

CHAPTER 4

ENVIRONMENTAL CONSEQUENCES

This Chapter summarizes the effects of implementing each alternative on the affected environment described in Chapter Three. It also presents the scientific and analytical basis for the comparison of alternatives presented in the alternatives chapter.

This chapter shows the changes that can be expected from implementing the action alternatives or taking no action at this time. The consequences are based on existing conditions in the project area, which are represented by Alternative #1 – No Action (continued grazing). Changes from existing conditions in the project area, which are represented by Alternatives #2 and #3 can be compared to Alternative #1. The consequences that would result from Alternative #1 – No Action, are described first, followed by each of the action alternatives evaluated separately. Where consequences are the same from one alternative to another, there will be a reference to a preceding alternative discussion.

Alternatives and Consequences by Issue _____

Issue – Livestock Distribution & Management

Cattle, given the opportunity, will spend a disproportionate amount of time in a riparian area as compared to adjacent drier (xeric) uplands. The time spent may be five to 30 times longer than expected based on extent of the riparian area (Clary and Webster, 1989). Livestock distribution and management is difficult in rangelands on the Lower East Fork and Upper East Fork Allotments where remote, forested, steep and dissected terrain and available livestock water limit effective herd management. Sensitive resources associated with available water limit use levels across upland rangelands, unless management techniques such as herding, salt placement, water development, and fencing can be effectively applied in combination with grazing prescriptions to limit the intensity, duration and timing of grazing impacts (Ehrhart and Hansen, USDI, BLM, 1997).

As more restrictive management standards are established through forest planning or ESA consultation, it becomes increasingly difficult to obtain good distribution and grazing utilization patterns over upland rangelands. The intensity of herding practices and other resource investments required to meet standards limit the economic and realistic feasibility of implementing these practices. Monitoring results in both East Fork Allotments indicate that obtaining proper livestock distribution while meeting riparian management standards and objectives is extremely difficult. Significant efforts have been made by the permittees to meet the established standards since 1991. Results have varied. On many key areas, results have been poor.

Alternative #1

Direct and Indirect effects:

Given continuation of current stocking levels, FLRMP and ESA consultation standards for riparian areas would not be met on all key areas in the allotments. Adaptive management of stocking levels and reduced grazing seasons since 1992 have resulted in an average of approximately 25% reduction from permitted use. During recent years use levels have been reduced by 50%, and still riparian management standards have not been met in some drainages.

Adaptive management strategies would continue to be applied to attempt to meet standards. These strategies would include continued reductions in grazing use and grazing season averaging approximately 553 HMs on the Upper East Fork Allotment and 962 HMs on the Lower East Fork Allotment. Livestock control difficulties outlined in Chapter 3, including livestock drift off the allotment, into rested areas, and livestock remaining on the allotments after the removal dates, would continue. Upper Bowery Creek, the South and West Forks, Upper Silver Rule/Big Lake Creeks, Sullivan Creek and Big Boulder Creek pastures would continue to be the chief areas of concern. At these use levels, it is probable that there would be continued problems meeting grazing riparian management standards and objectives on a significant number of key areas within the allotments.

Allotment boundaries would initially remain the same including approximately 58,000 acres (3450 acres capable) in the Upper East Fork Allotment and 73,000 acres (15,000 acres capable) in the Lower East Fork Allotment. Some modifications to pasture boundaries and management prescriptions could occur over time in response to adaptive management process.

Incidents of livestock being in a non-permitted place and/or at a non-permitted time and failure to meet management standards may be addressed using permit violation procedures. This could result in remedial actions. If the prescribed remedial action is ineffective or does not take place, then the grazing permit would be subject to further penalties. Additionally, failure to meet the prescribed standards associated with ESA consultation requirements may lead to reinitiating consultation. The results of re-initiating consultation are uncertain but would likely include application of additional management requirements, grazing restrictions and stocking adjustments.

Riders would continue to have limited success in controlling livestock distribution, mainly due to the amount of time needed to access portions of the allotment. Fence or water development maintenance requirements would remain the same in the short-term but could increase over time in response to adaptive management decisions.

Cumulative effects

It is unlikely this alternative would provide a sustainable level of grazing use in the long-term (> 5 years). Under this alternative, the permittees would remain in an uncertain position, with the continued risk of incurring permit violations and subsequent penalties, or administrative actions that could further modify their grazing permits. Future reductions of permitted numbers, grazing season, or allotment area would likely occur over the long-term. At some point, potential reductions in conjunction with increasing management investments and associated costs could render the allotment uneconomical to operate.

Alternative #2

Direct and Indirect effects:

Changes in allotment boundaries would reduce the allotments to approximately 35,000 acres (2170 acres capable) for the Upper East Fork allotment and 30,000 acres (9250 acres capable) for the Lower East Fork Allotment. Using adaptive management on reduced allotment boundaries to meet management objectives would result in significant permit reductions in the short-term. Permitted grazing numbers on the Upper East Fork and Lower East Fork allotments would be reduced by 66% and 70% respectively to 349 HMs on the Upper East Fork allotment and 590 HMs on the Lower East Fork allotment. A minimum one-year notice would be given to the permittees before any reductions would be implemented [36 CFR 222.4(a)(8)].

The reductions in sustained grazing use that would occur as a result of adaptive management actions and changes in the allotment boundaries are considerable. This scenario, combined with continuing investments in grazing management create a difficult economic situation for the permittees. However, there is a strong likelihood that management standards and objectives would be met, grazing would be at a sustainable level, and permitted use would remain stable over the long-term. Although the amount of time or investments necessary may remain stable, the net effect to the permittees would be a lower total workload. It is probable that the reduced workload would be more consistent with their current capabilities and resources. Control of livestock may be more successful given the modified allotment boundaries containing a higher percentage of suitable rangeland.

Four livestock watering facilities and 3.7 miles of fence would need to be removed. Three cattleguards / gates and 1.5 miles of new fence would be constructed. A new drift fence constructed on the West Fork of the East Fork will prevent livestock from drifting over the top into the Salmon/Pole Creek Area. Drift fences constructed at the French Creek Trail and Big Creek Trail would reduce the risk of drift off the allotment into the 4th of July, Washington Lake and Chamberlain Basin areas. There would be less reliance on marginally effective topographic barriers along the adjusted allotment boundaries. Riders would also have better success in controlling livestock distribution with the removal of remote areas from the allotments and improved fencing in the remaining area.

Cumulative effects:

There would be lower risk of permit violations and more stability and security for ranching operations. Reductions in numbers or season, such as during drought, to meet management standards are significantly less likely to occur. It is probable that livestock management issues would not lead to re-initiating consultation under ESA with NOAA Fisheries or USFWS. It is uncertain how any benefits related to long-term stability and security will be offset by significantly reducing the economic base of the permittees' grazing operations.

There would be a need to remove fences and livestock watering facilities from areas no longer grazed. If left in place, their condition could deteriorate and remaining materials, especially fence wire would become a hazard.

Alternative #3

Direct & Indirect effects

Under this alternative, livestock grazing would be eliminated (with the exception of recreation stock use). While a minimum of two years notice would be required prior to cancellation of grazing permits (36 CFR 222.4(a)(1)), grazing use would be reduced over a three-year period resulting in a total cessation of grazing in the 4th year. Required investments related to management and distribution of livestock during this period would decrease as well. However, maintenance responsibilities would not decrease proportional to the 20-40-60% decline in authorized grazing use during the three-year phase out period.

Cumulative effects

After the three-year phase out period, there would be a need to remove fences and livestock watering facilities. Some ponds or collection pits may be left in place. However, if fences or troughs are left in place, their condition would deteriorate and remaining materials, especially fence wire would become a hazard for recreation livestock, recreation users, and big game.

Issue – Plant Diversity

Effects common to all Alternatives

The SNRA has a started a weed treatment effort that will continue to be implemented despite the selected alternative. Areas of known invasion will be treated annually and their containment and/or eradication will be emphasized. New infestation discovered will be incorporated into the weed management program and will be treated, contained and/or eradicated. Road- and trail-side infestations will likely have more successful treatment and containment than those infestations that are located in remote and isolated areas, given that the ability to detect and treat decreases as non-native plant species move away from travel corridors (Southwest Idaho Ecogroup LRMP FEIS, 2003).

