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Environmental Assessment

Wood Bison Project

Glacier Ranger District
Chugach National Forest

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Summary

The Chugach National Forest proposes to authorize year round grazing and holding of up to 160 wood bison, the equivalent of 70 cow calf pairs and 20 individuals, on 165 acres of NFS land (NFS land). This authorization would be issued through a 15 year special use permit to Alaska Department of Fish and Game (ADF&G). The project area is located in Portage, Alaska and is in the Glacier Ranger District, Chugach National Forest. This action is needed because the captive breeding program at the Alaska Wildlife Conservation Center (AWCC) does not have enough space for the wood bison which may lead to diseases and/or death of wood bison, and thus there is a need for additional land suitable for grazing wood bison near the existing AWCC facilities and 27 acres of NFS land pasture. The proposed action will allow new grazing use on 138 acres of NFS land for 15 years and will extend grazing use on 27 acres of NFS land, currently set to expire in 2016, for an additional 11 years.

The proposed action may reduce winter and summer browse forage for moose, increase the risk for noxious weeds introduction and/or spread, and increase the amount of pasture available for wood bison.

Based upon the effects of the alternatives, the responsible official will decide whether or not allow grazing on approximately 165 acres of NFS land for the purposes of supporting the wood bison captive breeding program and reintroduction project as described in the proposed action, the proposed action as modified, or take no action. If the responsible official decides to implement the proposed action as described or modified then a special permit will be issued to the ADF&G.

Document Structure

The Forest Service has prepared this Environmental Assessment in compliance with the National Environmental Policy Act (NEPA) and other relevant Federal and State laws and regulations. This Environmental Assessment discloses the direct, indirect, and cumulative environmental impacts that would result from the proposed action and alternatives. The document is organized into four parts:

- *Introduction:* The section includes information on the history of the project proposal, the purpose of and need for the project, and the agency's proposal for achieving that purpose and need. This section also details how the Forest Service informed the public of the proposal and how the public responded.
- *Comparison of Alternatives, including the Proposed Action:* This section provides a more detailed description of the agency's proposed action as well as alternative methods for achieving the stated purpose. These alternatives were developed based on significant issues raised by the public and other agencies. This discussion also includes possible mitigation measures. Finally, this section provides a summary table of the environmental consequences associated with each alternative.
- *Environmental Consequences:* This section describes the environmental effects of implementing the proposed action and other alternatives. This analysis is organized by significant issues and significant factors. Within each section, the affected environment is described first, followed by the effects of the No Action Alternative that provides a baseline for evaluation and comparison of the other alternatives that follow.
- *Agencies and Persons Consulted:* This section provides a list of preparers and agencies consulted during the development of the environmental assessment.
- *Appendices:* The appendices provide more detailed information to support the analyses presented in the environmental assessment.

Additional documentation, including more detailed analyses of project-area resources, may be found in the project planning record located at the Glacier Ranger District Office in Girdwood, Alaska.

Background

The Forest Service in conjunction with the US Fish and Wildlife Service (USFWS), Alaska Department of Fish and Game (ADF&G), Natural Resource Conservation Service (NRCS), and the Alaska Wildlife Conservation Center (AWCC) has supported a wood bison restoration program that intends to reintroduce extant wood bison onto its former range in Alaska, as documented in a Memorandum of Understanding (US Forest Service, 2007). The range of wood bison in Alaska within the last 5,000 years was widespread, including Tanana and Yukon Basins in eastern interior Alaska, north to the Brooks Range, south to Anchorage, and west to Ruby along the Yukon River. The last reported sightings in Alaska occurred in early 1900s. At present, wood bison exist in the wild only in Canada, where numbers have increased to over 3,000 after declining to only a few hundred animals in the early 1990s. Skeletal remains and accounts from Alaskan Native elders indicate that wood bison occupied a large region in Alaska before disappearing during the last few hundred years.

The Forest Service role and contribution in support of the wood bison reintroduction program is to provide pasture land adjacent to existing AWCC facilities. In 2007 the Forest Service approved the establishment of 27 acres of NFS land that supplemented 65 acres at the AWCC, for a total of 92 acres of land used for captive breeding of wood bison for 15 years, as documented in the Wood Bison Pasture Decision Notice (WPBEA DN) (2007). More information on the background of the wood bison restoration program and the decision to graze wood bison on NFS land is documented in the WPBEA DN, and the WPBEA DN is hereby incorporated by reference. There are 132 wood bison currently within these 92 acres of pasture.

Purpose and Need for Action

The wood bison reintroduction effort has been delayed as ADF&G and USFWS work together to complete rules under the ESA section 10(j) to designate the reintroduction population as a non-essential experimental population, and provide protections and guidelines for the continued state management of the population once reintroduced. This delay has resulted in the current pasture lands at the AWCC, 65 acres, plus the 27 acres of adjacent NFS land under special use permit, for a total of 92 acres has become insufficient to support the growing wood bison herd. Currently there are 132 individual bison in the captive breeding program, or approximately 1.5 individuals per acre on average. ADF&G continues to determine the breeding rate of bison in the captive breeding program. Until there is more pasture available for the wood bison captive breeding program, the bison captive breeding population will not be allowed to increase to limit crowding. As crowding and competition increases it causes stress to the bison, which can jeopardize health and can result in the death of some animals. Stressed animals can become more vulnerable to bullying by other wood bison, to parasite infections, and to a generally reduced ability to thrive. For the safety and health of the wood bison and insufficient pasture space, some older bison have had to be culled to make space for new calves born this spring.

Thus the purpose of the Wood Bison project is to provide an adequate amount of NFS land suitable for wood bison grazing and near existing wood bison pasture to maintain healthy stocks of wood bison for the captive breeding program until successful reintroduction of wood bison occurs in Alaska, which is expected to occur over the next 15 years.

Proposed Action

The action proposed by the Forest Service to meet the purpose and need is establish Pasture B, 138 acres of new pasture, and continue grazing of wood bison on Pasture A for an additional 9 years, 27 acres of existing pasture, in Portage. Both pastures are located adjacent to the Seward highway and will be used year-round. Establishing Pasture B will include fencing, clearing alder and willow, seeding grass, creating an access route from the Seward Highway to access the pasture, and installing troughs and water pump. The captive breeding bison population will increase with the birth of new calves each year, and the 165 acres of bison pasture will be enough pasture for this expected growth in the captive breeding bison population. Both pastures could be used for up to 15 years. As reintroduction occurs and pasture need is lessened due to successful reintroduction, pasture use may be reduced on NFS land in coordination with ADF&G. When pasture is no longer needed for wood bison on NFS land, all improvements will be removed and native vegetation will be allowed to return to the site. Special use permits needed to implement this project would be issued to ADF&G. Details of the proposed action are below in Alternative 1.

