APPENDIX C

ALASKA NATIONAL INTEREST LANDS CONSERVATION ACT (ANILCA) § 810 ANALYSIS OF SUBSISTENCE IMPACTS

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Introduction

On December 21, 2012, the United States Department of the Interior (USDOI) Bureau of Land Management (BLM) issued a Notice of Intent in the Federal Register to prepare a Programmatic Environmental Impact Statement (PEIS) to evaluate the viability of using aminopyralid, fluroxypyr, and rimsulfuron herbicides as part of BLM vegetation management programs in 17 western states, including Alaska. A total of 18 herbicides were approved for use on public lands under the 2007 *Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement* (2007 PEIS; USDOI BLM 2007a). If approved for use under the current project, the three new herbicides will join the list of EIS-approved herbicides currently in use on BLM lands, bringing the total to 21.

The Notice of Intent for the PEIS identified the locations and times of public scoping meetings, and stated that comments on the proposal would be accepted until February 19, 2013. Information gathered at the public meetings and during the comment period led to the development of the *Draft Vegetation Treatments Using Aminopyralid, Fluroxypyr, and Rimsulfuron on Bureau of Land Management Lands in 17 Western States PEIS*. This document assesses on a national level the BLM's proposed use of aminopyralid, fluroxypyr, and rimsulfuron. Together with the 2007 PEIS, it addresses the BLM's herbicide treatment programs on the 17 western states, including Alaska. Because of the programmatic nature of herbicide use by the BLM, the two documents address a wide range of impacts that are inclusive of the extensive and diverse land area under analysis. Should herbicide use be proposed locally, then site-specific impacts of all vegetation treatments would be addressed and analyzed in additional NEPA documents prepared by local BLM offices and tiered to the PEIS documents.

BLM-administered lands (public lands) are federally owned lands and interests in lands (such as federally owned mineral estate) that are administered by the Secretary of the Interior through the BLM. In Alaska, public lands also include lands selected, but not yet conveyed, to the State of Alaska or Native Corporations and villages.

Chapters 3 (Affected Environment) and 4 (Environmental Consequences) of the PEIS provide detailed descriptions of the affected environment and the potential effects of the various alternatives on subsistence resources, with information in the 2007 PEIS referenced where appropriate. This appendix uses the detailed information presented in the PEIS to evaluate the potential impacts to subsistence pursuant to Section 810(a) of the Alaska National Interest Land Conservation Act (ANILCA).

Subsistence Evaluation Factors

Section 810(a) of ANILCA requires that an evaluation of subsistence uses and needs be completed for any federal determination to "withdraw, reserve, lease, or otherwise permit the use, occupancy or disposition of public lands." As such, an evaluation of potential impacts to subsistence under ANILCA § 810(a) must be completed for the PEIS. ANILCA requires that this evaluation include findings on three specific issues:

- The effect of use, occupancy, or disposition on subsistence uses and needs;
- The availability of other lands for the purpose sought to be achieved; and
- Other alternatives that would reduce or eliminate the use, occupancy, or disposition of public lands needed for subsistence purposes (16 United States Code § 3120).

A finding that the proposed action may significantly restrict subsistence uses imposes additional requirements, including provisions for notices to the State of Alaska and appropriate regional and local subsistence committees, a hearing in the vicinity of the area involved, and the making of the following determinations, as required by Section 810(a)(3):

- Such a significant restriction of subsistence uses is necessary, and consistent with sound management principles for the utilization of the public lands;
- The proposed activity will involve the minimal amount of public lands necessary to accomplish the purposes of use, occupancy, or other disposition; and
- Reasonable steps will be taken to minimize adverse effects upon subsistence uses and resources resulting from such actions.

To determine if a significant restriction of subsistence uses and needs may result from any one of the alternatives discussed in the PEIS, including their cumulative effects, the following three factors in particular are considered:

- Reductions in the availability of subsistence resources caused by a decline in the population or amount of harvestable resources;
- Reductions in the availability of resources used for subsistence purposes caused by alteration of their normal locations and distribution patterns; and
- Limitations on access to subsistence resources, including limitations resulting from increased competition for the resources.