Alternative #1

ALPINE

Direct/Indirect Effects

This alternative would allow for livestock grazing and associated impacts to occur in areas that are currently permitted as well as allow for unauthorized use access in key alpine areas such as Railroad Ridge and Boulder Chain Lakes Region. The unique diversity of Railroad Ridge has been well documented (Richardson and Henderson, 1999) and this area is host to several species and communities not found elsewhere in Idaho (see Chapter III). Current livestock management practices (Alternative 1) have allowed for and would continue to contribute to both direct and indirect effects within these unique alpine ecosystems. Although geographic barriers do offset some unauthorized use in areas outside of the allotment boundaries, the gentle topography of areas like Railroad ridge allow for access and congregation within these fragile plant communities.

In general, large mammal grazing can lead to important shifts in community composition by impacting the demography of species and communities. Plant community responses to grazing may include: composition shift from “desirable” to “less desirable” species for grazing animals, increased shift to woody less palatable species, decreased dominance of tall perennial species, increased annual and weedy species, and decreased species richness (Cottam et al., 1986; Noy-Meyer et al., 1989; Schupp, 1990; Murray, 2001). Direct impacts from livestock grazing in alpine ecosystems have been documented to include: reductions in cover and height of alpine species, herbivory (although this effect is likely low to none in cushion plants), trampling, loss of plants, destruction of mycorrhizal fungi, and disrupted seed bank conditions. Indirect impacts from livestock use and associated impacts could include soil compaction, introduction of noxious weeds, decreased gene flow, decreased soil moisture, pollinator impacts (ground nesting bees could be killed or nests destroyed), loss of alpine community composition due to conversion, invasion of woody or tree-species, and increased competition for resources from invasive species (Murray 2001; Cole and Monz, 2002; Klug et al. 2002). Implementation of this alternative would not preclude the USFS from meeting NFMA requirements for diversity. Impacts documented in Railroad Ridge include soil compaction, decreased dominance of perennial species, species conversion to less desirable species, and herbivory.

Native herbivores and large mammals will continue to utilize these regions and may contribute to some of the direct and indirect impacts described above. Plants in the Intermountain West have evolved with herbivory by insects, rodents, and wildlife species (elk, deer, and big horn sheep), thus some plants may have evolved with some pressure from natural grazing intensities and may be somewhat adapted to these pressures (Burkhardt 1995).

Cumulative Effects

Increasing recreational use has been documented within alpine regions throughout the country (Sandercock and Martin, 2001). Current recreational impacts pose major threats to the alpine communities found within and adjacent to the allotments. Other recreational impacts including “very heavy” and “heavy trail” use (Recreation use – Chapter III) and concentrated use areas (have been documented within several of the alpine communities. Under Alternative 1, recreational impacts and uses will likely remain the same or increase given current recreational use trends. Thus, recreational impacts may be or may continue to be exacerbated under this alternative given that alpine conditions may be already be degraded through livestock use and associated impacts.

Alpine conditions under Alternative 1 may continue to be impacted by uses such as livestock grazing, recreation, and mining activities. These alpine areas would still be accessible to livestock in this alternative, therefore this alternative may not allow for FRLMP MA#3 Objective 03108 to be met. These impacts may degrade alpine ecosystem conditions and make these communities more susceptible to the impacts of global warming or climate change.

While no noxious weeds have been documented on Railroad Ridge or other alpine ecosystems within or adjacent to the allotment boundaries, Dalmatian toadflax infestations have been documented on FS road 120 and FS road 677 on the SNRA well below Railroad

Ridge. Access to railroad ridge via FS 677, increases the risk of spread greatly because vehicles and ORVs can serve as vectors for this invasive species. The SNRA is actively spraying and treating these infestations and will continue to (Phalen, 2003).

THREATENED, ENDANGERED, PROPOSED, OR CANDIDATE SPECIES

Slender Moonwort (*Botrychium lineare*)

Direct and Indirect Effects

This alternative would allow for authorized grazing in areas that are currently permitted, although unauthorized livestock grazing in areas adjacent to allotments may continue. The current Lower East Fork allotment boundary runs along the watershed break several hundred feet above the known slender moonwort population. This boundary is not fenced given extreme weather conditions and the maintenance obligations that would be required to ensure a fence remained in place. Under Alternative 1, the allotment boundary would not change and the possibility for unauthorized use within the population would continue to occur. The region below the allotment boundary is extremely steep and rocky and there appears to be the lack of available forage for livestock in the areas surrounding the population. Thus, the incidences of unauthorized use within this population may be limited. Potential habitat for slender moonwort may exist in other alpine and subalpine regions within the allotments. Further survey work and trend assessment is needed to determine impacts to potential habitat.

Given the livestock use under Alternative 1, direct impacts from livestock grazing and unauthorized use in Slender moonwort habitat may include: herbivory (although effects are likely low to none due to diminutive size), trampling, loss of plants, destruction of mycorrhizal fungi (essential for slender moonwort survival), and disrupted spore establishment conditions. Indirect impacts from livestock use and associated impacts could include soil compaction, introduction of noxious weeds, decreased gene flow, decreased soil moisture, community composition alteration, invasion of woody or tree-species, and increased competition for resources from invasive species (Murray 2001). The specific effects of grazing on the species are unknown, although if grazing by livestock or wildlife species occurs prior to the maturation and release of spores, the capacity for sexual reproduction of affected plants may be compromised. Slender moonworts have not been observed in areas with obvious disturbance by livestock (FR 66 no. 109, 2001; E. Rey-Vizgirdas, personal communication, 2002). Under this alternative, unauthorized use in the *B. lineare* population is still possible therefore FLRMP Standard TEST26 may not be met. Alpine areas and potential habitat for *B. lineare* would still be accessible to livestock in this alternative, therefore this alternative may not allow for FRLMP MA#3 Objective 0354, to be met. Implementation of this alternative may affect, but would not likely adversely affect slender moonwort.

Cumulative Effects

As with the alpine ecosystems, increasing recreational use has been documented within slender moonwort habitat. ORV use, “very heavy” and “heavy trail use” (Recreation use – Chapter III) and concentrated use areas have been documented within or adjacent to the slender moonwort population. Under Alternative 1, recreational impacts and uses will likely remain the same or increase given current recreational use trends. Thus, recreational impacts may be or may continue to be exacerbated under this alternative given that slender moonwort habitat conditions may be already be degraded through livestock use and associated impacts.

Currently, no noxious weeds have been documented within the slender moonwort population. However, Dalmatian toadflax, a highly invasive species, has been documented on FS road 120 and FS road 677 on the SNRA well below the population. Access to railroad ridge via FS 677, increases the risk of spread from livestock, vehicles and ORVs because each can serve as a vector for this aggressive and invasive species. The SNRA is actively spraying and treating these infestations (Taylor and Pierson, 2002, personal observation). Under implementation of the anticipated Conservation strategy, every effort will be made to ensure that noxious weeds do not move up to Railroad ridge or within the population.

The Livingston Mine is found well below the occupied habitat of *Botrychium lineare* but reclamation or expansion efforts could pose threats to the occupied habitat or in unexplored areas adjacent to the mine. FLRMP standards should however provide adequate protection for occupied slender moonwort habitat. Saleable or leasable mineral operations will not be approved in occupied slender moonwort habitat. Adverse effects from locatable operations to slender moonwort occupied habitat will be avoided. Additionally, new and existing quarry projects will keep equipment and activities out of occupied slender moonwort plant habitat. Potential habitat will be surveyed prior to any propose mining or quarry projects and appropriate mitigation will be assigned. Additionally, management actions shall be designed to avoid or minimize adverse effects to listed species and their habitats.

The development and implementation of a Conservation Assessment and Strategy for slender moonwort will greatly improve the protection and conservation of the slender moonwort population.

Ute ladies'-tresses Orchid – *Spiranthes diluvialis*

Direct and Indirect Effects

Under this alternative the riparian areas that are not moving toward FLRMP vegetation management objectives and that are in low seral stages would continue in their current trend. Because potential habitat for Ute ladies'-tresses' orchid in the Challis Volcanics and Idaho Batholith regions of Idaho is considered to have an upper limit of 6,500 feet elevation (R.M. Moseley, 1999), less than 2 miles of streamside habitat in these allotments are likely to be potential habitat. Ironically, areas where willow abundance has decreased or been eliminated may create habitat for this rare species but due to the expectation that livestock grazing would continue in this condition overall habitat degradation would be anticipated.