Decision Framework

The responsible official is the Forest Supervisor. Given the purpose and need, the responsible official reviews the proposed action and the other alternatives in order to make the following decisions:

Whether to implement the wood bison project with the proposed action as described, or the proposed action as modified, or take no action at this time. If the decision is made to implement the proposed action or the proposed action as modified, a special use permit would be issued for a 15 year term that would include both Pasture A and B, and the existing permit for Pasture A would be terminated. All mitigations would be incorporated into the new permit.

Public Involvement

The proposal was listed in the Schedule of Proposed Actions in the July and October 2012 editions. A letter was mailed or emailed to 21 adjacent landowners and interested members of the public during scoping July 3, 2012 through August 2, 2012. A legal ad was published in the Anchorage Daily News on July 3, 2012 beginning the scoping period. A public notice was published in the Turnagain Times on July 5, 2012. A public notice flyer was also posted near mile post 78 of the Seward Highway at the project site, knowing that members of the public likely use the area for dispersed access to Placer River.

A total of 3 individuals submitted a total of 5 comments during scoping. From these comments, a total of 3 issues were identified and are summarized below, and addressed in detail in Appendix. 2.

Issue: The wood bison herd pasture is currently very close to anadromous fish waters, and high tides may flood parts of the pastures. There is concern that the wood bison use of these pastures close to these waters will damage the environment, particularly for salmon. There is concern that bison urine and manure would damage the environment. This issue is addressed in the Environmental Consequences section, significance factor 1 starting on page 8.

Issue: Pasture A is overgrazed and overpopulated, damaging the environment. The proposed action will continue this in Pasture B. This issue is addressed in the Environmental Consequences section, significance factor 1 starting on page 8.

Issue: There is a concern that when the area floods brucellosis may be spread from wood bison in the pastures. This issue is addressed in the Environmental Consequences section, significance factor 1 starting on page 8.

The Draft Environmental Assessment was distributed for public comment from October 23, 2012 to November 22, 2012, and a legal ad was published in the Anchorage Daily News on October 23, 2012 beginning the comment period. A notice was also published in the Turnagain Times on November 15, 2012. A total of 9 commenters submitted a total of 16 comments during the comment period. All of the commenters expressed support for the project although some expressed concerns about topics such as the weeds washing mitigation and potential bison-vehicle collisions on the Seward highway. A complete list of the comments received and the response to these comments is provided in Appendix 3 Draft Environmental Assessment Comments. Also, after the comment period closed two additional supportive comments were received.

Alternatives, including the Proposed Action

This chapter describes and compares the alternatives considered for the Wood Bison project. It includes a description and map of each alternative considered. This section also presents the alternatives in comparative form, sharply defining the differences between each alternative and providing a clear basis for choice among options by the decision maker and the public. Some of the information used to compare the alternatives is based upon the design of the alternative (i.e., distance of fencing from water) and some of the information is based upon the environmental, social and economic effects of implementing each alternative (i.e., quality of aquatic habitat with and without pastures).

Alternatives Considered But Eliminated From Detailed Study

Federal agencies are required by NEPA to rigorously explore and objectively evaluate all reasonable alternatives and to briefly discuss the reasons for eliminating any alternatives that were not developed in detail (40 CFR 1502.14).

Alternate Location

Alternative locations for Pasture B near the AWCC were considered in Portage. However, most private land is isolated or without road access. There are other areas of NFS land that have potential to be used for this purpose, however, these other parcels are too wet, are near recreational facilities, are isolated, or without road access. Thus it was determined that there were no alternate locations that were nearby the AWCC, and thus this alternative was dismissed as infeasible while still meeting the purpose and need of the project.

Alternatives Analyzed in Detail

Alternative 1 – The Proposed Action

The action proposed by the Forest Service to meet the purpose and need is to establish Pasture B, 138 acres of new pasture, and continue grazing of wood bison on Pasture A, 27 acres of existing pasture, in Portage. Both pastures are located adjacent to the Seward highway. Establishing Pasture B will include fencing the pasture, creating a temporary road from the Seward Highway to access the pasture, and installing troughs and water pump. Both pastures will be used until wood bison are successfully reintroduced into Alaska, which is anticipated to be approximately 15 years. Fencing and vegetation clearing to establish Pasture B is anticipated to occur in the fall of 2012. Specifically this will entail:

1. Fence approximately 138 acres of Forest Service land (see Figure 1) to create Pasture B. Fencing will be 8’ high and anchored by posts every 20’. Posts will be black or a dark, rusty brown. Fencing material will be dark in color and non-reflective. Fencing would be located at least 100’ from the shoreline of Portage and Placer Creek. No vegetation will be removed within 100 feet of

shorelines. Fencing will be located 150' from the edge of the Seward Highway, outside of the Alaska Department of Transportation (DOT) easement. Fence construction will likely require some brush clearing and cutting.

2. Retain brush approximately 25' of brush adjacent to the portion of the Pasture B fence along the Seward Highway such that the brush will shield the pasture, fencing and wood bison from view from the Seward Highway. Retain mature cottonwood trees. Retain petrified trees and fence petrified trees to protect from being them from being pushed over by the wood bison.

3. In Pasture B, place a trough approximately 3 feet off the ground in the new pasture. Place a new 2-inch ¾ gallon gas pump, mounted to the trough, and the water from the pump will feed directly into the trough. The input waterline from the Placer River will be above ground. A gas spill containment device will be placed under the gas pump whenever there is gas in the pump or gas being poured into or removed from the pump. A spill plan will be implemented in the event of a gas spill.

4. In Pasture B, construct an access route and turn-around by clearing brush and placing gravel from the Portage Gravel Pit to harden the road enough to prevent vehicles from getting stuck in spring and fall mud. A temporary corral will be placed adjacent to the access route for loading and unloading of wood bison, and will be removed from the site in-between uses.

5. In Pasture B, construct a cross fence to subdivide Pasture B as shown in Figure 1. A cross fence will provide a rest rotation that will provide for better grass recovery and soil productivity than without a cross fence. Pastures will have a simple rest rotation system such that when 50% of the biomass in a pasture is consumed, animals will be removed from that pasture. A 3-inch residual stubble height will be used to approximate when 50% of the biomass has been consumed, but may be adjusted based upon photo monitoring. When 6-8 inches of grow occurs after removal, then animals may be returned to that pasture.

6. In Pasture A, continue to permit the use of 27 acres of NFS land for wood bison pasture simultaneous as Pasture B (additional 9 years) (see map below), retaining existing fencing, waterlines, powerlines, and water troughs (same as original decision). Willow and alder will be planted along the portion of Pasture A fence line adjacent to the Seward highway to improve visual screening, as analyzed in the Wood Bison Pasture Environmental Analysis (WBPEA) and Wood Bison Pasture Decision Notice (WBPEA DN) hereby incorporated by reference, except that planting of alder and willow will begin within 2 years.

