APPENDIX H

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

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

Introduction

On October 11, 2001, the Bureau of Land Management (BLM) issued a Notice of Intent in the Federal Register to prepare a Programmatic Environmental Impact Statement (PEIS) on the treatment of vegetation on public lands in the western U.S., including Alaska. Subsequent Federal Register Notices in January 2002 notified the public of the location of public scoping meetings, changes to the meeting schedule, and extension of the public comment period. Information gathered at these meetings and during the comment period led to the development of the *Draft Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States PEIS* and the *Draft Vegetation Treatments on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Report* (PER). Together, these documents assess on a national level the BLM's proposed use of herbicides, and describe the environmental impacts of using herbicides and other vegetation treatment methods, such as fire, manual removal, mechanical removal, and biological controls. Because of the programmatic nature of the proposed use of herbicides 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 and PER 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 and Chapters 3 (Public Land Resources) and 4 (Effects of Vegetation Treatments) of the PER provide detailed descriptions of the affected environment and the potential effects of the various alternatives on subsistence resources. This appendix uses the detailed information presented in the PEIS and PER 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 and PER. 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 USC § 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 or treatments reviewed in the PER, 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

Under each of the alternatives presented below, the proposed actions involved two primary decisions: 1) the determination of which herbicide active ingredients are available for use on public lands in the western U.S., including Alaska, in order to improve the agency's ability to control hazardous fuels and unwanted vegetation; and 2) the development of a state-of-the-science ecological risk assessment methodology to evaluate herbicides that may become available in the future[1]. There are no specific projects proposed under any of the alternatives. When a project is proposed, the BLM will be required to initiate a site-specific NEPA analysis of the proposed actions and conduct an additional ANILCA § 810 Analysis of Subsistence. 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 five alternatives considered in the PEIS, primarily because of the programmatic nature of the proposed herbicide use. 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 five 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 E 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.

[1] To be developed by BLM in consultation with the U.S. Environmental Protection Agency (EPA), U.S. Fish and Wildlife Service (USFWS) and National Oceanic and Atmospheric Administration National Marine Fisheries Service.

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, and resource values would receive attention at present levels. Currently, vegetation management in Alaska consists of less than 50 acres of weed control, fewer than 200 acres of mechanical fuels reduction treatments each year, and periodic prescribed burns for wildlife habitat enhancement. Direction contained in existing laws, regulations, and policies would continue to be implemented. In general, most activities would be analyzed on a case-by-case basis and few uses would be limited or excluded, provided they were consistent with state and federal laws. Fire would be managed consistent with the *Alaska Land Use Plan Amendment for Wildland Fire and Fuels Management* (USDI BLM 2005).

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

Selection of this alternative would result in the fewest acres treated; therefore, levels of risk from herbicide and other vegetation management treatments to subsistence resources would be lower than under the other alternatives. Threats from invasive plants and severe fire, however, would be higher than under the other alternatives. This alternative is likely to have more impact on subsistence resources than the Preferred Alternative (Alternative B), as it may be less effective at controlling invasive plants and excessive fuels.

Under the No Action Alternative, the BLM would have fewer options to control unwanted vegetation on BLM lands in Alaska (85.5 million acres). In Alaska, invasive plant species are generally found on road rights-of-way and areas of human-caused disturbance like cities, villages, trails and recreation areas; however, they are continually expanding their range. The focus of invasive species treatments is to control infestations before they spread to adjacent areas, where they are likely to have negative effects on subsistence resources by displacing native plants that are a food source for Native peoples and subsistence animals. Without weed and fuel control treatments, changes in the native plant community could increase over time and become permanent. Some invasive plants are known to change nutrient cycling regimes or increase erosion and sedimentation in streams, which could reduce fish populations.

Manual vegetation removal treatments, such as pulling, digging or mowing, can selectively remove unwanted vegetation, but may cause trampling and piling of debris on adjacent plants that could be used for subsistence and wildlife forage. These impacts would be limited to small areas. Impacts from mechanical vegetation removal treatments would be similar, but on a greater scale, as heavy equipment causes more severe impacts to plants and soil through disturbance and compaction. Mechanical treatments can be conducted over larger areas than manual treatments, but would be limited in Alaska by cost and access. The BLM would hire workers from local communities to conduct vegetation management activities. Higher levels of treatment could result in an additional source of income for rural Alaskans who depend on subsistence.