Direct impacts from livestock use could include trampling, uprooting plants, loss of seed set, herbivory, ORV trampling (associated with structural improvements), reduced seed production due to loss of pollinators, and disrupted seed bank. Indirect impacts from livestock use and rangeland improvements could include soil compaction, introduction of noxious weeds, changed upland vegetation, chemical application to shrublands to increase grasslands, pollinator impacts (ground nesting bees could be killed or nests destroyed), alteration of vegetation community, acceleration of desertification, decreased gene flow, decreased soil moisture, and loss of grassland due to conversion to shrub communities (Arft 1995; Moseley 1999; Pierson and Tepedino, 2000). Floodplain conditions could also be impacted by livestock use including streambank downcutting, change in bank stability, vegetation alteration, trampling, soil compaction, and changed flow velocity. Implementation of this alternative, may affect, but would not adversely affect Ute ladies'-tresses' orchid.

Cumulative effects

Under Alternative 1, recreational impacts and uses will likely remain the same or increase given current recreational use trends. Thus, recreational impacts including ORV use, trail use, and riparian degradation, may be or may continue to be exacerbated under this alternative given that potential Ute ladies-tresses' orchid habitat conditions may be already be degraded through livestock use and associated impacts.

Currently, no noxious weeds have been documented within the Ute ladies-tresses' orchid potential habitat. However, Dalmatian toadflax, spotted knapweed, yellow toadflax, musk thistle and black henbane all occur in lower elevation habitats along main roads and trails. The risk of spread from vectors such as livestock, vehicles and ORVs for these aggressive and invasive species under this Alternative may be high.

No foreseeable mining activities have been identified at this time. However, activities associated with the reclamation of the Livingston mine may have downstream impacts for potential Ute ladies'-tresses orchid habitat. Although these restoration efforts may be beneficial in the long-term, short-term (3 to 5 years) impacts may pose threats to this threatened species habitat.

SENSITIVE PLANT SPECIES

White Cloud Milkvetch - *Asragalus vexilliflexus var. nubilis*

This alternative would allow for livestock grazing in the areas that are currently permitted and would allow for continued moderate to locally heavy negative impacts within known populations. There are only nine populations known globally, all of which occur within the boundaries of Upper and Lower East Fork allotments. Monitoring by the SNRA range staff has documented that 44% (4 of 9) of the populations are experiencing moderate to locally heavy livestock use.

Direct effects include herbivory, trampling, and loafing. Indirect impacts include soil compaction, species composition alteration, potential loss of pollinators and/or their required habitat conditions, introduction of noxious weeds, and potential seed bank disruption. These sites are extremely vulnerable to continued degradation and potential loss of viability under the current grazing systems. Additionally, all populations are accessible to livestock and changes in salting or herding strategies could also contribute to increased threats for all known population.

Current livestock management practices may make it difficult to meet viability requirements for rare plant species under FSM 2670 without the development and implementation of a Conservation Strategy to offset effects. Livestock grazing may continue to occur within all the White cloud Milkvetch populations therefore this alternative may not allow for FRLMP standard BTST01 and MA#3 Objective 03108 to be met. As such, implementation of this alternative may impact White Cloud Milkvetch individuals but would not tend towards federal listing.

Cumulative effects

Under Alternative 1, recreational impacts and uses will likely remain the same or increase given current recreational use trends. Thus, recreational impacts may be or may continue to be exacerbated under this alternative given that White cloud milkvetch population conditions may be already be degraded through livestock use and associated impacts.

Several infestations of weedy species including Dalmation toadflax, yellow toadflax, and musk thistle, and spotted knapweed have been documented near known populations. Indirect impacts from livestock (described above), recreational, and other authorized land uses may increase conditions for establishment and spread within these populations. Current management practices attempt to eradicate or contain such infestations. Herbicide applications could also threaten known populations of these species if coordination with range management is not ensured to prevent accidental application or drift. Such impacts can also affect pollinators within these areas. The risk of spread from vectors such as livestock, vehicles and ORVs for these aggressive and invasive species under this Alternative may be high.

A draft Conservation Assessment and Strategy has been prepared by a volunteer botanist for the Sawtooth NF (Clebsch, 2002). This assessment and strategy outline the population trends, research needs, action items, and protection needs for this rare species.

No foreseeable mining activities have been identified at this time.

PROPOSED SENSITIVE PLANT SPECIES

Silvery/Jones' Primrose - *Primula incana*

Direct and Indirect Effects

This alternative would allow for livestock grazing in the areas that are currently permitted and would allow for continued moderate to locally heavy negative impacts within known populations. The only known Silvery/Jones primrose populations in Idaho occur along the East Fork Salmon River. One population is found within the Bowery Guard Station Exclosure and another is outside of the current exclosures. Severe trampling effects from livestock have been recorded. Current livestock use practices have documented declines in habitat integrity, population fecundity, and population numbers. Maintenance of the exclosures under current management has been inconsistent and impacts have occurred. It is assumed that under Alternative 1, direct impacts such as trampling, herbivory, and loss of plants will continue. Additionally, it is assumed that indirect impacts such as soil compaction, soil hummocking, noxious weed introduction, impacts to pollinators, loss of seed bank viability, loss of fecundity, and loss of population viability will continue.

Current livestock management practices may make it difficult to meet viability requirements for rare plant species under FSM 2670 if cattle continue to access the populations. If current conditions are maintained under this alternative it may not allow for FRLMP Objective 0354 to be met. As such, implementation of this alternative may impact silvery/Jones' primrose individuals but would not tend towards federal listing.

Cumulative Effects

Under Alternative 1, recreational impacts and uses will likely remain the same or increase given current recreational use trends. Utilization of the hot springs where this rare species occurs is a popular activity and will likely increase. Thus, recreational impacts may continue

to be exacerbated under this alternative given that White cloud milkvetch population conditions may already be degraded through livestock use and associated impacts. Elk and moose have also been documented as trampling within these areas. Such impacts will occur despite the alternative selected.

Several infestations of weedy species including Dalmation toadflax, yellow toadflax, and musk thistle, and spotted knapweed have been documented near known populations. Indirect impacts from livestock (described above), recreational, and other authorized land uses may increase conditions for establishment and spread within these populations. Current management practices attempt to eradicate or contain such infestations. Herbicide applications could also threaten known populations of these species if coordination with range management is not ensured to prevent accidental application or drift. Such impacts can also affect pollinators within these areas. The risk of spread from vectors such as livestock, vehicles and ORVs for these aggressive and invasive species under this Alternative may be high.

The Forest plans to prepare a Conservation Assessment and Strategy for this rare plant species. The assessment and strategy will outline the population trends, research needs, action items, and protection needs for this rare species.

Northern sagewort and Other Proposed Sensitive Species

Direct and Indirect Effects

This alternative would allow for livestock grazing in the areas that are currently permitted. Excess livestock grazing may occur in areas adjacent to allotments. The current Lower East Fork allotment boundary runs along the watershed break several hundred feet above the known populations of northern sagewort (only 1 in Idaho), wedge-leaf saxifrage, pointed draba/rockcress draba, Challis milkvetch, and Brewer's sedge. This boundary is not fenced given extreme weather conditions and the maintenance obligations that would be required to ensure a fence remained in place. Under Alternative 1, the allotment boundaries would not change and the possibility for unauthorized use within these rare populations would continue to occur. These alpine areas would still be accessible to livestock in this alternative, therefore this alternative may not allow for FRLMP Objective 0354 to be met. Livestock impacts to these species are currently unknown, however their close proximity to the TEPC species described above would suggest that they would suffer similar impacts. Inventory and monitoring is needed to determine threats and trends of these populations. Implementation of this alternative may impact proposed sensitive individuals but would not tend towards federal listing.