7. Total amount of wood bison to be placed in Pastures A and B will not exceed NRCS recommendations for conservative grazing use, of no more than the equivalent of 70 cow-calf pairs in Pasture B and 20 individuals in Pasture A. Both pastures could be used year round.

8. Existing shrub will be cleared and native grass seeds will be spread as needed within both pastures to increase grasses for grazing. If native grasses are unavailable, non-native grasses will be reviewed by botanist to ensure that non-native grass with the minimum potential to continue to persist in the area is used. Supplemental hay will be used. The intent is to use hay that is as clean and free of invasive seeds and plant parts as possible, and as certified weed-free hay is available, it will be used.

9. Prior to the completion of 15 years of wood bison use, when the reintroduction program has a reduced need for wood bison and less land is needed for wood bison, the amount of NFS land used for wood bison pasture will be evaluated by the Forest Service in coordination with

ADF&G, and NFS land no longer needed to support the captive breeding program will have all improvements removed and native vegetation allowed to repopulate.

10. After successful reintroduction of wood bison, all improvements will be removed and native vegetation will be allowed to repopulate (except for the gravel placed to harden the access route).

Alternative 2 – No Action

1. Under the No Action alternative no changes would occur. The current special use permit for Pasture A would continue unaltered, and wood bison would continue to forage in Pasture A.

Figure 1 Map of Pastures A and B. Location of access road (black line) is approximate and will be located according to access permit from DOT.

Mitigation for Alternative 1

Mitigation measures were developed to reduce some of the potential impacts the alternatives may cause.

1. Should any historic properties be discovered during archaeological survey, avoidance and mitigation measures will be determined by the heritage specialist using the established guidelines in the Programmatic Agreement with the State Historic Preservation Office (SHPO).
2. One-time vegetation clearing necessary for fence installation and to increase grasses will occur outside the migratory bird core nesting period of May 1 to July 15.
3. Prior to entry onto NFS land, ensure all off-road equipment engaged in construction or vegetation clearing have been cleaned/washed so they are free of visible dirt, plants, and plant parts. Take particular care to ensure undercarriages of vehicles are clean. In the event equipment is taken off site and then brought back, re-cleaning is only necessary if the equipment was used in another area with known infestations of white sweet clover, orange hawkweed, bird vetch, reed canarygrass, and/or invasive plants identified as highly or extremely invasive by the Alaska Natural Heritage Program (http://aknhp.uaa.alaska.edu/botany/akepic/non-native-plant-species-biographies). The Forest Service will be notified after equipment has been clean and is available for inspection.
4. Biannual monitoring to detect the presence of non-native plant species within both pastures will occur, see Appendix 1 for monitoring protocol. If non-native plant species are found within or adjacent to the pastures non-native plants and their parts will be removed and disposed.

Comparison of Alternatives

This section provides a summary of the effects of implementing each alternative. Information in the table is focused on activities and effects where different levels of effects or outputs can be distinguished quantitatively or qualitatively among alternatives.

Table 1 Comparison of Alternatives.

	Alternative 1 Proposed Action	**Alternative 2 No Action**
Number of Bison	70 cow-calf pairs and 20 individuals = 160 individuals	20 individuals
Acres of NFS Land used for pasture	165	27
Distance of Fence to Stream	100 feet in both Pasture A & B	100 feet in Pasture A No fence in Pasture B
Quality of Aquatic Habitat	Negligible decrease in aquatic habitat	No Change
Moose Winter Range Habitat Quantity	Loss of 111 acres or 1% of Twenty Mile moose winter range and browse habitat	No Change in moose winter browse habitat
Risk of Weeds Spread	Increase in risk due to new access road, seeding, and hay	No Change

Environmental Consequences

This section summarizes the physical, biological, social and economic environments of the affected project area and the potential changes to those environments due to implementation of the alternatives. It also presents the scientific and analytical basis for comparison of alternatives presented in the chart above. Environmental analysis for the establishment of Pasture A was documented in the WBPEA (2007), including analysis of effects on moose winter range, the possibilities of disease transfer, visibility of the wood bison from the highway and associated safety concerns, and potential impacts to fisheries, and this analysis is hereby incorporated by reference.

Context

The Wood Bison Project occurs in the vicinity of a former town of Portage, at the mouth of the anadromous Placer and Portage Rivers. This project occurs within the Portage Valley area, a natural narrow isthmus connecting the Kenai Peninsula to the mainland of Alaska. The mountainous and rugged terrain of the area results in most human travel through the area to come through Portage Valley, a transportation corridor including the Seward Highway and Alaska Railroad rail lines.

NFS land in the area is generally fragmented and discontinuous from the general forest due to the transportation pathways that bisect the area. The parcels of NFS land proposed as Pasture A and B are isolated from the general forest by the Seward highway, Placer or Portage creeks, and the Pacific Ocean. Both pastures are influenced by their close proximity to the Seward highway, such that non-native plants are easily introduced immediately adjacent to the Seward highway and spread by passing vehicles. The traffic rate of the Seward highway is high, high enough to be a barrier for wildlife movement (Waller & Servheen, 2005). People more frequently use this area than the general forest due to relatively easy vehicular access, particularly for winter over-the-snow access parallel to the Seward highway and summer river access. Thus these isolated relatively small patches of NFS land have less intrinsic natural benefit and function for wildlife, plants, fish, and natural ecosystem functions, than the general forest as a whole.

The area is within the Placer River/Twenty Mile moose winter and summer ranges. Within the winter range, the project area contains some of the lower elevation habitat that is generally accessible even in winters with deep snow accumulation. Since winter browse is believed to be a moose population limiting factor, winter browse access is an important moose habitat element (Ilse, 2012).

Significance Factors

1. Impacts that may be both beneficial and adverse. A significant effect may exist even if, on balance, effects are believed to be beneficial.

Providing grass browse in pasture supporting the wood bison reintroduction program, and thus reintroducing an extant wildlife species, does not provide a beneficial effect for the NFS land in the area, and thus was not used to offset the adverse effects of displacing wildlife from habitat and decreasing the amount of winter browse for moose, of increasing the risk of spreading and introducing noxious weeds, and increased fecal and urine flowing into Placer River. The adverse effects, without consideration of beneficial effects, are described below.

Wildlife

Mitigation measures will reduce the potential for adverse effects to migratory birds by not cutting vegetation during the core migratory bird nesting window of May 1 to July 15, as recommended by the USFWS (USDA Forest Service and USDI Fish and Widlife Service, 2008).