Under this alternative, fuel reduction treatments to prevent wildland fires would be more limited than under other alternatives, and the untreated hazardous fuels could result in severe fires that threaten life and property. Severe fires could destroy homes, and reduce subsistence opportunities by destroying plants and wildlife habitat over large areas. Areas affected by severe burns may take from several years to several decades to revegetate to healthy conditions. However, fire is still a natural ecosystem process in Alaska, and only a few areas in the state have altered fire regimes that are more conducive to fires because of human interference or as a result of insect infestations. Fighting wildland fires in Alaska and elsewhere is a major source of seasonal employment for Alaska Natives throughout the state. The income generated by this seasonal work comprises a major portion of the rural economy, and provides the cash necessary to purchase equipment and supplies needed for subsistence harvesting.

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 manage public lands in Alaska to prevent the spread and establishment of invasive non-native plants and to reduce hazards caused by excessive fuel loads. Because the PEIS is not area-specific, but applies to all federal public lands administered by the BLM, no other lands are appropriate for the purpose sought to be achieved. As a result, the "other lands" evaluation as required by ANILCA is more applicable to the future site-specific proposals that could result from the PEIS, at which

time discrete, bounded lands would be proposed for vegetation treatment.

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, or areas with an abundance of fire fuels that increase the likelihood of catastrophic fire. Additionally, lands where habitat is much less productive than desired for wildlife may be subject to treatments to improve wildlife habitat. The objectives of treatments would be 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 that would define the types of vegetation management actions allowed 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 created to represent a wide range of potential vegetation treatment activities that could occur on public lands, along with management actions that would serve to protect specific resource values following current national guidelines. Additional alternatives that were considered, but not analyzed in detail, are also discussed in Chapter 2.

Findings

The No Action Alternative would not significantly restrict subsistence use and needs in Alaska, as envisioned vegetation treatment would be minimal and treatment with herbicides has not been considered for Alaska. Expansion of invasive species and excessive hazardous fuel loads could occur under this alternative, resulting in the loss or displacement of native plants used by Alaska Natives for subsistence purposes. Additionally, invasive species and severe fires could reduce forage and habitat for subsistence animals. Potential invasive species spread and severe fires may eventually result in a significant reduction of species available for subsistence use, but this consequence is not expected to occur during the life of the PEIS and PER. Initially, displacement would be localized to disturbed areas that are easily accessible to humans, such as along roads. As more invasive, non-native plants are introduced and adapt to local conditions, they will become more widespread and problematic. No limits to access for subsistence purposes are envisioned as a result of this alternative.

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

Under the Preferred Alternative, the BLM would be able to use four new herbicides in addition to 14 herbicides that have been previously-approved to treat approximately 932,000 acres annually across 17 western states. In addition, the BLM would be able to use herbicides in Alaska. Although no herbicide treatments are planned for Alaska under this alternative, the BLM could use herbicides as a part of an integrated vegetation management program that would more actively manage invasive non-native and undesirable plants, thereby reducing their negative effects on the environment and on subsistence use. It is estimated that over the next 10 years, no more than 1,000 acres of public lands in Alaska would be treated with herbicides in any year. The herbicides considered for use in Alaska must be registered in Alaska. At present, 13 of the 18 herbicide active ingredients proposed for use are registered for use in Alaska, and the list is further reduced to only certain formulations of those active ingredients that are registered in Alaska. That list is available from the Alaska Department of Environmental Quality.

Implementation of the Preferred Alternative would be guided by Standard Operating Procedures (SOPs) that serve to protect habitat and resources from potential impacts as a result of permitted activity. Standard Operating Procedures for use with herbicide application are found in Chapter 2 of the Final PEIS, in Table 2-8 and additional mitigations are found in Table 2-9 of the same chapter. 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 would be negligible, and where other treatment methods would not provide adequate vegetation control (Hebert 2001).