Cumulative effects

As with the TEPC species and alpine communities described above, it is likely that recreational impacts will remain the same or increase under Alternative 1. Recreational impacts could result in the direct trampling, loss of plants, or pollinator displacement for these rare or unique species. Indirect impacts from increased recreational use could include soil compaction, pollinator impacts, and loss of viability. Livestock, recreational, and other land uses could also result in the introduction of the many noxious weed species identified within watershed. Herbicide applications could also threaten known populations of these species if coordination with range management is not ensured to prevent accidental

application or drift. Such impacts can also affect pollinators within these areas. No foreseeable mining activities are known within these areas.

WHITEBARK PINE

Direct/Indirect Effects

This alternative would allow for livestock grazing and associated impacts to occur in areas that are currently permitted as well as allow for unauthorized use access in Whitebark areas such as Railroad Ridge. Under Alternative 1, subalpine slopes and Whitebark pines stands would continue to be susceptible to livestock bedding and trailing and vigor and stand integrity may continue to decline (EPA 2003). The vast majority of suitable habitat for Whitebark pine is above 9,000 feet in elevation and despite original range analysis maps classifying these areas as barren or unsuitable for cattle grazing, they would continue to be grazed under Alternative 1. Fencing is an impractical option for protecting Whitebark pine stands because of the wide dispersal of plant locations throughout the area, shallow, rocky soils, and snow loading on fences. Whitebark pine forest habitat types can provide some forage production that may sustain light grazing. However, heavy grazing effects may easily decimate the forage, expose the soil, and result in decreased seedling viability and establishment of Whitebark pine. Livestock tend to seek shade under large Whitebark pine trees. This behavior exacerbates soil compaction and erosion around the tree trunk, can expose the roots and can reduce the likelihood of seedling establishment. In such scenarios, vegetation recovers very slowly, and in some areas soil loss can prevent complete restoration. Whitebark pine stands would still be accessible to livestock in this alternative, therefore this alternative may not allow for FRLMP Objective 0344 to be met. Implementation of this alternative may impact Whitebark pine stands but would not preclude the USFS from meeting NFMA requirements for diversity.

Cumulative effects

Climate change could result in the loss of alpine and subalpine forest types. The EPA (2003) estimates that modest warming and drying could reduce Whitebark pine habitat by up to 90% over the next fifty years. Changing climatic conditions may cause Whitebark pine forests to be replaced with Douglas fir, and while lower forested slopes could give way to treeless landscapes dominated by big sagebrush, Idaho fescue, and Bluebunch wheatgrass. Stress from livestock grazing and associated impacts to soil conditions species composition, and soil moisture could expedite this loss. In addition, the mountain pine beetle infestation currently within the SNRA could exacerbate the loss of these unique forest stands (Arno and Hoff 1989; Tomback, 2001; Red Tree EA, 2003). Blister rust epidemics, increased recreational impacts (such as ORV trampling and weed introduction), and continued fire exclusion within these subalpine zones may also contribute to the loss of Whitebark pine stands within the allotments.

NON-NATIVE PLANTS

Direct and Indirect Effects

This alternative would allow for livestock grazing and associated impacts to occur in areas that are currently permitted as well as allow for unauthorized use in areas adjacent to the allotments (given current management effects) and will likely allow for low to moderate levels of infestations of non-native plants. Disturbance from livestock grazing may result in portions of the allotments becoming susceptible to noxious weed and non-native plant invasions and establishment.

Non-native plant establishment can directly alter: the amount of annual and perennial vegetation present, the percent of soil ground cover, the quality of terrestrial wildlife cover, and the composition of rare plant habitat. Non-native plant establishment can indirectly alter:

- the vegetative species' composition of an area,
- shrub canopy closure patterns and distribution,
- individual plant vigor,
- soil surface erosion rates,
- the level of sediment affecting water quality,
- the soil productivity of a site,
- water runoff volume or rate,
- the quality of threatened and endangered species habitat,
- aquatic and terrestrial habitat condition,
- fire regimes,
- big game winter range,
- the level of shrub and tree regeneration.

(Final EIS, Southwest Idaho Ecogroup, 2003).

The main weed of concern for this area is spotted knapweed, a highly invasive species, which is currently found in small, scattered populations. Under Alternative 1, this species will likely remain in isolated, small populations adjacent to roads and trails given the ability for range managers to detect new infestation in conjunction with range monitoring. However, risk of spread and establishment for this species may be higher in remote areas and it could become established and spread rapidly without detection. Infestations of musk thistle, black henbane, Dalmatian toadflax, yellow toadflax and cheatgrass area also found along roads and trails. Under Alternative 1, these less aggressive species will likely remain in small isolated, semi-contained populations given current treatment and management practices.

Range management under this alternative will likely allow for continued tracking of non-native plant populations and containment and treatment of these isolated populations along roads and trail will be emphasized. Current weed management plans will be used to direct treatment and containment strategies. The ability to detect and monitor weed populations will influence the size and density of new weed populations. Detection is strongly connected to the frequency and amount of time various management activities take place in an area during the year. In areas where other resource management activities occur and administrative visits are infrequent, the likelihood of detecting new populations is also low. If a new infestation becomes established, a couple of years could potentially pass without detection, thus creating a large weed seed source that will take several years to eliminate. Under Alternative 1, livestock may serve as wide ranging vectors, given the large allotment boundaries, for the invasive species and non-native plants described above. Livestock use and associated impacts (soil disturbance, changed vegetation compositions) may facilitate a higher risk of non-native plant species becoming established in remote areas, rare plant populations or unique communities.

Cumulative Effects

Current infestations of spotted knapweed can be found along roads and trails in Carbonate Creek and Bowery creek and are semi-contained. However, large infestations on adjacent private and BLM lands may serve as a seed source for increased infestation and establishment. Recreational, livestock, and other land uses (such as mining, vegetation management) may allow for infestations and establishment of invasive species.

Under Alternative 1, recreational impacts and uses will likely remain the same or increase given current recreational use trends. ORV's and ATV's may also increase the incidence of non-native plant introduction and establishment. Such vehicles may encounter infestations within the Allotments or along adjacent trails or roads and may serve as vectors to more remote locations. Additionally, these vehicles could introduce new highly invasive species from other sources such as private land, BLM land, other National Forest lands, or state lands. Introductions of such species in remote locations could lead to new invasive species establishing within the allotments and may make treatment and containment difficult.

No foreseeable mining activities have been identified at this time. However, activities associated with the reclamation of the Livingston mine may potential impacts for spread or may provide the opportunity to treat invasive species. The largest infestation of Dalmation toadflax is found with the Livingston mill area along Big Boulder Creek. Treatment of this population prior to or in conjunction with restoration efforts may reduce spread to other locations.

The risk of exotic plant infestations occurring within wildfire areas is a concern under all the alternatives. No foreseeable prescribed fire activities have been identified. Wildland fire is always a risk and could contribute to the spread of established populations.

Alternative #2

Effects under this alternative were analyzed following the assumptions described for Alternative 2 under Livestock Distribution and Management.

In this alternative all elevations above 9000 feet would be considered closed to grazing, thus reducing impacts to the alpine communities and several TEPSC plant populations. In the Lower East Fork Allotment an estimated 14% and in the Upper East Fork Allotment, an estimated 16% of riparian areas that are accessible to cattle are currently not moving toward the FLRMP vegetation management objectives. These areas would continue to be available for livestock grazing upon initial implementation of this alternative (determined based on the riparian areas accessible to cattle within the affected environment). These areas would move toward the desired vegetation conditions over time and TEPSC plant habitat and alpine communities could be benefited, as long as standards were met. Within the areas removed from the allotment, vegetation management objectives would move toward the desired objectives at a higher rate than areas where livestock grazing would continue. TEPSC plant populations would receive lower impacts due to livestock use and associated activities.

ALPINE

Direct and Indirect Effects

Given that all elevations above 9,000 feet would be considered closed to grazing, the impacts from livestock use within alpine ecosystems would be greatly reduced or removed in most alpine areas of concern and would greatly improve habitat conditions for these unique regions. Additionally, the incidence of unauthorized livestock use in areas outside of the allotment boundaries (Railroad Ridge, Boulder Chain Lakes Region) would be greatly reduced. The alteration of the boundary within the Lower East Fork Allotment would include the elimination of a large portion of the Boulder creek pasture, along with Upper Silver Creek drainage and upper Railroad Ridge from the Big Lake Creek pasture, thus reducing the opportunity for unauthorized use within alpine communities.