Evaluation of Alternatives and Findings

The alternatives presented below are associated with a decision about whether to allow the BLM to use the herbicides aminopyralid, fluroxypyr, and rimsulfuron on public lands in the western U.S. and Alaska. All of the alternatives involve herbicide treatments on the same number of total acres, with differences in how much of each herbicide would be used annually. No specific projects are proposed under any of the alternatives. When a project is proposed, the BLM will be required to initiate a site-specific National Environmental Policy Act analysis of the proposed actions. For lands covered under the ANILCA, the BLM would also conduct an additional ANILCA § 810 Analysis of Subsistence Impacts. During this process, the BLM will invite public participation and collaborate with Alaska Natives to identify and protect culturally significant plants used for food, baskets, fiber, medicine and ceremonial purposes. For this document, the evaluation and findings required by ANILCA § 810 are similar for all four alternatives considered in the PEIS, primarily because of the programmatic nature of the proposed herbicide use, and because there is no difference in location or amount of total herbicide use among the alternatives. The BLM has found that none of the alternatives in the PEIS result in a finding of "may significantly restrict subsistence uses and needs."

A subsistence evaluation and finding under ANILCA § 810 must also include a cumulative impacts analysis. The discussion below begins with evaluations and findings for each of the four alternatives discussed in the PEIS. Finally, the cumulative case, as discussed in Chapter 4 (Environmental Consequences) of the PEIS, is evaluated. This approach helps the reader to separate the subsistence restrictions that would potentially be caused by activities proposed under the alternatives from those that would potentially be caused by past, present, and future activities that could occur, or have already occurred, under the vegetation management program.

ANILCA § 810(a) Evaluations and Findings for All Alternatives and the Cumulative Case

The following evaluations are based on information relating to the environmental and subsistence consequences of alternatives A through D and the cumulative impacts analysis as presented in Chapter 4 (Environmental Consequences) of the PEIS. The evaluations and findings focus on potential impacts to subsistence resources themselves, as well as access to resources, and economic and cultural issues that relate to subsistence use.

Evaluation and Findings for Alternative A - Continue Present Herbicide Use (No Action Alternative)

Under this alternative, the BLM would continue current vegetation management activities in Alaska with the 18 herbicides approved for use in the Record of Decision for the 2007 PEIS (currently approved herbicides). This alternative represents the Preferred Alternative of the 2007 PEIS.

Approximately 932,000 acres would be treated with herbicides annually across 17 western states. It is estimated that no more than 1,000 acres of public lands in Alaska would be treated with herbicides in any year. Since the release of the 2007 PEIS, 0 acres in Alaska have been treated using herbicides, although some herbicide use has been proposed in association with future projects to limit the spread of invasive species from disturbed sites into more pristine areas.

Only herbicides that are registered for use in Alaska would be applied in the state. At present, 15 of the 18 currently approved herbicide active ingredients are registered for use in Alaska, although the list includes only certain formulations of the registered active ingredients. This list is available from the Alaska Department of Environmental Quality.

All herbicide treatments would be guided by Standard Operating Procedures (SOPs) that serve to protect habitat and resources from potential impacts. Standard Operating Procedures pertaining to herbicide application are found in Chapter 2 of the 2007 PEIS (USDOI BLM 2007a:Table 2-8). Additional mitigation measures that were developed to protect various resources can be found in the Record of Decision for the 2007 PEIS (USDOI BLM 2007b:Table 2). There is concern in Alaska about the use of herbicides in sensitive environments, including tundra and boreal forests, but herbicide use may be appropriate where impacts to soil and other resources are negligible, and where other treatment methods do not provide adequate vegetation control (Hebert 2001).

Evaluation of the Effect of Use, Occupancy, or Disposition on Subsistence Uses and Needs

In Alaska, use of herbicides would have both beneficial and adverse effects. Herbicides would be used to eliminate or reduce the extent of infestations of invasive vegetation, which could help restore ecosystem function to the benefit of subsistence resources. The *Dalton Management Area Integrated Invasive Plant Strategic Plan Environmental Assessment* (USDOI BLM 2013), which incorporates a draft of the strategic plan (USDOI BLM 2009), proposes use of herbicides to control invasive plants along the Dalton Highway and adjacent BLM-administered lands along trails and spur roads, and at other heavy use areas (e.g., gravel pits, rest stops, mine sites, and airstrips). The intent of the herbicide treatments is to stop the spread of invasive plants from disturbed sites into the more pristine areas. Prevention of weed spread into these areas would be expected to help protect subsistence resources from the ecological changes caused by invasive plant species. For example nitrogen fixing weeds (white sweetclover, alfalfa, birdsfoot trefoil and birdsfoot) have the risk of altering ecosystem processes and wildlife habitats by introducing nitrogen into naturally nitrogen-poor habitats.

