNP Plan seems more as an appeasement to those concerned about chemical herbicide use.*

    The National Park Service's definition of Integrated Pest Management (IPM) is clearly stated on page ii of the plan:

    "A decision-making process that coordinates knowledge of pest biology, the environment, and available technology to prevent unacceptable levels of pest damage, by cost-effective means, while posing the least possible risk to people, resources, and the environment."

We agree with your statement that we should utilize other control techniques first, then include chemicals on a limited basis as a last resort. In numerous places throughout the plan (see pages 20, 27 and 56, for example) we state, "only the least toxic [effective] herbicide will be used as a last resort." On page iv of the plan and elsewhere, we state that 427 acres are infested with invasive exotic plants. We are able to control invasive exotic plants using techniques other than chemical control on 361.75 of the 427 acres. However, even by defining threshold levels and trying other techniques first, we have 65.25 acres where we believe we have to use the least toxic (effective) herbicide to prevent the loss of important habitat. We disagree with your statement that RMNP's discussion of non-chemical methods has been done as an appeasement.

18. *My suggestion would be to edit the Plan to reflect the true philosophy of IPM; to focus on the use of nonchemical methods and products FIRST; then offer the option of chemical herbicides only if needed AND after a through site- and species specific analysis as well as analysis of the sociological, ecological and economical impact.*

    The plan does not need to be edited since it already reflects the true philosophy of IPM. Chapter 5 adequately discusses the sociologic, ecologic and economic impacts. We also discuss the National Park Service's mandate to protect natural and cultural resources and our preferred alternative complies with that mandate.

19. *I hope RMNP will continue to keep the lines of communication open with citizens, to hear their concerns, but also to take very seriously their suggestions about alternative control methods and products.*

    On page 30 of the plan we state under Programs to Inform the Public that we will offer a yearly opportunity for interested individuals to meet and discuss the effectiveness of all management tools and to exchange information about new control techniques. The current Invasive Exotic Plant Management Plan includes many significant changes as compared to the plan that was released for public review in 2000. These changes were made because we did listen to the concerns expressed by the public, we took those concerns seriously and addressed them to the best of our ability in the new plan.

20. *Page i, first paragraph, last sentence, which states that the "least toxic herbicide will be used" – add "effective."*

    Effective was added on page i and throughout the plan.

21. *Pages 6-11, the set of Treatment Area Maps is confusing with respect to where they are placed in the EA. The dots on the map are only those sites considered for herbicide treatment during 2003. Perhaps an explanation of what these maps are would be helpful. To me, one is led to believe that the dots represent all of the species listed on pages 12-14.*

    The following sentences were added to page 2 of the plan:
    "The dots that are shown on Figures 2 through 6 represent existing invasive exotic plant infestations that are being considered for natural and synthetic herbicide treatments. Herbicide treatment would continue until the infestations can be brought below specified threshold levels, which is anticipated to take between three to five years. The dots are generic and represent one of the 15 invasive exotic species identified for control using herbicides. Each treatment area

surrounding the dots represents areas of the park infested with invasive exotic plants that are to be controlled using all of the various IPM techniques. Table 2, on pages 12 - 14, identifies the invasive exotic species that are present and will be controlled within each treatment area. Control work will not be done on park inholdings, which are privately owned. Species listed in Table 2 that will be controlled using herbicides have been identified with an asterisk. Other species will be controlled using IPM techniques other than herbicides."

22. *Pages 12-14, all of the species listed on these pages do not necessarily correspond with the dots. For example; no musk thistle sites are presently identified for herbicide treatment.*

    The plan has been amended to clearly define what the dots represent.

23. *Page 51, Low Risk Methods section, what about mentioning corn gluten or other "organic" [natural] products that make themselves known in the future?*

    We added another sentence on page 51 about using natural products in the future, and corn gluten is specifically mentioned in the plan on page 92.

24. *Pages 92 and 93, regarding the tables estimating cost for initial treatment with herbicides – on page 29, it is stated that the cost per acre is approximately $500. Why are the amounts on pages 92 and 93 so much higher?*

    The $500 per acre was the cost to use Plateau, applied to leafy spurge. The cost per acre can be higher, because some herbicides are more expensive than others.