In addition to the reduction of direct impacts such as trampling, herbivory, and disruption of seed bank stability, indirect impacts associated with livestock use and associated activities would be greatly reduced. As a result, incidence of soil compaction, introduction of noxious weeds by livestock, decreased soil moisture, pollinator impacts, alpine community composition conversion, and invasion of woody or tree-species will be profoundly reduced. Vegetation conditions within these habitats will also benefit and vegetation management objectives and NFMA requirements for diversity will be better met. The closure to livestock grazing above 9000 feet would remove livestock from these fragile areas and would allow for FRLMP Objective 03108 to be met. Implementation of this alternative would not preclude the USFS from meeting NFMA requirements for diversity.

Native herbivores and large mammals will continue to utilize these regions and may contribute to some of the direct and indirect impacts described above. However, improved vegetation conditions and reduction of livestock trampling and congregational impacts will decrease the overall impacts of such use.

Cumulative Effects

Increasing recreational use has been documented within alpine regions throughout the country (Sandercock and Martin, 2001). Current recreational impacts pose major threats to the alpine communities found within and adjacent to the allotments. Other recreational impacts including very heavy and heavy trail use Recreation use – Chapter III) and concentrated use areas have been documented within several of the alpine communities.

As described in the cumulative effects for alpine communities in Alternative 1, no noxious weeds have been documented in alpine areas but infestations found along roads and trails in lower elevations could serve as a source for introduction. Because livestock use would be eliminated in alpine areas in Alternative 2, the risk of livestock as vectors or their ability to create disturbance sufficient for weed establishment would be profoundly reduced. However, increased recreation within alpine areas could increase the risk of spread greatly because vehicles and ORVs can serve as vectors for invasive species. The SNRA is actively spraying and treating all known infestations and will continue to despite the alternative selected (Phalen, 2003).

THREATENED, ENDANGERED, PROPOSED, AND CANDIDATE SPECIES

Slender Moonwort - *Botrychium lineare* Direct and Indirect Effects

The incidence of livestock use in areas outside of the allotment boundaries and within the slender moonwort population (Railroad ridge) would be greatly reduced under Alternative 2. The alteration of the boundary within the Lower East Fork Allotment would include the elimination of a large portion of the Boulder creek pasture, along with Upper Silver Creek drainage and upper Railroad Ridge from the Big Lake Creek pasture. These alterations will reduce the accessibility of livestock to Railroad ridge and to potential habitat for this rare species. Additionally, under Alternative 2 all elevations above 9,000 feet would be considered closed to grazing. Thus, the impacts from livestock use within potential slender moonwort habitat would be greatly reduced or removed in most potential habitat areas.

Direct impacts such as trampling, herbivory, and disruption of spore established would be greatly reduced under this Alternative along with indirect impacts associated with livestock use and associated activities. Thus, the incidence of soil compaction, introduction of noxious weeds by livestock, decreased soil moisture, habitat composition conversion, and invasion of woody or tree-species would be markedly reduced. Given the almost complete removal of effects of livestock grazing on slender moonwort under this alternative, it is suspected that the capacity for sexual reproduction may improve and long-term viability of this population will be promoted. Under this alternative, access to the *B. lineare* population is greatly restricted given the 9000 foot closure to grazing therefore FLRMP Standard TEST26 may be met. Livestock access to alpine areas and potential habitat for *B. lineare* would be greatly restricted or removed, therefore this alternative may allow for FRLMP MA#3 Objective 0354, to be met. This alternative would greatly improve the ability to meet FLRMP standards and guidelines for TEPC species and NFMA requirements for diversity. Implementation of this alternative may affect, but would not likely adversely affect slender moonwort. Indeed, implementation of this Alternative may benefit the population in the long-term.

Cumulative Effects

Current recreational impacts to the slender moonwort population are described in the cumulative effects section for Alternative 1. They include ORV use and concentrated use areas within or adjacent to the population.

Currently, no noxious weeds have been documented within the slender moonwort population. However, Dalmatian toadflax, a highly invasive species, has been documented within proximity of the population (see Cumulative Effects- Alternative 1). The SNRA is actively spraying and treating these infestations. Under implementation of the anticipated Conservation strategy, every effort will be made to ensure that noxious weeds do not move up to Railroad ridge or within the population.

The Livingston Mine is found well below the occupied habitat of slender moonwort but reclamation or expansion efforts could pose threats to the occupied habitat or in unexplored areas adjacent to the mine. Alternative 1 (cumulative effect section) outlines FLRMP standards that will offset most of the effects associated with mining operations.

The Forest plans to develop a Conservation Assessment and Strategy for slender moonwort. The development and implementation of the Conservation Assessment and Strategy will greatly improve the protection and conservation of the slender moonwort population.

Ute ladies'-tresses Orchid – *Spiranthes diluvialis***Direct and Indirect Effects**

In Alternative 2, livestock grazing within Ute ladies'-tresses Orchid habitat (mainly along riparian areas, wetlands, and springs) would be reduced and habitat conditions would begin to improve. The amount of riparian areas that are not moving toward FLRMP vegetation management objectives would also be reduced and areas that continue to be grazed by livestock would begin to attain vegetation management objectives. Because potential habitat for Ute ladies'-tresses' orchid in the Challis Volcanics and Idaho Batholith regions of Idaho is considered to have an upper limit of 6,500 feet elevation (Moseley, 1999), less than 2 miles of streamside habitat in these allotments are likely to be potential habitat.

Direct impacts from livestock use including trampling, uprooting plants, loss of seed set, herbivory, ORV trampling (associated with structural improvements), reduced seed production due to loss of pollinators, and disrupted seed bank will likely be reduced given allowable use standards under Alternative 2. As a result, indirect impacts from livestock use including soil compaction, introduction of noxious weeds, changed upland vegetation, chemical application to shrublands to increase grasslands, pollinator impacts (ground nesting bees could be killed or nests destroyed), alteration of vegetation community, acceleration of desertification, decreased gene flow, and decreased soil moisture will be reduced (Arft 1995; Moseley 1998; Pierson and Tepedino, 2000). Allowable use standards, will also contribute to the reduction of changed floodplain conditions (from above direct and indirect impacts) and changed flow velocity. Implementation of this alternative may affect, but would not likely adversely affect Ute ladies'-tresses' orchid. Indeed, implementation of this Alternative may benefit the potential habitat in the long-term.

Cumulative Effects

Currently, no noxious weeds have been documented within the Ute ladies'-tresses' orchid potential habitat. However, Dalmatian toadflax, spotted knapweed, yellow toadflax, musk thistle and black henbane all occur in lower elevation habitats along main roads and trails. The risk of spread from vectors such as livestock, vehicles and ORVs for these aggressive and invasive species under this Alternative may be high.

No foreseeable mining activities have been identified at this time. However, activities associated with the reclamation of the Livingston mine may have downstream impacts for potential Ute ladies'-tresses orchid habitat. Although in the long-term these restoration efforts may be beneficial, short-term (3 years) impacts may pose threats to this threatened species habitat.

SENSITIVE PLANT SPECIES**White Cloud Milkvetch - *Astragalus vexilliflexus* var. *nubilis*****Direct and Indirect Effects**

Under Alternative 2, the known populations of White Cloud Milkvetch would be greatly benefited due the boundary adjustments and the closure of livestock grazing above 9,000 ft.

Under alternative 1, all nine populations (known globally) occur within the boundaries of Upper and Lower East Fork allotments. Under Alternative 2, only 3 of the 9 known

populations would be within the modified boundaries of both allotments. Even more importantly, of the 44% (4 of 9) of the populations that are experiencing moderate to locally heavy livestock use only 1 would remain within the modified allotment boundaries. Such adjustments would profoundly reduce the impacts from livestock grazing and associated activities and would allow for the promotion of long-term viability and habitat condition improvement.

The majority of the populations under Alternative 2 would experience a decrease in direct effects including herbivory, trampling, and loafing. Additionally, Alternative 2 would promote the reduction of indirect impacts (described in Alternative 1) within the majority of the populations. Two of the three populations that are retained within the allotments boundaries under Alternative 2 occur well above 9,000 feet in elevation. Livestock management practices and herding practices under this Alternative should keep livestock impacts within these populations to a minimum given that these areas would be considered closed to grazing.