Herbicide treatments are expected to have short-term adverse and long-term beneficial effects. Undesirable impacts from herbicide use could include: 1) overspray onto non-target species that would result in injury or death of plants; 2) accidental spills that could kill non-target plants and run into wetlands or streams; 3) herbicide drift from the application site that could damage plants; and 4) toxicity to organisms, including people, from excessive contact or ingestion. The BLM has developed SOPs to minimize the adverse effects of herbicide treatments. Part of the NEPA process for vegetation treatments is consultation with Native groups and the public to determine the location of important subsistence resources that might be affected by herbicide treatments, in order to minimize or eliminate the undesirable impacts of the treatments. The BLM would work closely with subsistence users to minimize impacts to subsistence resources in particular, and would follow guidance under Human Health and Safety in Chapter 4 of the 2007 PEIS in areas that may be visited by people after treatments.

If necessary for the protection of subsistence plants and wildlife forage, the BLM would: 1) use drift reduction agents with herbicides, as appropriate, to reduce the drift hazard to non-target species; 2) refer to the herbicide label when planning revegetation to ensure that desirable vegetation would not subsequently be injured by the herbicide; and 3) consider site characteristics, environmental conditions, and application equipment in order to minimize damage to non-target vegetation. To protect fish and wildlife, the BLM would: 1) use buffer zones based on label and risk assessment guidance; 2) minimize treatments near

fish-bearing water bodies during periods when fish are in life stages most sensitive to the herbicide(s) used; 3) use appropriate application equipment/methods near water bodies if the potential for off-site drift exists; 4) use herbicides that are the least toxic to fish; 5) treat only the portion of the aquatic system necessary to achieve acceptable vegetation management; 6) select the appropriate application method(s) to minimize the potential for injury to desirable vegetation and aquatic organisms; 7) follow water use restrictions presented on the herbicide label; 8) minimize treatments during nesting and other critical periods for birds and other wildlife; and 9) use herbicides of low toxicity to wildlife.

To protect water resources, the BLM would: 1) consider climate, soil type, slope, and vegetation type when determining contamination risk; 2) conduct mixing and loading operations in an area where an accidental spill would not contaminate an aquatic body; 3) refrain from rinsing spray tanks in or near water bodies; 4) refrain from broadcasting pellets where there is danger of contaminating water supplies; 5) minimize treating areas with high risk for groundwater contamination; 6) maintain herbicide-free buffers between treatment areas and water bodies; and 7) use the appropriate herbicide-free buffer zone for herbicides not labeled for aquatic use based on risk assessment guidance, with minimum widths of 100 feet for aerial, 25 feet for vehicle, and 10 feet for hand spray applications.

Evaluation of the Availability of Other Lands for the Purpose Sought to be Achieved

The purpose sought to be achieved under the No Action Alternative is to continue to manage public lands to prevent the spread and establishment of invasive non-native plants and to reduce hazards caused by excessive fuel loads. The lands that would be selected for weed control or fuels reduction treatments include areas on public lands in Alaska where invasive plants occur and areas with an abundance of fire fuels that increase the likelihood of catastrophic fire. The objective of treatments is to restore land health. In the future, areas of proposed treatment would be prioritized and analyzed under an appropriate NEPA document. Given that the BLM would propose future treatments on public lands only, other lands would not be available for the purpose. Lands administered by other federal agencies in Alaska are directed by their own planning documents. State- and Native Corporation-administered lands cannot be considered in a BLM plan, and under BLM policy other public lands outside of Alaska are not considered under ANILCA.

Evaluation of Other Alternatives that would Reduce or Eliminate the Use, Occupancy, or Disposition of Public Lands Needed for Subsistence Purposes

Other alternatives pertaining to use of herbicides on public lands needed for subsistence include the action alternatives, which are presented and analyzed in Chapters 2 and 4 of the main body of the PEIS. These alternatives were developed based on the alternatives in the 2007 PEIS, and address many of the concerns raised during scoping for the 2007 PEIS and for this PEIS, including risks associated with aerial spraying and use of acetolactate synthase (ALS) inhibiting active ingredients. These alternatives represent a range of options for feasibly attaining or approximating the BLM's objectives for herbicide use, as expressed in its programs, policies, and land use plans.

Findings

The No Action Alternative would not significantly restrict subsistence use in Alaska. Although no herbicide treatments under the vegetation management program have occurred in Alaska to date, some herbicide use is proposed for the future. For all future projects, individual, site-specific NEPA analysis is required prior to implementing the project. In this way, the BLM would be able to define with local input what SOPs and mitigation measures would be required to prevent damage to subsistence plants and animals. When projects are proposed, local communities would be given the opportunity to participate in the planning process and assist with the design of proposed treatments. The No Action Alternative also includes all of the SOPs and mitigation measures from the 2007 PEIS that have been developed to minimize impacts to resources and human health. Over the long term, actions to reduce the spread of invasive plants and reduce wildfire risk would likely benefit subsistence resources.