If new herbicides are developed in the future that provide control of unwanted vegetation superior to that of currently-used or proposed herbicides and with fewer risks to soil and other resources, the BLM would be able to use these herbicides, to the benefit of resources, upon completion of appropriate risk assessments and associated NEPA analysis.

Non-herbicide treatment options (fire use, and mechanical, manual, and biological control methods) would be guided by SOPs listed in Table 2-5 of the PER to protect resources. Fire would be managed in accordance with the *Alaska Land Use Plan Amendment for Wildland Fire and Fuels Management* (BLM 2005).

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

In Alaska, the use of herbicides would have both beneficial and adverse effects. The area treated under this alternative would be greater than under the No Action Alternative, and thus the effects of herbicide use would be greater. By treating a larger area than under the No Action Alternative, the BLM would have a greater likelihood of reducing the number of acres covered by weeds and other invasive vegetation, and restoring ecosystem function to the benefit of subsistence resources. In this way, the Preferred Alternative has the greatest potential for the long-term protection of subsistence resources from impact by invasive plants or catastrophic fire by permitting flexibility in the management of vegetation resources.

Impacts to subsistence and wildlife from integrated weed management and fuels reduction treatments are expected to have short-term negative and long-term positive 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 negative effects of vegetation management 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 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 herbicide, 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 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.

Impacts of non-herbicide treatments are discussed under the No Action Alternative, above.

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

The purpose sought to be achieved under the Preferred Alternative is to more effectively manage public lands in Alaska 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 non-native 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 that would define the types of vegetation management actions allowed on public lands needed for subsistence include the 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 were created to represent a wide range of potential vegetation treatment activities that could occur on public lands, along with management actions that would serve to protect specific resource values following current national guidelines. Additional alternatives that were considered, but not analyzed in detail, are also discussed in Chapter 2.

Findings

The Preferred Alternative would not significantly restrict subsistence use in Alaska, since no herbicide treatments for Alaska are proposed under this alternative. Instead, the alternative examines the parameters by which herbicides use would be allowed, and requires individual, site-specific NEPA analyses any time that herbicide treatments are proposed in the future. In this way, the BLM would be able to define with local input the required SOPs and mitigations that would be applied 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 also prescribes a range of mitigations and required SOPs that are available for use by the BLM in order to minimize impacts to resources and human health. The list of SOPs is presented in Table 2-8 of Chapter 2 of the PEIS, and mitigations are listed in Table 2-9, in the same chapter.

Evaluation and Findings for Alternative C – No Use of Herbicides

Alternative C, the No Use of Herbicides Alternative, would eliminate the risks associated with herbicide application that have been identified for the Preferred Alternative. However, the risks associated with other vegetation management techniques, as discussed under the No Action Alternative, could be greater under Alternative C. The greatest risks would likely be associated with prescribed fire treatments. In addition, human health might be adversely affected by noxious weeds, other invasive plants, and/or fuels being maintained at current levels or increasing. Under this alternative, lands selected by the State and by Native or Village Corporations could be treated, with the permission and cooperation of the selecting organization.

Under Alternative C, weed control treatments in Alaska are expected to increase up to approximately 300 acres, with approximately 1,000 acres treated using manual or mechanical fuels reduction methods. Prescribed fire treatments may occur when conditions are appropriate, but are unlikely to occur annually. Under this alternative, there would be no risk from herbicides to paleontological, cultural, and subsistence resources, or to the health of Native Americans, Alaska Natives and other people. No herbicide use has been proposed or analyzed for public lands in Alaska. Direction contained in existing laws, regulations, and policies would continue to be implemented. In general, proposed vegetation management activities would be analyzed on a case-by-case basis and few uses would be limited or excluded as long as they were consistent with state and federal laws and SOPs. Fire would be managed in accordance with the *Alaska Land Use Plan Amendment for Wildland Fire and Fuels Management* (BLM 2005).

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

Alternative C is likely to have an indirect impact on subsistence resources, similar to the No Action Alternative, as it may be less effective at controlling invasive plants and excessive fuel loads than the herbicide-use alternatives. Non-native or other undesirable vegetation can displace native species that may be used by Alaska Natives for subsistence purposes, and may result in poorer quality forage and cover for wildlife used for subsistence. These potential impacts to subsistence are described in detail under the No Action Alternative. There would be no direct impact to subsistence resources from herbicides or other chemicals under this alternative, as no herbicide use would be allowed. However, there would be direct effects to subsistence resources by manual, mechanical, and prescribed fire treatments that could temporarily displace wildlife and damage or kill plants used for subsistence. See the discussion of the impacts of these treatments under the No Action Alternative.