25. *Biological Controls section – insects identified for yellow toadflax control available through APHIS are the following: Calophasia lunula, Eteobalea intermediella, and Mecinus janthinus. The two insects identified in the EA, I have not heard of for use here in Colorado. The APHIS website is*: www.ag.state.co.us/DPI/insectory

    The two insects listed on page 141 were from information available from APHIS in 2000. We consulted the web page and confirmed your list of insects. The insects we propose to use, once research is completed to determine if these insects have an impact on native plants, have been changed to the three species currently listed by APHIS. If the insects are found to impact native plants, we will not release them.

26. *Page 3 and 4 (chart): Replace "state-listed" with "state noxious weed list."*

    We agree, and changed the wording.

27. *Page 15, second para.: Instead of "culprits," simply state '…wind, and water have all contributed to the establishment and spread…"*

    We agree, and changed the wording.

28. *Page 27, last para.: As a risk management measure, I recommend that treated areas subject to visitation be posted until dry.*

We added the following to page 27: "Areas treated with an herbicide will be posted at least two weeks before treatment occurs, and yellow signs will remain in place for three months afterwards."

30. *Page 30, para.2: Add cleaning wildland fire fighting vehicles to prevent seed importation. I do not know if it is feasible, but one could also require fire fighters to clean their boots and launder their Nomex clothing prior to going on duty in the park. Otherwise, these footwear and clothing items could easily introduce exotic plant seeds into the park. There should also be a bullet for the park's use of a weed seed free feed program.*

    The bullets on page 30 have been changed. There are times when it is not possible for RMNP to require the cleaning of clothing, boots and construction equipment. We can request that fire fighters inspect their equipment, clothing and boots before reporting for duty at RMNP

31. *Pages 30 and 31: Under "inform the public," another option could be to use a toll-free number for public information.*

    We will look into the use of a toll-free number.

32. *Page 53: Redeem R&P also contains clopyralid, not just tricolpyr.*

    We added clopyralid under Redeem for Tables 6 through 9.

33. *Page 54, para.3: There would be long-term MAJOR negative impacts to native vegetation if herbicides were not used, as weeds would be able to advance into an exponential expansion phase.*

    We disagree. If synthetic herbicides were not used, all of the other IPM techniques would be brought to bear on controlling invasive exotic plants. We acknowledge that it would be difficult, costly and time consuming to keep invasive exotic plants in check without the use of herbicides, and some exotic plant populations would continue to expand. However, we believe that the impacts can be held to a minor level for some time. While the use of synthetic herbicides will have long-term beneficial effects, they also would result in localized, short-term minor impacts.

34. *Page 106, #11: Specify low volatile ester (LVE), rather than "ester," especially since the former is what the park specifies earlier in the EA.*

    We meant to specify low volatile ester (LVE) and LVE was added to #11 on page 106.

35. *Page 125: In regard to quinclorac, IPM practitioners will need to be careful with this material, in order to preclude it from reaching water resources.*

    The herbicide Paramount (active ingredient Quinclorac) was identified as the preferred herbicide to control field bindweed because there were no known infestations located near riparian areas or wetlands. However, after the Plan/EA was released for public review, field bindweed infestations were discovered in Moraine Park and Hollowell Park that are within 100 feet of wetland areas. Consequently, we have identified another herbicide that is suited for use near aquatic environments. The herbicide Rodeo (active ingredient Glyphosate) has been reviewed

using the RAVE scorecard, as presented in Appendix "G" of the Plan/EA, and actually has a better score than quinclorac. Implementing the mitigating measures contained in the Plan/EA will minimize the risk of contaminating water resources.