Evaluation and Finding for Alternative B - Allow for Use of Three New Herbicides in 17 Western States (Preferred Alternative)

Alternative B, the Preferred Alternative, would allow the BLM to use aminopyralid, fluroxypyr, and rimsulfuron, in addition to the 18 currently approved active ingredients, in its herbicide treatment programs. Under this alternative, as under the other alternatives, total projected acreage of herbicide treatments on public lands in 17 western states is 932,000 acres annually. Within Alaska, it is estimated that no more than 1,000 acres of public lands would be treated with herbicides in any given year. Only herbicides that are registered for use in Alaska would be applied in the state. Formulations of aminopyralid, fluroxypyr, and rimsulfuron are registered in Alaska, so all three could be used in the state.

All herbicide treatments would be guided by SOPs that serve to protect habitat and resources from potential impacts, as well as mitigation measures developed for the currently approved herbicides, which can be found in the 2007 PEIS and the associated Record of Decision. Additionally, all of the mitigation developed for use of the three new herbicides would be followed, as applicable. This mitigation is presented in Table 2-5 of the PEIS.

Evaluation of the Effect of Use, Occupancy, or Disposition on Subsistence Uses and Needs

Potential effects to subsistence resources under the Preferred Alternative would be similar to those under the No Action Alternative. There would be no difference between the alternatives as far as the goals of herbicide treatments or the land areas affected, although the mix of herbicides used could be different. Use of herbicides would have both beneficial and adverse effects, with a potential long-term benefit of reducing or eliminating target infestations of invasive plant species.

Plants, fish, and wildlife used for subsistence could be adversely affected by herbicide treatments. It is assumed that non-target plants could be impacted by treatments utilizing any of the active ingredients, although the species impacted and level of effect would vary by active ingredient used. Herbicide treatments could temporarily displace wildlife, and could result in toxicological impacts to fish and wildlife. Toxicological risks would vary based on the active ingredients used. All three of the new active ingredients are of lower risk to fish and wildlife than nearly all of the other active ingredients currently approved for use. Additionally, use of the currently approved herbicides with the greatest risk to fish and wildlife would decrease under this alternative, relative to the No Action Alternative. Therefore, toxicological risks to fish and wildlife could also be lower under this alternative, depending on which herbicides were selected for use in Alaska in the future.

Evaluation of the Availability of Other Lands for the Purpose Sought to be Achieved

Just like under the No Action Alternative, the lands that would be selected for weed control or fuels reduction treatments include areas on public lands in Alaska where invasive plants occur and areas with an abundance of fire fuels that increase the likelihood of catastrophic fire. Future treatments would occur on public lands only; other lands would not be available for this purpose and could not be considered by the BLM.

Evaluation of Other Alternatives that would Reduce or Eliminate the Use, Occupancy, or Disposition of Public Lands Needed for Subsistence Purposes

Other alternatives that would define the types of vegetation management actions allowed on public lands needed for subsistence include the other action alternatives, and No Action Alternative, which are presented and analyzed in Chapters 2 and 4 of the main body of the PEIS. These alternatives represent a range of options for feasibly attaining or approximating the BLM's objectives for herbicide use, as expressed in its programs, policies, and land use plans.

Findings

The Preferred Alternative would not significantly restrict subsistence use in Alaska. Although no herbicide treatments under the vegetation management program have occurred in Alaska to date, some herbicide use is proposed for the future. For all future projects, individual, site-specific NEPA analysis is required prior to implementing the project. In this way, the BLM would be able to define with local input what SOPs and mitigation measures would be required to prevent damage to subsistence plants and animals. When projects are proposed, local communities would be given the opportunity to participate in the planning process and assist with the design of proposed treatments. The Preferred Alternative includes all of

the SOPs and mitigation measures from the 2007 PEIS that have been developed to minimize impacts to resources and human health. It also includes additional mitigation measures for aminopyralid, fluroxypyr, and rimsulfuron from the current PEIS to minimize impacts to resources and human health associated with these active ingredients. Over the long term, actions to reduce the spread of invasive plants and reduce wildfire risk would likely benefit subsistence resources.

Evaluation and Findings for Alternative C – No Aerial Application of New Herbicides

Alternative C, the No Aerial Application of New Herbicides Alternative, would allow the BLM to use aminopyralid, fluroxypyr, and rimsulfuron, in addition to the 18 currently approved active ingredients, in its herbicide treatment programs. However, only ground applications of the new herbicides would be permitted; aerial applications of aminopyralid, fluroxypyr, and rimsulfuron would be prohibited. Under this alternative, as under the other alternatives, total projected acreage of herbicide treatments on public lands in 17 western states is 932,000 acres annually. Within Alaska, it is estimated that no more than 1,000 acres of public lands would be treated with herbicides in any given year.