Since more acres would be treated under Alternative C than under the No Action Alternative, there would be more potential direct impacts to subsistence resources from vegetation treatments. In addition to the impacts described for the No Action Alternative, there would be more exhaust from equipment used, and smoke from prescribed fire, that could impact individuals sensitive to particulates produced by combustion. Although the income generated by seasonal work could supplement the rural economy and provide cash to purchase equipment and supplies needed for subsistence harvesting, individuals conducting these treatments could suffer injuries from manual labor or machinery.

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

The purpose sought to be achieved under Alternative C is to manage public lands in Alaska 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 non-native 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, 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 that would define the types of vegetation management actions allowed on public lands needed for subsistence include the 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 were created to represent a wide range of potential vegetation treatment activities that could occur on public lands, along with management actions that would serve to protect specific resource values following current national guidelines. Additional alternatives that were considered but not analyzed in detail are also discussed in Chapter 2.

Findings

Alternative C would not significantly restrict subsistence use and needs in Alaska. Within 10 years, the area treated to control invasive plants is likely to increase to not more than 300 acres, and the area treated to reduce hazardous fuels is likely to increase to no more than 1,000 acres. Under this alternative, there would be no risks to paleontological, cultural, and subsistence resources and human health from herbicide applications. However, risks to these resources and human health associated with alternative vegetation management methods, such as manual clearing or prescribed fire use, could be greater than under this alternative than under the No Action Alternative. The greatest risks would likely be associated with prescribed fire treatments (see Chapter 4 in the PER). In addition, human health might be adversely affected by invasive weeds and poisonous plants that adversely affect humans being maintained at current levels or increasing because herbicides were not a treatment option. In the long run, this alternative could result in expansion of invasive species and increased fuel loads and loss of native plants that provide forage and cover for wildlife used for subsistence.

Evaluation and Findings for Alternative D – No Aerial Application of Herbicides

Alternative D is the No Aerial Application of Herbicides Alternative. Restriction on aerial applications would reduce the risk of herbicide drift and impacts to unintended targets. Alternative D would be much like the Preferred Alternative in that no aerial herbicide applications are proposed or likely to be proposed in Alaska under the Preferred Alternative. Under Alternative D, the BLM would be able to use four new herbicides, in addition to previously-approved herbicides for 17 western states that are registered in Alaska. Although aerial herbicide treatments would not be allowed, the BLM could use ground-based application as a part of an integrated vegetation management program. It is estimated that no more than 1,000 acres of public lands in Alaska would be treated with herbicides in any year for the next 10 years. The herbicides considered for use in Alaska must be registered in Alaska. At present, 13 of the 18 active ingredients are registered for use in Alaska. This list is further reduced to specific formulations of the active ingredients registered for use in Alaska.

If new herbicides are developed in the future that provide control of unwanted vegetation superior to that of currently-used or proposed herbicides and with fewer risks to soil and other resources, the BLM would be able to use these herbicides to the benefit of resources upon completion of appropriate risk assessments and associated NEPA analysis.

Non-herbicide treatment options (fire use, and mechanical, manual, and biological control methods) would be guided by SOPs listed in Table 2-5 of the PER to protect resources. Fire would be managed in accordance with the *Alaska Land Use Plan Amendment for Wildland Fire and Fuels Management* (BLM 2005).

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

Alternative D would be much like the Preferred Alternative in that no aerial herbicide applications are proposed or likely to be proposed in Alaska under the Preferred Alternative. Required SOPs for use with herbicide application are found in Table 2-8 of Chapter 2 of the final PEIS, and additional mitigations are found in Table 2-9 of same chapter.

The use of herbicides would have both beneficial and adverse effects. The area treated under this alternative would be greater than the area treated under the No Action Alternative; thus, the effects associated with herbicide use would be greater. However, by treating a larger area than under the No Action Alternative, the BLM would have a greater likelihood of reducing the number of acres covered by weeds and other invasive vegetation and restoring ecosystem function, to the benefit of subsistence resources.