A decrease in the quantity of moose winter and summer range, 1% of the Placer River/Twenty Mile moose summer and winter range, is expected to have minor negative effects to moose. Additional discussion of the winter range of moose is in the WBPEA and is hereby incorporated by reference. The habitat lost is some of the lower elevation browse available in winter, which is particularly important moose browse during deep snow. The habitat affected is isolated from the rest of the winter and summer ranges due to the Seward highway. Cumulatively, this project affecting 1% of moose range in combination with past impacts to moose range, including private land homes, the AWCC, a campground on private land, and the Seward and Whittier highways, railroad, and future highway improvements planned, approximately 3% of the Placer River/Twenty Mile moose winter range and 5% of the Placer River moose summer range have had reduced habitat value. Across this 3% of winter range and 5% of summer range, reduced habitat value has eliminated forage across some of this area as well as displaced moose or made it more difficult for moose to forage in this habitat due to habitat fragmentation or human activity. These effects to moose habitat occur generally near the Seward highway and are concentrated in the vicinity of the wood bison project (Ilse, 2012). Affecting a total of 3-5% of winter and summer ranges is not expected to have substantial effects to the moose population because most of these areas will have reduced habitat value, but moose will still provide limited moose habitat, and effects at this scale are not expected to alter moose population trends.

Moose can be susceptible to brucellosis, a disease that bison can carry, although surveys of moose mixed with cattle in open ranges found no sign of brucellosis infection in moose (Forbes et al., 1996; Hudson et al., 1980). Wood bison at the AWCC have completed testing and not only are negative for brucellosis, but are also disease free. Even with negative test results there is a small chance that wood bison may have brucellosis due to inherent errors possible in tests (false negative), although this chance is minimal given the repeated tests over several years conducted at the AWCC. The disease is spread most commonly by contact with birthing fluids, blood, or meat through oral, eyes and open wounds, and thus the electric fencing of the pastures should result in negligible levels of interactions between moose and wood bison, and even less risk of transmitting brucellosis to moose (Department of Natural Resources - Michigan, 2012; Animal and Plant Health Inpsection Service, n.d.).

There is a seabird rookery adjacent to Pasture A. Pasture A has been operating with wood bison using the Pasture for several years without observed disturbance to the rookery, and thus the project is not anticipated to disturb the seabird rookery (Ilse, 2012).

Botany

The project will have “high” risk of introducing or spreading non-native plants. Non-native plants are abundant in areas of human disturbance, particularly along roads. The proposed pasture is adjacent to the Seward Highway and would be accessed by a newly developed access route which would become an ideal vector for the introduction of non-native species. The most likely species to become introduced are common ones such as the common dandelion, which is only modestly invasive. However moderately to extremely invasive species occur within 10 miles, including, white sweet clover, orange hawkweed, bird vetch, and reed canary grass. Care to ensure that equipment involved in vegetation clearing or ground disturbing activities is clean of visible dirt, plants, and plant parts is believed to reduce the risk of introducing or spreading noxious weeds. The use of certified weed free hay and native grass species when seeding when possible is also believed to reduce the risk of introducing or spreading noxious weeds (Charnon, 2012).

The grasses planted are pasture grasses that tolerate close grazing and form mats that protect the soil. Assuming that Pasture A and B have similar levels of production and that no more than half of grass production will be allowed for bison consumption, Pasture B will add approximately 2.5 months of forage for a herd of 70 wood bison cow-calf pairs, compared to the no action alternative. A cross

fence in the largest portion of Pasture B provides a rest rotation that would provide for better grass recovery and production than without a cross fence (Sonnen, 2012). Allowing no more than half of grass production is believed to provide protection for long term soil productivity (Sonnen, 2012). The proposed action will reduce current density of wood bison from 0.62 acres per individual to 1.7 acres per individual.

Fisheries

With wood bison confined to a relatively small area (compared to free ranging bison), there will be increased fecal, urea and organic, matter available to draining into the Placer River. Higher levels of nitrogen and phosphates available for uptake can lead to algae blooms reducing available oxygen for fish. However, given large tidal fluctuations every six hours, there is little measurable adverse effects on coho salmon or Dolly Varden Char, and thus overall effects to coho salmon and Dolly Varden Char are negligible. There will be no effects to fish habitat or other fish species (Lang, 2012).

2. The degree to which the proposed action affects public health or safety.

Alternative 1 is not anticipated to affect public safety because project activities are outside of the Alaska Department of Transportation (DOT) right of way (150 feet of centerline) for the Seward Highway, and visual screening along the fence line closest to the Seward Highway makes it unlikely that travelers will be able to see wood bison from the Seward Highway, and thus unlikely that travelers will cause traffic safety problems due to the presence of wood bison near the Seward Highway. Alaska DOT was contacted during scoping and no safety concerns were raised.

In the WPBEA there were concerns about public safety, with the concern that if people could see wood bison in Pasture A from the Seward Highway, it may have caused traffic safety problems. Mitigations of providing screening and retaining brush to obscure the pasture were implemented with the original WPBEA decision. Monitoring by Glacier RD personnel has found that brush retention was more effective than screening in Pasture A, and there have not been traffic safety complaints from the public or the Alaska DOT. Pasture B contains naturally more brush than Pasture A did originally, and screening is anticipated to meet or exceed current screening of Pasture A. Thus, the proposed action should not cause public safety problems on the Seward Highway.

Wood Bison are large animals that could cause harm to humans if humans and bison are in close proximity to each other. Thus for human safety it is important that the bison are managed such that there is minimal risk of bison escape from their pastures, or during bison handling operations. The AWCC has been operating Pasture A with a fence and electric fence for the past 6 years, and bison have not escaped the pastures and the AWCC. Other animals from the AWCC have escaped when electric fencing was turned off for repair (none have escaped from Pasture A). The electric fence is placed inside the pasture from the exterior fencing such that humans must reach through the perimeter fence in order to be able to touch the electric fence. The AWCC uses this fencing system with their animal exhibits where thousands of visitors each year have not been electrocuted by the fence.

If wood bison did escape either pasture, bison would likely stray across the Seward highway, since bison are unlikely to enter the ocean. Escaped bison could cause traffic disturbances, similar to when other wildlife are on roads, as well as traffic accidents. In Canada, where wood bison range freely along and across open highways there are problems with bison routinely travelling and foraging along highways due to easier access to grasses, higher winds reducing biting insects on road corridors, low snow depth along road ways, and long sight distance for seeing predators (Wildlife Collision Prevention Program, 2012). On the Alaska Highway bison herds in Canada have varied levels of vehicle collision mortality rates, depending on the speed of traffic and patterns of when the bison use the highway corridors (Wildlife Collision Prevention Program, 2012). For example the Nordquist

herd, which had the entire herd foraging along the highway during the winter census, lost 10% of the herd due to vehicle collisions in one winter, or 0.05% risk of collision per night per bison. The likelihood of bison escaping the pastures is considered low due to the fencing and lack of bison escapes from Pasture A, that the overall risk of bison escaping and causing a collision is considered very low.