Evaluation of the Effect of Use, Occupancy, or Disposition on Subsistence Uses and Needs

Potential effects to subsistence resources under Aternative C would be similar to those under the other alternatives. There would be no difference among the alternatives as far as the goals of herbicide treatments or the land areas affected, although the mix of herbicides used could be different. And while aminopyralid, fluroxypyr, and rimsulfuron would only be applied using ground methods, other active ingredients could be applied aerially. Use of herbicides would have both beneficial and adverse effects, with a potential long-term benefit of reducing or eliminating target infestations of invasive plant species.

Similar to the other alternatives, non-target plants, fish, and wildlife used for subsistence could be adversely affected by herbicide treatments. Wildlife could be temporarily displaced from treatments sites, and fish and wildlife could be subject to toxicological risks associated with exposure to herbicides. Impacts to fish and wildlife would vary depending on the type of fish or wildlife exposed to the treatment, the type of exposure, and the active ingredient(s) used. Aminopyralid, fluroxypyr, and rimsulfuron have a lower toxicological risk to fish and wildlife than many of the currently approved herbicides, so this alternative would allow the BLM more opportunities than at present to select active ingredients that do not harm fish and wildlife, depending on the treatment needs.

Evaluation of the Availability of Other Lands for the Purpose Sought to be Achieved

Just like under the other alternatives, the lands that would be selected for weed control or fuels reduction treatments include areas on public lands in Alaska where invasive plants occur and areas with an abundance of fire fuels that increase the likelihood of catastrophic fire. Future treatments would occur on public lands only; other lands would not be available for this purpose and could not be considered by the BLM.

Evaluation of Other Alternatives that would Reduce or Eliminate the Use, Occupancy, or Disposition of Public Lands Needed for Subsistence Purposes

Other alternatives that would define the types of vegetation management actions allowed on public lands needed for subsistence include the other action alternatives and the No Action Alternative, which are presented and analyzed in Chapters 2 and 4 of the main body of the PEIS. These alternatives represent a range of options for feasibly attaining or approximating the BLM's objectives for herbicide use, as expressed in its programs, policies, and land use plans.

Findings

Alternative C would not significantly restrict subsistence use in Alaska. Although no herbicide treatments under the vegetation management program have occurred in Alaska to date, some herbicide use is proposed for the future. For all future projects, individual, site-specific NEPA analysis is required prior to implementing the project. In this way, the BLM would be able to define with local input what SOPs and mitigation measures would be required to prevent damage to subsistence plants and animals. When projects are proposed, local communities would be given the opportunity to participate in the planning process and assist with the design of proposed treatments. Alternative C includes all of the SOPs and mitigation measures from the 2007 PEIS that have been developed to minimize impacts to resources and

human health. It also includes additional mitigation measures for aminopyralid, fluroxypyr, and rimsulfuron from the current PEIS (Table 2-5) to minimize impacts to resources and human health associated with these active ingredients. Over the long term, actions to reduce the spread of invasive species and reduce wildfire risk would likely benefit subsistence resources.

Evaluation and Findings for Alternative D – No Use of NewAcetolactate Synthase-inhibiting Active Ingredients (No Rimsulfuron)

Alternative D, the No Use of New Acetolactate Synthase-inhibiting Herbicides alternative, would allow the BLM to use aminopyralid and fluroxypyr, in addition to the 18 currently approved active ingredients, in its herbicide treatment programs. Rimsulfuron, however, would not be added to the list of approved active ingredients. Under this alternative, as under the other alternatives, total projected acreage of herbicide treatments on public lands in 17 western states is 932,000 acres annually. Within Alaska, it is estimated that no more than 1,000 acres of public lands would be treated with herbicides in any given year.

Evaluation of the Effect of Use, Occupancy, or Disposition on Subsistence Uses and Needs

Under Alternative D, potential effects to subsistence resources would be similar to those under the other alternatives. There would be no difference among the alternatives as far as the goals of herbicide treatments or the land areas affected, although the mix of herbicides used could be different. Use of herbicides would have both beneficial and adverse effects, with a potential long-term benefit of reducing or eliminating target infestations of invasive plant species.

Similar to the other alternatives, non-target plants, fish, and wildlife used for subsistence could be adversely affected by herbicide treatments. Wildlife could be temporarily displaced from treatments sites, and fish and wildlife could be subject to toxicological risks associated with exposure to herbicides. Impacts to fish and wildlife would vary depending on the type of fish or wildlife exposed to the treatment, the type of exposure, and the active ingredient(s) used. Aminopyralid and fluroxypyr have a lower toxicological risk to fish and wildlife than many of the currently approved herbicides, so this alternative would allow the BLM more opportunities than at present to select active ingredients that do not harm fish and wildlife, depending on the treatment needs. However, the number of new lower risk herbicides available would be less than under the other action alternatives.