Alternative D has the potential for long-term preservation of subsistence resources from impact by invasive plants or catastrophic fire by permitting flexibility in the management of vegetation resources.

Impacts to subsistence and wildlife from integrated weed management and fuels reduction treatments are expected to have short-term negative and long-term positive effects. Undesirable impacts from ground-based herbicide applications under this alternative 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; and 3) herbicide drift off the application site that could damage plants. The SOPs specific to reducing impacts to subsistence resources would include consultation with Native groups and the public to determine the location of important cultural and subsistence resources that might be affected by herbicide treatments. The BLM would work with subsistence users to minimize impacts to these resources, and would follow Human Health and Safety guidance provided in Chapter 4 of the PEIS in areas that may be visited by subsistence users after treatments.

For the protection of subsistence plants and wildlife forage, the BLM would: 1) use drift reduction agents, 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/method near water bodies if the potential for off-site drift exists; 4) use herbicides least toxic to

fish, yet still effective; 5) treat only the portion of the aquatic system necessary to achieve acceptable vegetation management; 6) select 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; 9) use herbicides of low toxicity to wildlife, where feasible; and 10) use timing restrictions, as specified on the herbicide label, to minimize impacts to wildlife. Impacts of non-herbicide treatments are discussed under the No Action Alternative, above.

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

The purpose sought to be achieved under Alternative D is to manage public lands in Alaska to prevent the spread and establishment of invasive non-native plants and to reduce hazards caused by excessive fuel loads, without the use of aerial herbicide applications. The lands that would be selected for weed control or fuels reduction 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. The objectives of treatments are 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 that define the types of vegetation management actions allowed on public lands needed for subsistence include the 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 were created to represent a wide range of potential vegetation treatment activities that could occur on public lands, along with management actions that would serve to protect specific resource values following current national guidelines. Additional alternatives that were considered, but not analyzed in detail, are also discussed in Chapter 2.

Findings

Alternative D would not significantly restrict subsistence use in Alaska. Site-specific treatments would be analyzed in NEPA documents that would identify numerous SOPs and mitigations that would be required to prevent damage to subsistence plants and animals. For proposed projects, local communities would be given the opportunity to participate in the planning process and assist with design of proposed treatments. This alternative prescribes mitigations and SOPs to minimize impacts to resources and human health. Standard Operating Procedures are listed in Table 2-8 in Chapter 2 of the Final PEIS, and mitigations are listed in Table 2-9 of the same chapter.

Evaluation and Findings for Alternative E – No Use of Sulfonylurea and other Acetolactate Synthase-inhibiting Active Ingredients

Alternative E prohibits the use of Sulfonylurea and other Acetolactate Synthase (ALS)-inhibiting active ingredients, which include chlorsulfuron, imazapic, imazapyr, metsulfuron methyl, and sulfometuron methyl. Alternative E incorporates additional management practices of limiting application techniques; however, the resulting effects to subsistence resources would be similar to those described under the Preferred Alternative.

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

Under Alternative E, the BLM would be able to use some herbicides, but not ALS-inhibiting herbicides. Although no herbicide treatments have been planned for Alaska, the BLM could use herbicides under this alternative as a part of an integrated vegetation management program that would more actively manage invasive non-native plants and other unwanted vegetation, thereby reducing their negative affects on the environment and subsistence uses. It is estimated that treatments would start on fewer than 100 acres. Within 10 years, it is estimated that no more than 1,000 acres of public lands in Alaska would be treated with herbicides in any year.

Impacts to subsistence use under this alternative would be similar to those described under the Preferred Alternative. Herbicides would be applied primarily by spot spraying, wiping, or injection, which would

reduce impacts to non-target plants by preventing overspray that could damage or kill plants unintentionally. However, the high concentrations of herbicides used for these application techniques could have increased toxicity to animals exposed to the herbicide or ingesting treated plants. Non-herbicide treatment impacts would be the same as those described under the No Action Alternative.