3. Unique characteristics of the geographic area.

The project area occurs in the Portage area, where the 1964 Alaska earthquake resulted in sea water intrusion, killing trees and a significant portion of the native vegetation in the vicinity of the project area. Since the earthquake, native marsh, shrub, and grass types of vegetation have grown in the area. The project is not expected to alter the unique residual effects of the 1964 earthquake to the Portage area. A stand of petrified trees from the earthquake are within the project area, and these trees will be fenced off.

4. The degree to which the effects on the human environment are likely to be highly controversial.

The establishment of pasture for grazing of wood bison follows established methods that have been used countless times in private industry and government projects, and were used in the Wood Bison Pasture project that established Pasture A, see the WBPEA and WBPEA DN (2005) hereby incorporated by reference. Thus the effects to the human environment are not controversial.

5. The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.

The establishment of pasture for grazing of wood bison follows established methods that have been used countless times in private industry and government projects, and were used in the Wood Bison Pasture project that established Pasture A.

6. The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.

The establishment of pasture and continuance of use of existing pasture is a site specific decision in conjunction with a unique species reintroduction program. It is highly unlikely that another grazing species project will occur in the foreseeable future that could use this project as a precedent for use of NFS land in support of the captive breeding portion of a reintroduction project. The NFS land to be used in this project are to be removed from use as pasture at the completion of the project, further limiting the possibilities of this project enabling future considerations of similar projects. This decision does not involve a decision in principle about a future consideration.

7. Whether the action is related to other actions with individually insignificant but cumulatively significant impacts.

There are no other related or connected actions to this project, as there are no other plans or related efforts to graze animals on the Chugach National Forest, nor support a captive breeding program for a program to reintroduce an extant species. Other actions that may occur in the vicinity of the Portage Valley are Seward Highway improvements by the Department of Transportation (DOT) to reduce safety concerns and traffic congestion, and a relocation of the AWCC driveway. Scoping and consultation with DOT has found that proposed traffic improvements will widen and relocate the Seward highway in the area, which would move the Seward highway further away from the pastures based upon preliminary concept drawings dated August 8, 2012. The DOT project to widen the Seward highway will increase make the fragmented NFS land proposed for Pasture A and B more isolated and remote from the general forest.

8. The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places, or may cause loss or destruction of significant scientific, cultural or historical resources.

No documented cultural resources are located in or adjacent to Pasture B according to a literature review for historic properties potentially affected by the undertaking. An archeological survey will be completed to verify the presence or absence of any cultural resources. If cultural resources are discovered within the project area, avoidance and mitigation measures will be in place to avoid any adverse effects, in accordance with Appendix E: Approved Standard Protection Measures of the Third Amended Programmatic Agreement among the USDA Forest Service, Alaska Region, the Advisory Council on Historic Preservation, and the Alaska State Historic Preservation Officer regarding Heritage Program Management on the National Forests in the State of Alaska.

Several cultural resource sites are located within existing pasture A. Past monitoring has determined that fencing was adequate in protecting cultural resources from being affected by wood bison grazing activities (Hall, 2012).

9. The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.

There are no endangered or threatened species or its habitat in or adjacent to the project area. Thus there will be no effect to threatened, endangered species, or its critical habitat (Charnon, 2012; Ilse, 2012; Lang, 2012).

10. Whether the action threatens a violation of a Federal, State, or local law or other requirements imposed for the protection of the environment.

The proposed action will not threaten a violation of federal, state, or local law, or requirements imposed for the protection of the environment. It is consistent with:

Chugach Revised Land and Resource Management Plan

This decision is consistent with the Chugach Revised Land and Resource Management Plan (Forest Plan) (USDA Forest Service, 2002). The project is located within an area identified in the Forest Plan as having a management area prescription of Fish, Wildlife and Recreation (312) and Recreation River (331). See the project file for details on how the project is consistent with the Forest Plan.

Plants: No Sensitive plants are known to occur in the project area. The project will have "no impact" upon Sensitive plants because no plants were found in a thorough survey (Charnon, 2012).

Wildlife: One sensitive wildlife species, the Aleutian tern, has potential to occur near the project; however, no Aleutian terns have been observed in the vicinity of the project. There are no known nests or dens of wildlife Management Indicator Species or Species of Special Interest in the area (Ilse, 2012).

Fish: No Sensitive fish species are known to occur or have habitat in or adjacent to the project area. Management indicator species Coho salmon and Dolly Varden Char are present in the Placer creek adjacent to the project area. The area is a migratory route for both adult and juvenile fish. With bison confined to relatively small area, fecal matter would be available to drain into Placer Creek. Large tidal fluctuations every six hours, there is little anticipated measurable negative effect on Coho salmon and Dolly Varden Char.

ANILCA Section 810, Subsistence Evaluation and Finding

There is no documented or reported subsistence use in the project area (Lang, 2012).

ANILCA Section 811, Subsistence Evaluation and Finding

There is no documented or reported access that would be restricted as a result of this decision. For this reason, this action would not result in a significant possibility of a significant restriction of subsistence users having reasonable access to subsistence resources on NFS land (Lang, 2012).

National Historic Preservation Act of 1966

The Forest Service program for compliance with the National Historic Preservation Act (NHPA) includes locating, inventorying and evaluating the National Register of Historic Places eligibility of historic and archeological sites that may be directly or indirectly affected by scheduled activities. Regulations (36 CFR 800) implementing Section 106 of the NHPA require Federal agencies to consider the effects of their actions on sites that are determined eligible for inclusion in or are listed in the National Register of Historic Places (termed "historic properties"). A Forest Service Heritage Specialist has reviewed this project. Mitigations and monitoring is planned to result in No Historic Properties Affected in the area of potential effect for the proposed project.

Floodplain Management (Executive Order 11988), Protection of Wetlands (Executive Order 11990)

Executive Order 11988 has twin objectives of reducing the risk of flood loss and impacts on human safety, health, and welfare, particularly in regards to buildings and structures, as well as restoring and preserving the natural and beneficial values served by floodplains. This activity will not construct buildings or structures for humans within floodplains, as the project will install fencing within floodplains. The project will not impact the beneficial functions of floodplain water storage and water filtering because although vegetation will shift from shrub to grasses in Pasture B, vegetation will remain to protect the soil and provide the beneficial functions of the floodplain. Flood waters will not be restricted in flow because fencing will be wire fencing that allows flow of water.