36. *We can only support the use of the least toxic synthetic pesticides and only as a last resort when the non-chemical alternatives have been used and found ineffective. Furthermore, we can only support the use of synthetic chemicals within a short and defined period and only when there is a compelling need.*

    So noted. Throughout the plan, we discuss using the least toxic [effective] synthetic herbicides only after making a good faith effort to first control invasive exotic plants using other control techniques. On page 28 of the plan (Table 4) is the treatment schedule for the 15 invasive exotic species that warrant synthetic herbicide control. Based on the expected efficacy of each herbicide, we hope to have the 15 species below established threshold levels within three to five years.

37. *Labels for all proposed chemicals should appear at the back of the document.*

    We decided not to add the labels at the back of the Invasive Exotic Plant Management Plan because of the large number of pages that come with each label. It would have increased the size of the document to well over 200 pages. The labels of each synthetic herbicide we propose to use can be downloaded from the following internet site, http://www.cdms.net/manuf/mprod.asp. We have a copy of each label in a notebook in the Resources Management and Research Building at park headquarters.

38. *Inert ingredients of each chemical formulation should be stated along with their hazards.*

    In Chapter 5 each synthetic herbicide we propose to use was evaluated by consulting the latest information we could find in the literature. The literature we cited is listed on pages 111 to 116 of the management plan. Pertinent Internet sites are listed in Appendix K. We also called several companies that produce the various synthetic herbicides. Information on inert ingredients is somewhat limited and some sources of information stated that some inert ingredients are "trade secrets" and were not available. Information on inert ingredients can be found in Material Safety Data Sheets (MSDS), and the U.S. Forest Service Information Ventures, Inc. provides information on inert ingredients at the following web site: http://infoventures.com/e-hlth/pestcide. We also consulted the following additional websites http://ace.orst.edu/info/extoxnet/ghindex.html/ and www.gov/pesticides/reregristration/

    The environmental consequences of the active ingredients in each herbicide were evaluated in Chapter 5 of the management plan. Following is information on the inert ingredients:

    EPA states the following about inert ingredients for synthetic herbicides:

    > " Commercial products generally contain one or more inert ingredients. An inert ingredient is anything added to the product other than an active ingredient. Because of concern for human health and the environment, the U.S. Environmental Protection Agency (EPA) announced its policy on toxic inert ingredients in the Federal Register on April 22, 1987 (52 FR 13305). The intent of this policy is the regulation of inert ingredients. EPA's strategy for the implementation of this policy included the development of four lists of inerts based

on toxicological concerns. Inerts of toxicological concern were placed on List 1. Potentially toxic inerts/high priority for testing were placed on List 2. Inerts of unknown toxicity were placed on List 3 and inerts of minimal concern were placed on List 4.

For pesticides containing List 1 inerts, the EPA has given the pesticide registrant the opportunity to reformulate the product to remove the List 1 inerts. If the registrant chooses not to reformulate the product, then the List 1 inerts must be identified on the product label. For List 2 inerts, the EPA is monitoring ongoing testing and gathering existing information on the potential adverse effects of these chemicals to determine if further regulatory action is required. The EPA has no particular regulatory plans for List 3 and List 4 inerts."

The label for each synthetic herbicide we propose to use was consulted at the following Internet address: http://www.cdms.net/manuf/manuf.asp

None of the labels identified inert ingredients. Therefore, we conclude that there are no List 1 inert ingredients in the herbicides we propose to use.

The following web address lists inert ingredients for some of the herbicides we propose to use: http://infoventures.com/e-hlth/pestcide/pest-fac.html

The following table provides information on the inert ingredients that we were able to identify for the herbicides we propose to use:

Herbicide/Active Ingredient	**Inert Ingredient**	**Environmental Overview**
Redeem (Triclopyr and Clopyralid)	Inert ingredients (54.9%) may include water, emulsifiers, ethanol, kerosene, isopropyl alcohol, and a proprietary surfactant. Isopropyl alcohol CAS# 000067-63-0 (list 3) Ethylenediamine Tetraacetic Acid (Ethanol) CAS# 000060-00-4	Water is non-toxic. Ethanol, kerosene and petroleum solvents are toxic if swallowed. Excessive exposure to isopropyl alcohol, a minor ingredient, may cause eye, nose and throat irritation and at prolonged (hours) and high exposures, may cause lack of coordination, confusion, low blood pressure, low body temperature, circulatory collapse, respiratory arrest and even death. Surfactants and emulsifiers are generally low in toxicity.
2,4-D Amine, 2,4-D low volatile ester (LVE)	2,4-D Amine - inert ingredients (53.4%) including water and sequestering agents. 2,4-D Lo-V Ester – inert ingredients (34.9%). Inert ingredients found in 2,4-D products may include ethylene glycol, methanol, sequestering agents, petroleum hydrocarbons, and surfactants.	Ethylene glycol is moderately toxic to humans; it may cause tearing, anesthesia, headache, cough, respiratory stimulation, nausea or vomiting, pulmonary, kidney and liver changes. Methanol is moderately toxic to humans; it may cause damage to the optic nerve, tearing, headache, cough, difficult breathing, other respiratory effects, nausea, or vomiting.
Transline	Inert ingredients (59.1%) include	Excessive exposure to isopropyl

Herbicide/Active Ingredient	Inert Ingredient	Environmental Overview
	water, isopropyl alcohol, and a proprietary surfactant isopropyl alcohol CAS# 000067-63-0 (list 3)	alcohol, a minor ingredient, may cause eye, nose and throat irritation and at prolonged (hours) and high exposures, may cause lack of coordination, confusion, low blood pressure, low body temperature, circulatory collapse, respiratory arrest and even death. The manufacturer has not revealed the identity of the surfactants used in formulated products.
Rodeo	Inert ingredients (46.5%) includes only water	Water is non-toxic
Roundup	Inert ingredients (59%) includes the surfactant polyethoxylated tallowamine (15%) and water (44%)	The surfactant is an eye irritant and skin irritant and water is non-toxic.
Plateau	Inert Ingredients (76.4%). Inert ingredients are not listed.	There are no human effects of the inert ingredients in Plateau herbicide. This is supported by the acute toxicology results for Plateau herbicide (formulated product that is evaluated for the active ingredient imazapic).
Tordon	Inert Ingredients (75.6%). Inert ingredients found in picloram may include water, dispersing agents, wetting agents, sequestrants, and petroleum solvents.	Water is not toxic. Wetting agents and sequestrants are not very toxic, so they have little effect on the toxic hazard of the product. Some wetting agents and sequestrants may be eye or skin irritants. Some petroleum solvents may increase the amount of pesticide absorbed through the skin. Petroleum solvents may be a toxic hazard if the pesticide is swallowed.
Paramount	Inert ingredients (25.0%). Inert ingredients are not listed.	No inerts cited on EPA List 1 are included in the Paramount formulations. The manufacturer has not publicly identified any inerts used in paramount and no information is available.
Escort	Inert ingredients (40%). Inert ingredients are not listed.	No inerts cited on EPA List 1 are included in the Escort formulations. The manufacturer has not publicly identified any inerts used in Escort and no information is presently available.
Telar	Inert ingredients (25%). Inert ingredients are not listed.	No inerts cited on EPA List 1 are included in the Telar formulations. The manufacturer has not publicly identified any inerts used in Telar

Herbicide/Active Ingredient	Inert Ingredient	Environmental Overview
		and no information is presently available.

39. *If herbicides will be combined, for example, 2,4-D and Picloram, the EA should provide an analysis of the synergistic and cumulative effects of the proposed herbicide applications.*

    We have no plans to combine herbicides.

40 *The EA should provide an analysis of increased herbicide resistance in association with herbicide treatments. Herbicide treatments should not be done on herbicide resistance species.*

    Herbicides have not been used in RMNP since 1999. The last time herbicides were used in the park, monitoring indicated a good response to the treatment with a significant reduction in density and cover. We have established monitoring plots in areas identified for herbicide treatment and will monitor the effectiveness of each herbicide on target species. Table 4 on page 28 of the plan provides a time line based on the expected efficacy of the herbicides we propose to use. If we do not achieve 80% or better efficacy we will assess the situation and determine why.