Evaluation of the Availability of Other Lands for the Purpose Sought to be Achieved

Just like under the other alternatives, the lands that would be selected for weed control or fuels reduction treatments include areas on public lands in Alaska where invasive non-native plants occur and areas with an abundance of fire fuels that increase the likelihood of catastrophic fire. Future treatments would occur on public lands only; other lands would not be available for this purpose and could not be considered by the BLM.

Evaluation of Other Alternatives that would Reduce or Eliminate the Use, Occupancy, or Disposition of Public Lands Needed for Subsistence Purposes

Other alternatives that would define the types of vegetation management actions allowed on public lands needed for subsistence include the other action alternatives and the No Action Alternative, which are presented and analyzed in Chapters 2 and 4 of the main body of this PEIS. These alternatives represent a range of options for feasibly attaining or approximating the BLM's objectives for herbicide use, as expressed in its programs, policies, and land use plans.

Findings

Alternative C would not significantly restrict subsistence use in Alaska. Although no herbicide treatments under the vegetation management program have occurred in Alaska to date, some herbicide use is proposed for the future. For all future projects, individual, site-specific NEPA analyses is required prior to implementing the project. In this way, the BLM would be able to define with local input what SOPs and mitigation measures would be required to prevent damage to subsistence plants and animals. When projects are proposed, local communities would be given the opportunity to participate in the planning process and assist with the design of proposed treatments. Alternative D includes all of the SOPs and mitigation measures from the 2007 PEIS that have been developed to minimize impacts to resources and human health. It also includes additional mitigation measures for aminopyralid and fluroxypyr from the current PEIS (Table 2-5) to minimize impacts to resources and human health associated with these

active ingredients. Over the long term, actions to reduce the spread of invasive plant species and reduce wildfire risk would likely benefit subsistence resources.

Evaluation and Findings for the Cumulative Case

The Cumulative Case, as presented within the Cumulative Effects Analysis in Chapter 4 of the PEIS, is a discussion of impacts that could affect the management decisions contained within Alternatives A through D. The cumulative effects analysis in the PEIS is based on the analysis in the 2007 PEIS, which was completed for the BLM's vegetation management program, and which includes herbicide treatments as well as other treatment methods. Since the three new herbicides would be added to an existing program, with no change in program goals or in acres or areas treated, much of the 2007 analysis is inclusive of their use.

The analysis of cumulative impacts is a four-step process that follows guidance provided in *Considering Cumulative Effects Under the National Environmental Policy Act* (Council on Evironmental Quality [CEQ] 1997):

- **Specify the class of actions of which effects are to be analyzed.**

The PEIS cumulative effects analysis considers large, regional scale trends and issues that require integrated management across broad landscapes, and regional-scale trends and changes in the social and economic needs of people.

Potential cumulative effects include those assessed for all land ownerships, including lands administered by other federal agencies and non-federal lands, particularly effects on air quality and terrestrial and aquatic species. The analysis and disclosure of cumulative effects alerts decision-makers and the public to the context within which effects are occurring, and to the environmental implications of the interactions of known and likely management activities. During subsequent analyses for site-specific activities, local cumulative effects should be important considerations in the design of site-specific alternatives and mitigation measures.

- **Designate the appropriate time and space domain in which the relevant actions occur**.

The analysis period covered by the cumulative effects analysis primarily begins in the 1930s with the passage of the Taylor Grazing Act, and continues through 2057.

For purposes of this analysis, the spatial domain for past, present, and reasonably foreseeable activities is primarily the 17 western states evaluated in the PEIS.

- **Determine the magnitude of effects on the receptors and whether those effects are accumulating.**

The set of receptors assessed in the cumulative effects analysis are the physical, biological, and human systems discussed in Chapter 3 (Affected Environment).

The potential extent of the total cumulative effects (e.g., number of animals and habitat affected), and how long the effects might last (e.g., population recovery time), are estimated to determine the magnitude of effects that could accumulate for each resource. Where possible, the assessment of effects on a resource is based on quantitative analysis (e.g., level of risk to humans from use of an herbicide). However, many effects are difficult to quantify (e.g., animal behaviors; human perceptions) and a qualitative assessment of effects is made.