Livestock management practices under Alternative 2 would enable the SNRA to meet viability requirements for rare plant species under FSM 2670 and to meet FRLMP Objective 03108 for the majority of the populations. Three of the nine populations would remain in the new allotment boundaries. Development and implementation of a Conservation Assessment and Strategy for this species will provide for added protection and conservation of all known populations. With the implementation of a conservation strategy under this alternative, FRLMP Standard BTST01 could be met. Implementation of this alternative may impact White Cloud Milkvetch individuals but would not tend towards federal listing. Indeed, implementation of this alternative would likely benefit the populations of this rare endemic species.

Cumulative effects

Several infestations of weedy species including Dalmation toadflax, yellow toadflax, and musk thistle, and spotted knapweed have been documented near known populations. Indirect impacts from livestock (described above), recreational, and other authorized land uses may increase conditions for establishment and spread within these populations. Current management practices attempt to eradicate or contain such infestations. Herbicide applications could also threaten known populations of these species. Such impacts can also affect pollinators within these areas.

A draft Conservation Assessment and Strategy has been prepared by a volunteer botanist for the Sawtooth NF (Clebsch, 2002). This assessment and strategy outline the population trends, research needs, action items, and protection needs for this rare species.

No foreseeable mining activities have been identified at this time.

PROPOSED SENSITIVE PLANT SPECIES

Silvery/Jones' Primrose - *Primula incana* Direct and Indirect Effects

Despite major alteration of the allotment boundaries in Alternative 2, this alternative would still allow for livestock grazing in the areas that are currently permitted and would allow for continued moderate to locally heavy negative impacts within known populations. Population locations are described in Chapter III, and would not be affected by boundary adjustments. However, it is assumed that under Alternative 2, that maintenance of structure and herd management will be improved over those in Alternative 1 thus direct and indirect impacts may be reduced through more intensive livestock management.

Without management improvements, direct impacts such, as trampling, herbivory, and loss of plants will continue. Additionally, it is assumed that indirect impacts such as soil compaction, soil hummocking, noxious weed introduction, impacts to pollinators, loss of seed bank viability, loss of fecundity, and loss of population viability will continue. Proper maintenance of the Bowery Guard station exclosure would offset such effects from livestock but will not eliminate negative impacts from wildlife species. If mitigations proposed in this alternative are implemented, this alternative may allow for FRLMP Objective 0354 to be met. Implementation of this alternative may impact silvery/Jones' primrose individuals but would not tend towards federal listing.

Current livestock management practices may make it difficult to meet viability requirements for rare plant species under FSM 2670 without the development and implementation of a Conservation Strategy to offset effects. As such, implementation of this alternative may impact silvery/Jones' primrose individuals but would not tend towards federal listing.

Cumulative Effects

Because this portion of the Upper East Fork Allotment does not change by alternative, utilization of the hot springs in which this rare species will likely stay the same or increase. Thus, recreational impacts may continue to be exacerbated under this alternative given that White cloud milkvetch population conditions may be already be degraded through livestock use and associated impacts. Elk and moose trampling may constitute an adverse impact regardless of which alternative is selected.

Conditions for weed infestations and spread will not vary from Alternative 1 and thus the risk of spread from Dalmatian toadflax, yellow toadflax, and musk thistle, and spotted knapweed by vectors such as livestock, vehicles and ORVs under this Alternative may be high. Herbicide applications could also threaten known populations of these species if coordination with range management is not ensured to prevent accidental application or drift. Such impacts can also affect pollinators within these areas.

The Forest plans to prepare a Conservation Assessment and Strategy for this rare plant species. This assessment and strategy will outline the population trends, research needs, action items, established monitoring, and protection needs for this rare species.

Northern sagewort and other Proposed Sensitive Plant Species

Direct and Indirect Effects

Under Alternative 2, the known populations northern sagewort (only 1 in Idaho), wedge-leaf saxifrage, pointed draba/rockcress draba, Challis milkvetch, and Brewer's sedge of would be greatly benefited. Elimination of livestock above 9000 feet would profoundly reduce the impacts from unauthorized livestock grazing and associated activities and would allow for

the promotion of long-term viability and habitat condition improvement. The closure to livestock grazing above 9000 feet would remove livestock from these fragile areas and would allow for FRLMP Objective 0354 to be met. Implementation of this alternative may impact proposed sensitive plant individuals but would not tend towards federal listing.

Cumulative effects

As with the TEPC species and alpine communities described above, it is likely that recreational impacts will increase under Alternative 2 given the removal of livestock in high use areas (Railroad Ridge, Boulder Chain Lakes). Recreational impacts could result in the direct trampling, loss of plants, or pollinator displacement for these rare or unique species. Indirect impacts from increased recreational use could include soil compaction, pollinator impacts, and loss of viability. Recreational and other land uses could also result in the introduction of the many noxious weed species identified within watershed. Due to the closure of livestock use within the areas in which these species occur, livestock grazing and associated activities will not be probable vectors for weed establishment. Herbicide applications could also threaten known populations of these species if coordination with range management is not ensured to prevent accidental application or drift. Such impacts can also affect pollinators within these areas. No foreseeable mining activities are known within these areas.

Whitebark Pine

Direct and Indirect Effects

Under Alternative 2, the known populations of Whitebark pine would be greatly benefited due the boundary adjustments and the closure of livestock grazing above 9,000 feet. The vast majority of suitable habitat for Whitebark pine is above 9,000 feet in elevation and associated habitat types are not suitable for heavy livestock grazing. By eliminating corridors for unauthorized livestock use and limiting grazing activities to below 9,000 feet, impacts from livestock bedding and trailing in subalpine slopes and Whitebark pine stands will be greatly reduced. As a result, stand vigor, stand integrity, and seedling establishment may improve (EPA 2003). Less soil compaction may be a result of excluding livestock and seedling establishment may be more successful. Associated vegetation may recover more quickly than in areas with heavy grazing impacts and stand restoration may be possible. The closure to livestock grazing above 9000 feet would remove livestock from these fragile forested areas and allow for FRLMP MA#3 Objective 0344 to be met. Implementation of this alternative may impact Whitebark pine stands but would not preclude the USFS from meeting NFMA requirements for diversity. Indeed, implementation of this Alternative may benefit the Whitebark pine populations and their long-term viability.

Cumulative effects

Although not in the control of land managers, climate change could result in the loss of alpine and subalpine forest types including Whitebark pine forests. An estimated 90% of the Whitebark pine habitat could be reduced over the next fifty years by modest warming and drying (EPA, 2003). Changing climatic conditions may cause Whitebark pine forests to be replaced with Douglas fir. The reduction of stress from livestock grazing and associated impacts to soil conditions, species composition, and soil moisture in Alternative 2 could slow this loss. However, the mountain pine beetle infestation currently within the SNRA could exacerbate the loss of these unique forest stands (Arno and Hoff 1989; Tomback, 2001; Red Tree EA, 2003). Blister rust epidemics, increased recreational impacts (ORVs, ATVs, and

increased weed dispersal) and continued fire exclusion within these subalpine zones may also contribute to the loss of Whitebark pine stands within the allotments.

NON-NATIVE PLANTS

Direct and Indirect Effects

Under Alternative 2, the opportunity for livestock to serve as vectors and to create disturbance conditions that benefit spread and establishment of non-native plants is profoundly decreased due to the boundary adjustments and the closure of livestock grazing above 9,000 feet. As such, the likelihood of new levels of infestations and establishment will greatly decrease. However, because range monitoring will occur over a much smaller area than in Alternative 1, the ability to detect and contain establishment in remote areas may decrease. Thus, new establishments may occur in remote areas and may go undetected for long periods of time, making it more difficult to treat and contain.

Non-native plant establishment can directly alter:

- the amount of annual and perennial vegetation present
- the percent of soil ground cover
- the quality of terrestrial wildlife cover
- the composition of rare plant habitat.