Alternative E, like the Preferred Alternative, would be guided by a standard set of SOPs that serve to protect subsistence resources from potential impacts associated with vegetation management activities. Alternative E would be similar to the Preferred Alternative in reducing impacts from invasive non-native plants and excessive fuels. Impacts to subsistence resources are expected to have short-term negative effects (injury or death to non-target plants, injury to animals directly exposed to treatments) and long-term positive effects (healthy native plant communities that support healthy populations of subsistence wildlife). Alternative E does place increased emphasis on spot rather than broadcast applications, which would tend to correspond to less per area risk than under the No Action and Preferred alternatives. The risk per area treated, however, is not likely to be dramatically lowered by prohibiting the use of ALS-inhibiting herbicide active ingredients. In addition, because the number of acres proposed for treatment under Alternative E and the Preferred Alternative are similar (up to 1,000), overall risks would be similar for both alternatives. Conversely, more acres would be treated under Alternative E than under the No Action Alternative (50), so overall short-term risk would be greater.

Under all alternatives, the BLM would collaborate with Alaska Native groups to identify and protect culturally significant plants used for food, basket-weaving and other fibers, medicine, and ceremonial purposes, and would use minimal impact treatments or avoidance where culturally significant species are known to occur. In addition, under Alternative E, the BLM would establish herbicide-free zones to protect culturally significant plant and wildlife resources, which would reduce the likelihood that Alaska Natives would consume vegetation with herbicide residues.

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

The purpose sought to be achieved under Alternative E is to manage BLM lands in Alaska to prevent the spread and establishment of invasive non-native plants and to reduce hazards caused by excessive fuel loads, without using ALS-inhibiting herbicides. The lands that would be selected for vegetation management treatments include areas on public lands in Alaska where invasive non-native plants occur, areas with an abundance of fire fuels that increase the likelihood of catastrophic fire, and areas of degraded wildlife forage and habitat. The objectives of treatments are to restore land health and, subsequently, the subsistence resources that depend on healthy plant communities. 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 pubic 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 that would define the types of vegetation management actions allowed on public lands needed for subsistence include the 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 were created to represent a wide range of potential vegetation treatment activities that could occur on public lands, along with management actions that would serve to protect specific resource values following current national guidelines. Additional alternatives that were considered, but not analyzed in detail, are also discussed in Chapter 2.

Findings

Alternative E would not significantly restrict subsistence use and needs in Alaska, as a relatively small number of acres are being considered for herbicide treatments in Alaska (less than 1,000 acres). Under this alternative, risk per area treated would not likely be dramatically lowered by prohibiting the use of ALS-inhibiting herbicide active ingredients. Even under accidental exposure scenarios, imazapic, imazapyr, metsulfuron methyl, and sulfometuron methyl do not pose a risk to humans, and chlorsulfuron only poses a risk to workers under scenarios involving

ground broadcast applications at the highest application rate, and risk to the general public under scenarios involving an accidental spill of a large amount of chlorsulfuron into a very small pond—an unlikely scenario. Bromacil, diquat, and diuron, which pose the most severe human health risks, could be used under Alternative E; therefore, risk per area treated is not likely to be reduced by prohibiting the use of ALS-inhibiting herbicide active ingredients. Alternative E does place increased emphasis on spot rather than broadcast applications, which would tend to correspond to less per area risk than under the No Action and Preferred alternatives, except in the few possible cases where occupational receptors would be at a greater risk from spot applications.

Risks to subsistence resources and health risk to Native Americans and Alaska Natives associated with other vegetation management methods would likely be greater under Alternative E. The greatest risks would likely be associated with prescribed fire treatments (see the final PER). Because the number of acres proposed for treatment under Alternative E and the Preferred Alternative is similar (up to 1,000), overall risks would be similar for both alternatives.

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 E.

For this Programmatic EIS, the analysis of cumulative impacts is a four-step process that follows guidance provided in *Considering Cumulative Effects Under the National Environmental Policy Act* (CEQ 1997):

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

All vegetation treatment methods used by the BLM are considered in the analysis. These include herbicide use, manual, mechanical, and biological control methods, and use of fire, as identified in Chapter 2 (Alternatives). For the PEIS, 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 negative and beneficial effects. For example, herbicide treatments would harm or destroy vegetation used by some species of wildlife (negative effect), but would improve overall ecosystem health that would lead to improved watershed conditions and habitat for other wildlife (positive 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 did 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.