Executive Order 11990 directs Federal agencies to minimize the destruction, degradation or loss of wetlands, and to preserve and enhance the natural and beneficial values of wetlands. New construction in wetlands shall be avoided unless there is no practicable alternative and the proposed action includes all practicable measures to minimize harm to wetlands. Resource factors to consider for wetlands include:

(a) public health, safety, and welfare, including water supply, quality, recharge and discharge; pollution; flood and storm hazards; and sediment and erosion;

(b) maintenance of natural systems, including conservation and long term productivity of existing flora and fauna, species and habitat diversity and stability, hydrologic utility, fish, wildlife, timber, and food and fiber resources; and

(c) other uses of wetlands in the public interest, including recreational, scientific, and cultural uses.

The project will have minor negative impacts on wetlands by reducing species and habitat diversity at the project location, displacing native fauna to adjacent habitat and excluding use native fauna from using the area with electric fencing for approximately 15 years (Ilse, 2012). The water supply, recharge, and discharge wetland functions remain unaltered. Erosion and sedimentation should not be altered by project activities, as the project contains buffers where

native vegetation is retained adjacent to the Placer River and can filter and trap sediment (Lang, 2012). Retained clumps of shrub native vegetation within the pasture will also act as sediment and erosion traps. Allowing wood bison use of these pastures will increase the amount of urea and fecal matter to the area, which may have adverse effects upon wetlands by increasing nutrient availability and increased nutrient run off from wetlands into adjacent Placer River. However, due to dilution and dispersion nature of the tidal cycles, the effects of increased nutrient levels will be negligible (Lang, 2012).

Recreational Fisheries (Executive Order 12962)

The wood bison pastures are adjacent to anadromous Placer river. A 100 foot protection buffer is believed to provide adequate protection to anadromous fish and habitat and thus the project will not have adverse effects to anadromous fish related to this Order (Lang, 2012).

Invasive Species (Executive Order 13112)

Executive Order 13112 directs Federal agencies to identify actions which may affect the status of invasive species; prevent the introduction of invasive species; detect and respond rapidly to and control populations of such species; monitor invasive species populations; and to provide for restoration of native species and habitat conditions in ecosystems that have been invaded. An invasive plant risk assessment has been completed for this project. The risk of introduction and spread of non-native species is high. Although non-native plants are generally absent across much of the CNF, they are abundantly present in areas of human disturbance, particularly along roads. The proposed pasture is adjacent to the Seward Highway and would be accessed by a newly developed access route which would become an ideal vector for the introduction of non-native species. The most likely species to become introduced are common ones such as the common dandelion, which is only modestly invasive. However, there are several species that are ranked as moderately to extremely invasive occurring within 10 miles of the project area. These include species such as white sweet clover, orange hawkweed, bird vetch, and reed canary grass.

Pasture A was monitored in 2009 and 2010. The monitoring was focused on species ranked as moderately-extremely invasive in the state of Alaska. At the time of monitoring, there were no ranked moderately-extremely invasive found within in the pasture (Charnon, 2012). For Pasture B the risk of introducing moderately to extremely invasive species is likely less than the risk of common non-native species (Charnon, 2012).

Magnuson-Stevens Fishery Conservation and Management Act

The project area is adjacent to Placer River, an anadromous stream and essential fish habitat (EFH). Bison will be contained by fencing and will not directly affect streams or streambanks. There is potential for fecal matter draining into Placer River, although the volume of water flow and the tidal fluctuations are believed to negate any potential adverse impacts from fecal matter. Therefore, this project will not affect EFH (Lang, 2012).

National Forest Management Act

The proposed action is consistent with the National Forest Management Act of 1976 and its requirements detailed in 36 CFR 219.27, including those for the following subjects below.

Endangered Species Act

The proposed action is consistent with Section 7(c) of the Endangered Species Act. As documented in the Biological Assessment and Biological Evaluation, the action will have “no effect” on any endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973 (Lang, 2012).

Clean Water Act (Public Law 92-500)

This analysis is consistent with the Clean Water Act, which requires all federal agencies to comply with its provisions. The Clean Water Act regulates forest management activities near federal waters and riparian areas. Best Management Practices are standard practices that have been shown to be effective at minimizing impacts to water quality. The project is expected to have negligible effects to water quality (Lang, 2012).

Environmental Justice (Executive Order 12898)

The proposed action is consistent with Executive Order 12898, which requires that all federal actions consider potentially disproportionate effects on minority and low-income communities, especially if adverse effects on environmental or human health conditions are identified. Adverse environmental or human health conditions created by any of the alternatives considered would not affect any minority or low-income neighborhood disproportionately. The activities proposed in all alternatives were based solely on the existing and desired condition of the resources, sensitivity of the environment, and practical treatments in response to the purpose and need. In no case were the activities based on the demographic makeup, occupancy, property value, income level, or any other criteria reflecting the status of adjacent non-federal land. Reviewing the location of the proposed activities in any of the alternatives in relationship to non-federal land, there is no evidence to suggest that any minority or low-income neighborhood would be affected disproportionately. Conversely, there is no evidence that any individual, group, or portion of the community would benefit unequally from any of the actions in the proposed alternatives.

Special Area Designations

There are no specially designated areas (e.g., Research Natural Areas, Inventoried Roadless Areas, Wilderness Areas, and Wild and Scenic Rivers) that would be affected by the proposed action or alternatives.

Consultation and Coordination

The Forest Service consulted the following individuals, Federal, State, and local agencies, tribes and non-Forest Service persons during the development of this environmental assessment:

ID TEAM MEMBERS:

Jessica Ilse, IDT Leader and Wildlife Biologist

Betty Charnon, Ecologist

John Lang, Fisheries Biologist

Heather Hall, Archeologist

FEDERAL, STATE, AND LOCAL AGENCIES:

Meg Mueller, Natural Resources Conservation Service

Karin Sonnen, Natural Resources Conservation Service

Robert Stephenson, Alaska Department of Fish and Game

United States Fish and Wildlife Service

Kelly L. Peterson, Alaska Department of Transportation

David Post, Alaska Department of Transportation

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Appendix 1 Monitoring Protocols

The wood bison project has incorporated monitoring actions in order to determine if mitigation measures protecting cultural resources are effective and also to mitigate the increased risk of introducing or spreading noxious weeds. Appendix 1 provides the details of the monitoring protocols for the wood bison project. For efficiency, all monitoring may be conducted during the same site visit. The permit holder shall be responsible for conducting or overseeing monitoring and ensuring that monitoring results are submitted to the special uses permit administrator by December 31st each year. A note documenting monitoring trips, photos and monitoring results will be stored in the project monitoring file located at: O:\NFS\Chugach\Project\GRD\WoodBison\ProjectFile\10-Implementation\Monitoring

Condition Trend Photo Point Monitoring

Photo point monitoring will occur once during the summer annually in pastures to detect the trend of the condition of the pasture. Monitoring will involve taking a picture at an established photo monitoring point for comparison from year to year. Comparison of the grasses, soil, and overall conditions of the pasture between pictures from different years will be used to determine if conditions of the pasture degrade over time with grazing use. Each year the following will be recorded: date and time picture taken, number of bison using the pasture, whether bison are currently using pasture or not, how many days since the pasture had been most recently rested, and any additional observations regarding conditions of the pasture.