The purpose of the analysis of cumulative effects in the PEIS is to determine whether the effects are additive or synergistic or have some other relationship. Additive (or combined) effects on specific resources often are difficult to detect and do not necessarily add up in the strict sense of one plus one equals two. It is much more likely that an additive or combined effect would be greater than one but less than two. A synergistic effect, in theory, is a total effect that is greater than the sum of the additive effects on a resource. To arrive at a synergistic effect in this example (continuing with the numeric analogy), the total cumulative effect would need to end up greater than two. In the highly variable western U.S. environment, where natural variations in population levels can exceed the impacts of human activity, such an effect would need to be much greater than the hypothetical two to be either measurable or noteworthy. A countervailing effect occurs when an impact has both adverse and beneficial effects. For example, herbicide treatments would harm or destroy vegetation used by some species of wildlife (adverse effect), but would improve overall ecosystem health

that would lead to improved watershed conditions and habitat for other wildlife (beneficial effect).

Resource analysts have tried to keep the cumulative analysis useful, manageable, and concentrated on meaningful potential effects. The cumulative analysis considers in greatest detail activities that are more certain to happen and that are geographically in or near public lands, and activities identified during scoping as being of greatest concern. The guiding principles from existing standards, criteria, and policies that control management of the natural resources of concern have been used to help focus the analysis. For areas where existing standards, criteria, and policies are not available, the resource experts used their best judgment to focus the analysis.

Evaluation of the Effect of Such Use, Occupancy, or Disposition on Subsistence Uses and Needs

The PEIS Cumulative Effects Analysis in Chapter 4 does not include a specific section on subsistence. The following information is from the wildlife, fish, and vegetation sections, since subsistence resources fall into these categories.

Since the same number of acres would be treated with herbicides under all of the alternatives considered in the PEIS, there would be similar effects to subsistence resources under all of the alternatives. Differences would be limited to the relative amount of use of various herbicides. Therefore, cumulative effects would be similar under all the alternatives (including the No Action Alternative), although the Preferred Alternative and the other action alternatives could result in an increase in the number of active ingredients being released on public lands.

There would be short-term adverse impacts but long-term benefits to vegetation, fish, and wildlife, including resources used for subsistence purposes. Potential exposures to herbicides used by the BLM would be cumulative to exposures to other pesticides, as well as other chemicals that are released to the environment as a result of human activities. Mitigation measures and SOPs would help minimize impacts to fish, wildlife, and native plants. A countervailing effect of long-term improvement in ecosystem health as a result of successful herbicide treatments would offset short-term losses.

Although aminopyralid, fluroxypyr, and rimsulfuron are of low toxicity to fish and wildlife, some of the currently approved herbicides may harm these resources through certain exposure scenarios. Treatments would also alter wildlife habitat and behavior. The extent of these disturbances would vary by individual treatments. In general, large, aerial applications of herbicides would be most likely to result in exposures to wildlife in the area.

Subsistence users would be warned of planned sprayings ahead of time, and may need to avoid certain areas during and after vegetation treatments. There may also be a perception by subsistence users that subsistence resources are being tainted by exposure to herbicides and other chemicals, particularly in more pristine areas.

Treatments that improve habitat would provide long-term benefits to fish and wildlife. Treatments that remove hazardous fuels from public lands and reduce the risk of large, intense wildfire would reduce future death and injury of wildlife and lead to improved habitat. Treatments that control populations of non-native species on public lands would be expected to benefit most fish and wildlife over the long term by aiding in the re-establishment of native vegetation and restoring habitats to near historical conditions.

Regardless of the alternative chosen, there would be a cumulative loss of native vegetation and healthy ecosystem function. Over the long term, treatments should slow this loss and help to restore native vegetation and natural fire regimes and benefit ecosystem health and wildlife and their habitats.

In addition to the programmatic-level analysis provided in the PEIS, site-specific analysis would be conducted on proposed projects, to include an analysis of potential effects on subsistence resources, if applicable.

Evaluation of the Availability of Other Lands for the Purpose Sought to be Achieved

The purpose sought to be achieved under the PEIS and is to use aminopyralid, fluroxypyr, and rimsulfuron in the BLM's herbicide treatment programs, to increase the options available for preventing the spread and establishment of invasive plants and reducing hazards caused by excessive fuel loads. The lands that would be selected for weed control or fuels reduction treatments include areas on public lands where invasive plants occur and areas with an abundance of fire fuels that increase the likelihood of catastrophic fire. The objectives of treatments are to restore land health. In the future, proposed treatment areas would

be prioritized and analyzed under an appropriate NEPA document. Given that future treatments would occur on public lands only, other lands would not be available for this purpose. Lands administered by other federal agencies in Alaska are directed by their own planning documents. State- and Native Corporation-administered lands cannot be considered in a BLM plan, and under BLM policy other public lands outside of Alaska are not considered under ANILCA.