Based on the number of acres treated, short-term adverse impacts and long-term improvements to wildlife and habitat would be greatest under the Preferred Alternative, and least under the No Action Alternative. The number of acres treated, and the effects to wildlife and habitat would be similar under alternatives D and E. Effects to wildlife and habitat under Alternative C would be intermediate between these alternatives and the Preferred Alternative. Short-term effects from treatments and other human causes would accumulate, but a countervailing effect of long-term improvement in the ecosystem health, with success and maintenance of treatments, would offset short-term losses.

Alternative E places greater emphasis on passive restoration than the other alternatives. Passive restoration is often considered a critical first step in successful restoration of degraded areas, since anthropogenic activities that are causing degradation or preventing recovery are halted. All alternatives include both passive and active management. Recovery of vegetation through passive management is expected to take longer than under active management, where treatments such as seeding with native species, establishing intermediate vegetation to control erosion, and use of pre-emergent herbicides to prevent weed establishment would be expected to promote faster recovery.

The risks to wildlife, fish and vegetation from use of herbicides could be less under Alternative E than under the other herbicide use alternatives because ALS-inhibiting herbicides would not be used under Alternative E. ALS-inhibiting herbicides are effective at very low doses and could drift onto wildlife and plants and harm them. However, the ALS-inhibiting herbicides mostly posed no risk to terrestrial wildlife (chlorsulfuron, imazapic, sulfometuron methyl), except for a few cases of low risk (imazapyr, metsulfuron methyl), suggesting that prohibiting the use of these herbicides would not likely benefit wildlife used for subsistence purposes and could indirectly harm wildlife if more toxic herbicides that are currently available to the BLM were used in their place.

The risk of herbicide drift affecting wildlife and their habitats would be less under alternatives D and E than under the other herbicide treatment alternatives, as aerial treatments are prohibited under Alternative D, and discouraged under Alternative E.

The proposed vegetation treatments could kill or harm wildlife and could cause unavoidable short-term adverse impacts to wildlife habitat and behavior. The extent of these disturbances would vary by the extent and type of treatment. In general, greatest risks would be associated with the use of fire and herbicide treatments. If treatments were successful, species currently using treatment sites could be displaced by species better adapted to restored sites.

All treatments would have short-term adverse impacts to wildlife and their habitats, as discussed above. Treatments that improve habitat would provide long-term benefits to 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 wildlife over the long term by aiding in the re-establishment of native vegetation and restoring wildlife habitat 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.

Because herbicide use in the planning area is uncertain, the level of vegetation treatments projected through this plan is minimal. Site-specific analysis would be conducted on proposed projects, and no cumulative impacts to subsistence species are anticipated.

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

The purpose sought to be achieved under the PEIS and PER is to manage BLM 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 where invasive non-native 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 the BLM would propose this future treatment 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

Alternatives that would reduce or eliminate the use of public lands needed for subsistence include the four action alternatives that are presented and analyzed in Chapters 2 and 4, as well as the No Action Alternative. These alternatives were created to represent a range of potential vegetation management activities that could occur on public lands, along with management actions that would serve to protect specific resource values. Additional alternatives that were considered, but not analyzed in detail, are also discussed in Chapter 2.

Finding

Actions described in the PEIS and PER, when taken into consideration with the analysis presented as the cumulative case, would not significantly restrict subsistence use and needs in Alaska, as relatively few acres are being considered for treatment (less than 6,000 acres of vegetation treatments statewide). Additionally, these documents do not include any proposed on-the-ground projects. When proposed, site-specific projects will require an 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 met with local tribal governments to discuss subsistence issues relating to the PEIS and PER (see Chapter 5, Consultation and Coordination), and have 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 negative 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.

Additional 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.

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 July 3, 2002 to 230 tribes and Alaska Native entities that could be directly affected by vegetation treatment 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. A public scoping meeting for the BLM's proposed vegetation management PEIS was held in Anchorage, Alaska on March 6, 2002.

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 non-native plant competitors, which would allow proliferation of traditionally used plants.

References

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