The pasture condition trend will be interpreted by comparing the photos over time with assistance from NRCS. Based on these trends:

1. If monitoring determines that the condition of the pasture has degraded, then the amount of biomass retained in the pastures will be increased. This would occur by decreasing the number of bison in pasture and/or increasing the residual stubble height.

2. If monitoring determines that conditions have not degraded and NRCS recommends allowing increased grazing intensity, then the amount of biomass retained in the pasture could be decreased. This would occur by decreasing the residual stubble height.

The special uses permit administrator will be responsible for ensuring that monitoring takes place and is documented according to this protocol, as well as to coordinate assistance from NRCS in interpreting monitoring results. It is estimated that monitoring will cost approximately $150 every year, assuming it takes one person two to four hours to find the photo monitoring point and take a picture, as well as compare the condition of the area to previous pictures. Over the lifetime of this project, photo point monitoring is anticipated to cost the permit holder approximately $2,250 in time and materials.

Noxious Weeds Monitoring

Monitoring will occur once during the summer biannually (every other year) in pastures and along the temporary access route to detect the introduction of noxious weeds to the project area. A common plant survey type, the General survey method will be used, and is described in more detail in the plant specialist report (Charnon, 2012). People conducting monitoring will be experienced in identifying known invasive plants as listed in the plant specialist report (Charnon, 2012). Monitoring will continue until the use of this land as wood bison pasture has ceased and monitoring after the removal of improvements has completed has documented a lack of noxious weeds. Monitoring is needed for the duration of the project primarily because 1) the use of supplemental feed provides a continued vector for potentially introducing invasive species, 2) off road equipment and vehicles provide a vector for introducing invasive species.

If monitoring has discovered noxious weeds in the project area, the noxious weeds will be removed by hand, preferably after seed set, and discarded.

The special uses permit administrator will be responsible for ensuring that monitoring takes place and is documented according to this protocol. It is estimated that monitoring will cost approximately $500 every other year, assuming it takes a team of two people one day to monitor the two pastures. Over the lifetime of this project, noxious weed monitoring is anticipated to cost the permit holder approximately $4,000 in time and materials.

Cultural Resources Monitoring

Several cultural resource sites are located within the existing pasture, and have been excluded from wood bison with fencing. Monitoring will measure the effectiveness of the fencing mitigation at protecting cultural resources. Monitoring will occur by following established cultural resource monitoring protocols, same as monitoring that was conducted in 2009 and 2010. Monitoring will continue biannually (every other year) until the use of this land as wood bison pasture has ceased.

In addition to documenting the monitoring in the project monitoring file, monitoring surveys will be documented using the Heritage module in the nationwide Infra database and will be reported annually to the State Historic Preservation Officer in the Region 10 Heritage Programs Annual Report.

If monitoring discovers that mitigations are not effective in preventing damage to cultural resources, fencing may be relocated or strengthened.

The special uses permit administrator will be responsible for ensuring that monitoring takes place and is documented according to this protocol. It is estimated that monitoring will cost the permit holder approximately $400 every other year, assuming it takes one person one day to monitor the known cultural sites. Over the lifetime of this project, cultural resource monitoring is anticipated to cost the permit holder approximately $6,000 in time and materials.

In addition to formal monitoring above, when personnel are in the pastures tending to the bison, personnel will note if fencing protecting cultural resources sites appears to have been compromised. Compromised fencing will be repaired and the special uses permit administrator will be notified as soon as practical.

Appendix 2 Scoping Comments

A total of five comments were received and three issues were identified from these comments. Two comments were received regarding issue 1, about damage to the natural environment. One comment was a request for a map and not related to any issues concerning the proposed action. More detail about the comments received is in the project file.

Issue 1: The wood bison herd is currently very close to anadromous fish waters. High tides sometimes flood parts of the areas. There is concern that the wood bison will damage the environment, including salmon. The wood bison urinate and spread manure, destroying or damaging the environment.

> **Response 1:** Wood bison urine and manure is similar to other ungulates that naturally deposit their excrement scattered across the forest, including in Portage Valley. Environmental damage from wood bison excrement is not documented in scientific literature to our knowledge; however, wood bison will be confined to a relatively small area (compared to free ranging wood bison or other ungulates), there will be an increased fecal, urea and organic, matter available to draining into the Placer River. Higher levels of nitrogen and phosphates available for uptake can lead to algae blooms reducing available oxygen for fish. However, given large tidal fluctuations every six hours, the potential for fecal matter to flow out of the pasture is minor (Lang, 2012). Also buffers of vegetation will be retained within 100 feet of streams and rivers, and thus retained vegetation will filter and reduce the potential for fecal matter to flow into water. Thus there is little measurable negative effects on Coho salmon or Dolly Varden Char, and thus overall effects to Coho salmon and Dolly Varden Char are negligible. There will be no effects to fish habitat or other fish species (Lang, 2012). See Wildlife Effects and Fish Effects sections of EA on page 8.

Issue 2: The current pasture [Pasture A] is overgrazed and over populated.

> **Response 2**: In the past, Pasture A may have appeared barren because when Pasture A was established, the shrubs were removed to make space for grass. NRCS specialist, Meg Mueller, was consulted to determine carrying capacity, appropriate grazing strategy, and appropriate monitoring to ensure that the pastures will not be overgrazed or overpopulated. In addition, photo monitoring of Pasture B will be used to adjust grazing intensity as needed to ensure that long term productivity and health of the land is maintained. See Botany Effects section of EA on page 8

Issue 3: Did the wood bison get treated for brucellosis? There is a concern that when the area floods brucellosis may spread.

> **Response 3:** The wood bison have been routinely tested for many diseases including brucellosis for several years. Tests have determined that the wood bison herd at the AWCC is disease free, and thus there is negligible potential for the wood bison herd at the AWCC to spread brucellosis to wildlife or other animals. Also the pastures will be electric and wire fenced to keep bison in and wildlife out, making it unlikely that wildlife and bison would interact in a manner that could spread brucellosis (typically with contact of bodily fluids). See Wildlife Effects section of EA.

Appendix 3 Draft Environmental Assessment Comments

A total of 9 commenters provided comments on the Draft Environmental Assessment during the comment period. Six of these commenters expressed general support of the wood bison project and its role in the overall Wood Bison Reintroduction Program. A summary of comments, organized alphabetically by commenter, and the response to these comments is below. More detail about the comments received is in the project file. After the comment period closed two supportive comments were also received.