Evaluation of Other Alternatives that would Reduce or Eliminate the Use, Occupancy, or Disposition of Public Lands Needed for Subsistence Purposes

In addition to the Preferred Alternative to allow use of aminopyralid, fluroxypyr, and rimsulfuron in vegetation treatment programs, other alternatives would include the No Action Alternative to use only the currently approved herbicides, and the other action alternatives that are presented and analyzed in Chapters 2 and 4, which place certain restriction on use of the new active ingredients. These alternatives were created to represent a range of options for feasibly attaining or approximating the BLM's objectives for herbicide use on public lands, as expressed in its programs, policies, and land use plans.

Finding

Actions described in the PEIS, when taken into consideration with the analysis presented as the cumulative case, would not significantly restrict subsistence use and needs in Alaska. While herbicide treatments are likely to occur in Alaska in the future, the estimated treatment area is 1,000 acres or less, statewide, per year. Additionally, the new herbicides being proposed for use are of lower toxicity to fish and wildlife that might be used for subsistence than many of the currently approved herbicides. When proposed, site-specific projects will continue to require additional NEPA analysis, which will include public input and consultation with local native communities and entities that could be affected. A subsequent ANILCA § 810 Analysis of Subsistence Impacts will also be required for each proposed project.

Environmental Justice

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, and an accompanying Presidential memorandum require each federal agency to make the consideration of Environmental Justice part of its mission. The existing demographics (race and income) and subsistence consumption of plants and animals, and mitigating measures and their effects are presented.

Consultation and Coordination with Indian Tribal Governments

Executive Order 13175, *Consultation and Coordination with Indian Tribal Governments*, requires consultation with tribal governments on "actions that have substantial direct effects on one or more Indian tribes." Representatives of the BLM have solicited input from local tribal governments and Alaska Native Corporations to discuss subsistence issues relating to use of aminopyralid, fluroxypyr, and rimsulfuron (see Chapter 5, Consultation and Coordination). The BLM has also met with local tribal governments to discuss use of herbicides in the larger vegetation treatment program, and has established a dialogue on Environmental Justice with these communities.

In addition to ANILCA, Environmental Justice, as defined in Executive Order 12898, also calls for an analysis of the effects of federal actions on minority populations with regard to subsistence. Specifically, Environmental Justice is:

> The fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no group of people, including racial, ethnic, or socioeconomic group should bear a disproportionate share of the adverse environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal programs and policies.

Section 4-4 of Executive Order 12898, regarding the Subsistence Consumption of Fish and Wildlife, requires federal agencies to collect, maintain, and analyze information on the consumption patterns of populations that principally rely on fish and/or wildlife for subsistence, and to communicate to the public any risks associated with the consumption patterns. To this end, the subsistence analyses of all alternatives, located in Chapter 4 (Environmental Consequences) of the PEIS, have been reviewed and found to comply with Environmental Justice.

Further guidance is found in the CEQ document, *Environmental Justice – Guidance under the National Environmental Policy Act*, December 1997, and USEPA, Region 2, Interim Environmental Justice Policy December 2000. Additionally, the USDOI has an *Environmental Justice Strategic Plan 2012 – 2017* (USDOI 2012).

Government-to-Government Consultation with Federally-Recognized Tribes

The BLM formally consults with federally recognized tribes before taking actions that will have a substantial, direct effect on federally recognized tribes or their assets, rights, services, or programs. The BLM initiated consultation with Alaska Native groups in the form of a letter sent on April 18, 2013, to 519 tribes and Alaska Native Corporations throughout the 17 states that could be directly affected by vegetation management activities. The letter requested information on how the proposed activities could impact Native American and Alaska Native interests, including the use of vegetation and wildlife for subsistence, religious, and ceremonial purposes. The Alaska BLM District office in Fairbanks made the decision not to hold one or more public scoping meetings in Alaska based on low attendance at the meetings for the earlier PEIS, low past and projected future use of herbicides in Alaska, and the overlap of the public scoping period with that of an Environmental Assessment for a different project involving herbicide use (*The Dalton Management Area Integrated Invasive Plant Strategic Plan*). In lieu of a public scoping meeting, the BLM Fairbanks District office offered to host a web-based meeting for anyone who wanted to learn more about the project and provide comments. As no members of the public responded to this offer, no web-based meeting for the project was held.

When future vegetation treatment projects are proposed, local BLM offices will initiate site-specific analysis and NEPA documentation. This process will include consultation with Alaska Native groups to determine if culturally important areas and plants could be impacted by proposed vegetation treatments. Proposed treatments of plants that are important for maintaining traditional lifeways may need to be modified or cancelled in certain areas. On the other hand, there may be long-term benefits, such as reducing or eliminating invasive plant competitors, which would allow proliferation of traditionally used plants.

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