41. *The by-products resulting from the breakdown of herbicides should be evaluated for their toxicity.*

    We consulted a wide range of literature and Internet sites when evaluating the synthetic herbicides we propose to use. We chose the least toxic but effective herbicides for each of the 15 invasive exotic species based on the best information available and we believe adequately evaluated the environmental consequences of each herbicide in Chapter 5. This is supported by evaluating acute toxicology, cancer and mutation, and bioaccumulation results for each herbicide.

42. *To the extent feasible, non-chemical methods should be used around trails, campgrounds and other areas where the public would be exposed.*

    Figures 2 to 6 in the plan (pages 7 through 11), identify areas of the park where invasive exotic plants occur. Each dot within the figures represents areas where we plan to use herbicides to control exotic plants. Some of the areas proposed for herbicide treatment do occur near trails and campgrounds. The Mitigation Measures that are part of the plan (please refer to Chapter 7, starting on page 104), and the Communications Plan that has been incorporated into the document (please refer to Appendix F on page 135) have been developed specifically to safeguard the public. As discussed throughout the plan, we propose to use synthetic herbicides as a last resort and only when an invasive exotic species exceeds established threshold levels.

43. *A weed management committee should be formed that meets yearly to provide update on management methods.*

We agreed to conduct a yearly update. This annual meeting would provide an opportunity for interested individuals to meet and discuss the effectiveness of all management tools and to promote the interchange of ideas related to control techniques (please see page 31 of the plan).

44. *CCAP does not support the use of 2,4-D or Picloram.*

So noted. In Appendix C (page 125 of the plan), we identify the synthetic herbicides and natural chemicals we propose to use. We will make a best faith effort to use other control techniques first before we use 2,4-D or Picloram. If 2,4-D is used, we will use low volatile ester (LVE). We have identified three invasive exotic species where 2,4-D could be used and one of them is currently below the threshold level warranting chemical control. Canada thistle and spotted knapweed are the two other species, and less than 17 acres have been identified for synthetic herbicide treatment. We have the option of using corn or wheat gluten, Redeem, 2,4-D, or Transline on Canada thistle, and 2,4-D, Transline, or Tordon on spotted knapweed. Which herbicide we use will be based on a site assessment including the ranked score from RAVE as discussed in Appendix G on page 136 of the plan.

45. *Some animals such as dogs are significantly more sensitive to 2,4-D organic acids than are rats and humans. In view of this, should the park be concerned about coyotes?*

All native flora and fauna within the boundary of RMNP are protected, including coyotes. We are concerned about the wellbeing of all native fauna. We recognize the risk involved with using synthetic herbicides and did a thorough analysis of those risks in Chapter 5 of the plan. The maximum area to be treated with 2,4-D during the first year of exotic plant control using herbicides is 18.35 acres. This is .007 percent of the total land area within the park. We anticipate that the maximum acreage to be treated with 2,4-D in year two will drop to 3.35 acres, and in year three to 0.64 acres. In addition, other synthetic herbicides could be used in place of 2,4-D, which would reduce the acreage to be treated with 2,4-D even further. We stated in the EA that there would be short-term negligible to minor impacts to wildlife.

Every treatment area would be surveyed for coyote, fox or other carnivore dens. If any were found, they would be avoided.

46. *Clopyralid can cause severe eye damage including permanent loss of vision.*

Certified applicators will have copies of the label and MSDS sheets for each herbicide they use, they will be briefed on health risks, and all applicators must use proper Personnel Protective Equipment (PPE).

47. *We cannot support the use of picloram due to the fact that it is now in the groundwater of 14 states and is very persistent and has high phytotoxicity.*

We list Tordon (picloram is the active ingredient) as a control option for three invasive exotic species. As discussed in the plan, all sites where herbicides are proposed for use will be evaluated using the RAVE scorecard (please refer to Appendix G of the plan). The RAVE scorecard is used specifically to evaluate the potential for groundwater contamination. We propose to use Tordon to control spotted knapweed, diffuse knapweed and sulfur cinquefoil. All of these species occur in dry upland sites within the park and we believe the potential for groundwater contamination is low.