Non-native plant establishment can indirectly alter:

- the vegetative species' composition of an area
- shrub canopy closure patterns and distribution
- individual plant vigor, soil surface erosion rates
- the level of sediment affecting water quality
- the soil productivity of a site
- water runoff volume or rate
- the quality of threatened and endangered species habitat
- aquatic and terrestrial habitat condition
- fire regimes, big game winter range
- the level of shrub and tree regeneration

(Final EIS, Southwest Idaho Ecogroup, 2003).

The main weed of concern for this area is spotted knapweed, a highly invasive species, which is currently found in small, scattered populations. Under Alternative 2, this species will likely remain in isolated, small populations adjacent to roads and trails given the ability for range managers to detect new infestation in conjunction with range monitoring. However, the risk of spread and establishment by livestock will be much lower given the boundary adjustments and elevational restrictions. Infestations of musk thistle, black henbane, Dalmatian toadflax,

yellow toadflax and cheatgrass area also found along roads and trails. Under Alternative 2, these less aggressive species will like remain in small isolated, semi-contained populations given current treatment and management practices.

Range management under this alternative will likely allow for continued tracking of non-native plant populations and containment and treatment of these isolated populations along roads and trail will be emphasized. Current weed management plans will be used to direct treatment and containment strategies. The ability to detect and monitor weed populations will influence the size and density of new weed populations. Detection is strongly connected to the frequency and amount of time various management activities take place in an area during the year. Given the large proportion of both allotments that would be closed to grazing under Alternative 2, many remote sites will not be visited by range managers. New infestation could become established in these areas without detection, thus creating a large weed seed source that will take several years to eliminate.

Cumulative Effects

Current infestations of spotted knapweed can be found along roads and trails in Carbonate Creek and Bowery creek and are semi-contained. However, infestations on adjacent private and BLM lands may serve as a seed source for increased infestation and establishment. Recreational and other land uses (such as mining or logging) may allow for infestations and establishment of invasive species.

ORV's and ATV's may increase the incidence of non-native plant introduction and establishment. Such vehicles may encounter infestations within the Allotments or along adjacent trails or roads and may serve as vectors to more remote locations. Additionally, these vehicles could introduce new highly invasive species from other sources such as private land, BLM land, other National Forest lands, or state lands. Introductions of such species in remote locations could lead to new invasive species establishing within the allotments and may make treatment and containment difficult.

No foreseeable mining activities have been identified at this time. However, activities associated with the reclamation of the Livingston mine may potential impacts for spread or may provide the opportunity to treat invasive species. The largest infestation of Dalmation toadflax is found with the Livingston mill area along Big Boulder Creek. Treatment of this population prior to or in conjunction with restoration efforts may reduce spread to other locations.

The risk of exotic plant infestations occurring within wildfire areas is a concern under all the alternatives. No foreseeable prescribed fire activities have been identified. Wildland fire is always a risk and could contribute to the spread of established populations.

Alternative #3

In Alternative 3, livestock grazing would be phased out over a three-year period within the East Fork Salmon River watershed. After this time the habitats that are currently affected by livestock, which are mainly riparian areas, wet meadows, springs, and aspen forests would begin to attain FLRMP management objectives. Existing water troughs and fences would be removed after livestock grazing was eliminated from the area, however buried pipelines

would likely remain. The rate of reaching the vegetative objectives and NFMA requirements would be higher than under Alternative 2. All alpine areas that are currently impacted from livestock use or unauthorized livestock grazing would recover to standards higher than those described in the FLRMP. Alpine habitat conditions would slowly improve without livestock grazing impacts but could continue to be impacted by recreational or other land uses.

ALPINE

Direct and Indirect Effects

Under this Alternative, livestock grazing would be phased out over a three-year period thus resulting in livestock impacts within alpine ecosystems being greatly reduced or removed. A staggered reduction system (Chapter 2) from current baseline stocking levels would allow alpine communities to begin recovering the first year. Habitat conditions would improve markedly over time. The incidence of unauthorized livestock use in areas outside of the allotment boundaries (Railroad ridge, Boulder Chain Lakes Region) could be greatly reduced during this time period as well.

Direct impacts such as trampling, herbivory, and disruption of seed bank stability and indirect impacts associated with livestock use and associated activities would still occur within alpine areas would be consistently reduced over time. As a result, incidence of soil compaction, introduction of noxious weeds by livestock, decreased soil moisture, pollinator impacts, alpine community composition conversion, and invasion of woody or tree-species will be profoundly reduced and/or eliminated. This alternative will allow for FRLMP MA#3 Objective 03108 to be met in the long-term. Vegetation conditions within these habitats will also be benefited and vegetation management objectives and NFMA requirements for diversity will be better met. Implementation of this alternative would not preclude the USFS from meeting NFMA requirements for diversity.

Native herbivores and large mammals will continue to utilize these regions and may contribute to some of the direct and indirect impacts described above. However, improved vegetation conditions and reduction of livestock trampling and congregational impacts will decrease the overall impacts of such use over time.

Cumulative Effects

Increasing recreational use has been documented within alpine regions throughout the country (Sandercock and Martin, 2001). Current recreational impacts have been described in the cumulative effects sections under Alternatives 1 and 2. Under Alternative 3, recreational impacts would continue to increase in certain high use (i.e. Boulder Chain Lakes, Frog Lakes) areas over time.

As described in the cumulative effects for alpine communities in Alternative 1 and 2, no noxious weeds have been documented in alpine areas but infestations found along roads and trails in lower elevations could serve a source for introduction. However, because livestock use would be reduced and finally eliminated within this watershed, the risk of livestock as vectors or their ability to create disturbance sufficient for weed establishment would be profoundly reduced. The SNRA is actively spraying and treating all known infestations and will continue to despite the alternative selected (Phalen, 2003).

THREATENED, ENDANGERED, PROPOSED, AND CANDIDATE SPECIES

Slender Moonwort – *Botrychium lineare*

Direct and Indirect Effects

Under this alternative, livestock grazing would be phased out over a three-year period greatly reducing or removing livestock impacts within slender moonwort occupied or potential habitat. A staggered reduction system (Chapter 2 – Proposed Action) from current stocking levels in both allotments would allow for marked habitat improvement over time. The incidence of unauthorized livestock use in areas outside of the allotment boundaries (Railroad Ridge) could be greatly reduced during this time period as well given that livestock numbers will continue to be reduced on the allotments.

This alternative would most benefit the long-term population viability of slender moonwort. Direct impacts such as trampling, herbivory, and disruption of seed bank stability and indirect impacts associated with livestock use and associated activities could still occur within the occupied and potential habitat for slender moonwort but would be consistently reduced over time. As a result, incidence of soil compaction, introduction of noxious weeds by livestock, decreased soil moisture, alpine community composition conversion, and invasion of woody or tree-species will be reduced and/or eliminated. Access to the *B. lineare* population is still possible in the short-term under this alternative, however the phasing out grazing within these allotments will allow for FLRMP Standard TEST26 to be met in the long-term. Alpine areas and potential habitat for *B. lineare* would still be accessible to livestock in this alternative in the short-term but phasing out grazing within these allotments will allow for FRLMP MA#3 Objective 0354, to be met in the long-term. Implementation of this alternative may affect, but would not likely adversely affect slender moonwort. Indeed, implementation of this alternative may benefit the population in the long-term.

Cumulative Effects

As described in the cumulative effects for alpine communities in Alternative 1 and 2, no noxious weeds have been documented in slender moonwort occupied or potential habitat but infestations found along roads and trails in lower elevations could serve a source for introduction. Because livestock use would be reduced and finally eliminated within this watershed, the risk of livestock as vectors or their ability to create disturbance sufficient for weed establishment would be reduced. However, increased recreation within slender moonwort habitat could increase the risk of spread greatly because vehicles, ORVs, and pack animals can serve as vectors for invasive species. The SNRA is actively spraying and treating all known infestations and will continue to despite the alternative selected (Phalen, 2003).

The Livingston Mine is found well below the occupied habitat of slender moonwort but reclamation or expansion efforts could pose threats to the occupied habitat or in unexplored areas adjacent to the mine. FLRMP standards for TEPC species would be sufficient to offset the majority of effects from such activities (see Alternative 1 – cumulative effects).