Name	Comment	Issue or Topic identified	Response
Bruce Bustamante, AWCC Board of Directors	General support for the Wood Bison Project and larger Wood Bison Reintroduction Program.	Non-Issue: General support.	Thank you for your comment.
Chris Von Imhof, AWCC Board Member	General support of the project. The wood bison desperately need more space.	Non-Issue: General support.	Thank you for your comment.
David James, Regional Supervisor ADF&G	We understand that there are three petrified trees of concern that the USFS would like to have fenced. We will need to have those identified to us before we move bison into the pasture.	Non-Issue: Need to identify the petrified trees to fence off prior to moving bison into the pasture so that the petrified trees can be fenced off.	Trees will be identified prior to moving bison into pasture, and information about the location of the trees will be included in the special use permit.
David James, Regional Supervisor ADF&G	Our understanding is that AWCC is negotiating a different entrance to their facility. Within that agreement will be final provisions for planting shrubs along Pasture A.	Non-Issue: AWCC is negotiating a different entrance [road] to their facility and for efficiency the planting along Pasture A could occur after the new entrance road is installed.	The Forest Service has not received a specific proposal for relocation of the AWCC entrance road (partially located on NFS land). Therefore, there is no reason to delay planting. Planting of willow and alder are to begin within 2 years in the proposed action. Should the AWCC entrance road be relocated, additional planting may be necessary to maintain vegetative screening.
David James, Regional Supervisor ADF&G	We want to clarify that "70 cow-calf pairs" means "equivalent of 70 cow-calf pairs", because we will be putting bulls in that area as well.	Non-Issue: Clarify that "70 cow-calf pairs" means the "equivalent of 70 cow-calf pairs", because we will be putting bulls in that area as well.	Thank you for your comment, clarification has been added (page 6 Item #10). The intent is that the maximum capacity of Pasture B is the equivalent of 70 cow-calf pairs.

David James, Regional Supervisor ADF&G	We surmise that any gravel road bed which has been added will not have to be removed. We surmise that it will be simply be left, and vegetation will populate the area.	Non-Issue: The gravel road bed for the access route into Pasture B will not have to be removed, that it will be simply left and vegetation will populate the area after the completion of the project.	Thank you for your comment, clarification has been added (page 4). The gravel for the access route will not need to be removed when improvements are removed at the end of the project.
David James, Regional Supervisor ADF&G	We fully support taking reasonable precautions to prevent introduction of invasive plant species by vehicles travelling in an area. Fortunately our methods and track record with Pasture A shows that we have used adequate precautions already.	Non-Issue: Our track record shows that we have used adequate precautions already, and we fully support taking reasonable precautions to prevent introduction of invasive plant species.	A risk of this project is the introduction of invasive plants, which is still
Frans Weits, Girdwood Rotary	General support for the Wood Bison Project and the larger Wood Bison Reintroduction Program.	Non-Issue: General support.	Thank you for your comment.
Karla Dutton, Defenders of Wildlife	General support for the Wood Bison Project and larger Wood Bison Reintroduction Program.	Non-Issue: General support.	Thank you for your comment.
Matthew A Cronin, Research Professor of Animal Genetics	The statement that wood bison were sighted in Alaska in the early 1990s should be verified and referenced. There is an inconsistency in the statement that wood bison disappeared during the last few hundred years but were sighted in the late 1990s (page 2).	Issue: There is an inconsistency in when bison were last sighted in Alaska.	Wood bison were sighted last in the early 1900s, and the Draft Environmental Assessment contained a mistake citing this information. The date has been corrected (page 2).
Matthew A Cronin, Research Professor of Animal Genetics	It seems that collisions of bison and vehicles on the highway would be a potential impact and that could be noted and addressed.	Issue: Bison, if they were to escape the pastures, could cause collisions with vehicles and cause harm to bison, people, and vehicles.	This issue of bison collisions and bison escaping pastures has been disclosed in the Safety discussion (page 10). No bison has escaped from Pasture A to date.

Matthew A Cronin, Research Professor of Animal Genetics	The mitigation measure seems impractical (all equipment and vehicles that access the area off the paved highway are required to be cleaned of all attached mud, dirt, and plant parts). Exemptions to this should be allowed such as exempting vehicles of AWCC, veterinarians, botanists doing invasive plant surveys and removals, and others needing access to the pasture. It should also be stated where the vehicle washing will be done, and how long in time and space prior to getting access washing should be done. It would be easier to give AWCC authority to allow vehicles to enter when necessary and have the invasive plant surveys take care of any problems, than to require high pressure washing of vehicles in Portage.	Issue: Weeds washing mitigation is expensive and inconvenient.	The weeds washing mitigation has been clarified (page 7). Weeds washing does not need occur every time a vehicle travels between AWCC and Pasture B. Vehicles that travel to the pastures but do not engage in vegetation clearing or construction activities do not need to be washed. Vehicles that travel off road or are engaged in construction activities do need to be washed.
Randall R. Rogers	General support and agreement that the project will help to maintain the health and vigor of the captive wood bison herd.	Non-Issue: General support.	Thank you for your comment.
Rita Yates, ADF&G	Mitigation 3 - weeds washing is expensive and inconvenient. Does it need to be washed each time it goes between AWCC and Pasture B, for example for each load of hay each time they feed? Please try to keep it practical. What about when there is snow on the ground?	Issue: Weeds washing mitigation is expensive and inconvenient.	The weeds washing mitigation has been clarified (page 7). Weeds washing does not need occur every time a vehicle travels between AWCC and Pasture B. The primary weeds concern is during construction and if equipment is used in another area known to have highly invasive plants.
Robert F	The disease risk can never be	Non-Issue: The risk of	Thank you for the information and this has been

Gerlach, VMD, Alaska State Veterinarian	considered to be zero but in regard to this herd, the risk is extremely small. One minor comment on the document (page 9) related to brucellosis, I do not believe that saliva is considered to be a transmission route for *Brucellosis abortus*. The disease in cattle, water buffalo, and bison is caused almost exclusively by *B abortus* ; however, *B suis* or *B melitensis* is occasionally implicated in some cattle/bison herds. Natural transmission occurs by ingestion of organisms, which are present in large numbers in aborted fetuses, fetal membranes, and uterine discharges. Cattle/bison may ingest contaminated feed and water, or lick contaminated genitals of other animals. Venereal transmission by infected bulls to susceptible cows appears to be rare. So *B. abortus* is usually transmitted between animals by contact with the placenta, fetus, fetal fluids and vaginal discharges from an infected animal.	brucellosis is extremely small and saliva is not considered a transmission route for *Brucellosis abortus*.	corrected (page 8).
Robert F Gerlach, VMD, Alaska State Veterinarian	After reading this document and with firsthand experience with the management of the wood bison herd, I feel there is adequate oversight to ensure the land is not overgrazed.	Non-Issue: General support.	Thank you for your comment.