The development and implementation of a Conservation Assessment and Strategy for slender moonwort will greatly improve the protection and conservation of the slender moonwort

population. Detailed action items will ensure that population viability will be maintained for this rare species despite the alternative selected or projects proposed within the area.

Ute ladies'-tresses Orchid - *Spiranthes diluvialis*

Direct and Indirect Effects

In Alternative 3, livestock grazing within Ute ladies'-tresses Orchid potential mainly along riparian areas, wetlands, and springs would be systematically reduced and habitat conditions would improve over time. The amount of riparian areas that are not moving toward FLRMP vegetation management objectives would also be reduced and areas that continue to be grazed by livestock would begin to meet vegetation management objectives.

Potentially habitat for Ute ladies'-tresses' orchid would be most benefited by the actions prescribed under Alternative 3. Elimination of livestock grazing would markedly reduce direct and indirect impacts. Direct impacts include: trampling, uprooting plants, loss of seed set, herbivory, ORV trampling, and a reduced seed production due to loss of pollinators, disrupted seed bank. Indirect impacts from livestock use include: soil compaction, introduction of noxious weeds, changed upland vegetation, chemical application to shrublands to increase grasslands, pollinator impacts, alteration of vegetation community, acceleration of desertification, decreased gene flow, and decreased soil moisture (Arft 1995; Moseley 1998; Pierson and Tepedino, 2000). This alternative will also contribute to the reduction of changed floodplain conditions (from above direct and indirect impacts) and changed flow velocity. Implementation of this alternative may affect, but would not likely adversely affect Ute ladies'-tresses' orchid. Indeed, implementation of this alternative may benefit the potential habitat for this species in the long-term.

Cumulative Effects

Currently, no noxious weeds have been documented in Ute ladies'-tresses' potential habitat but infestations found along roads and trails in lower elevations could serve a source for introduction. Because livestock use would be phased out from within this watershed, the risk of livestock as vectors or their ability to create disturbance sufficient for weed establishment would be reduced. The SNRA is actively spraying and treating all known infestations and will continue to despite the alternative selected (Phalen, 2003).

No foreseeable mining activities have been identified at this time. However, activities associated with the reclamation of the Livingston mine may have downstream impacts for potential Ute ladies'-tresses orchid habitat. Although in the long-term these restoration efforts may be beneficial, short-term (3 years) impacts may pose threats to this threatened species habitat.

SENSITIVE PLANT SPECIES

White Cloud Milkvetch - *Astragalus vexilliflexus* var. *nubilis*

Direct and Indirect Effects

Alternative 3 will provide for long-term benefits and habitat recovery for the known populations of White Cloud Milkvetch that are found within the boundaries of Upper and Lower East Fork allotments. However, over the three-year phase out period short-term negative impacts to population viability and habitat conditions could continue. Because all of the populations of this rare species known to occur globally occur with both allotment

boundaries, the reduction of livestock over a given time period will continue to impact the populations until livestock are removed. Under Alternative 1, 44% (4 of 9) of the populations are experiencing moderate to heavy livestock use. It is anticipated that until stocking numbers are markedly reduced such impacts will continue to persist. As the stocking levels continue to decline over the three-year period, the promotion of long-term viability and habitat condition improvement will continue to increase. The long-term benefits of no grazing within these populations will greatly improve the viability of these populations and would enable the SNRA to better meet viability requirements for rare plant species under FSM 2670. Implementation of this alternative may impact White Cloud Milkvetch individuals but would not tend towards federal listing.

Development and implementation of a Conservation Assessment and Strategy for this species will provide for added protection and conservation of all known populations. Under this alternative, all known populations of White cloud Milkvetch may experience short-term impacts but long-term livestock impacts would be removed thus allowing FLRMP Standard BTST01 to be met. Phasing out grazing within these allotments would allow for FRLMP MA#3 Objective 03108 to be met in the long term. Implementation of this alternative may impact White Cloud Milkvetch individuals but would not tend towards federal listing. Indeed, implementation of this Alternative would likely benefit the populations of this rare endemic.

Cumulative effects

The noxious weeds described in the cumulative effects analysis for White Cloud milkvetch under Alternatives 1 and 2, will likely continue to pose impacts to the known populations. Systematic reductions of livestock over time will allow them to continue to serve as weed vectors until livestock are eventually removed from the watershed. Current management practices attempt to eradicate or contain such infestations. Herbicide applications could also threaten known populations of these species if coordination with range management is not ensured to prevent accidental application or drift. Such impacts can also affect pollinators within these areas. While risk of spread from vectors such as livestock may be decreased over time under Alternative 3, vehicles and ORVs may increase the risk of spread and establishment.

A draft Conservation Assessment and Strategy has been prepared by a volunteer botanist for the Sawtooth NF (Clebsch, 2002). This assessment and strategy outline the population trends, research needs, action items, and protection needs for this rare species.

No foreseeable mining activities have been identified at this time.

PROPOSED SENSITIVE SPECIES

Silvery/Jones' Primrose - *Primula incana*

Alternative 3 would provide the greatest protection of silvery/Jones' Primrose populations and provide for the long-term viability of these rare populations. Population locations are described in Chapter III, and would not be affected by boundary adjustments. However, under Alternative 3, livestock use would be phased out over a three-year period and would provide for long-term protection and recovery of these populations. Proper maintenance of

the Bowery Guard station enclosure would offset such effects from livestock. Reduction of livestock over a given time period will likely continue to impact the populations until livestock are eventually removed. As the stocking levels continue to decline over the three-year period, the promotion of long-term viability and habitat condition improvement will continue to increase. The long-term benefits of no grazing within these populations will greatly improve the viability of these populations and would enable the SNRA to better to meet viability requirements for rare plant species under FSM 2670. Implementation of this alternative may impact Silvery/Jones' primrose individuals but would not tend towards federal listing.

Short-term livestock impacts will continue to occur within these populations, however long-term changes will allow FRLMP Objective 0354 to be met. Implementation of this alternative may impact Silvery/Jones' Primrose individuals but would not tend towards federal listing. Indeed, implementation of this Alternative would likely benefit these rare populations.

Cumulative Effects

Under Alternative 3, recreational impacts and uses will likely remain the same or increase given current recreational use trends. Recreation utilization of the hot springs where Silvery/Jones' primrose exists will likely have the same or increased impacts. Elk and moose trampling impacts have also been documented within these areas.

Conditions for weed infestations and spread will not vary from Alternative 1. Thus the risk of spread from Dalmatian toadflax, yellow toadflax, and musk thistle, and spotted knapweed by livestock, vehicles and ORVs under this alternative may be high. Herbicide applications could also threaten known populations of these species if coordination with range management is not ensured to prevent accidental application or drift. Such impacts can also affect pollinators within these areas.

Development and implementation of a Conservation Assessment and Strategy for this species will provide for added protection and conservation of all known populations.

Northern sagewort and Other Proposed Sensitive Plant Species

Direct and Indirect Effects

Alternative 3 will provide for long-term benefits and habitat recovery for known populations of northern sagewort (only 1 in Idaho), wedge-leaf saxifrage, pointed draba/rockcress draba, Challis milkvetch, and Brewer's sedge that are found within the boundaries of Upper and Lower East Fork allotments. However, over the three-year phase out period short-term negative impacts to population viability and habitat conditions could continue. Because all of the globally known populations of this rare species known occur within both allotment boundaries, the systematic reduction of livestock over a given time period will continue to impact the populations until livestock are eventually removed. Livestock impacts to these species are currently unknown, however their close proximity to the TEPC species described above would suggest that they would experience similar impacts. Inventory and monitoring is needed to determine threats and trends of these populations. Phasing out livestock use within these fragile areas will allow for FRLMP Objective 0354 to be met in the long-term. Implementation of this alternative may impact proposed sensitive species individuals but would not tend towards federal listing.

Cumulative effects

Livestock, recreational, and other land uses could result in the introduction of the many noxious weed species identified within watershed, although the role of livestock as a vector will decrease over time. Herbicide applications could also threaten known populations of these species if coordination with range management is not ensured to prevent accidental application or drift. Such impacts can also affect pollinators within these areas. No foreseeable mining activities are known within these areas.

WHITEBARK PINE**Direct/Indirect Effects**

Alternative 3 could provide for long-term benefits and habitat recovery for Whitebark pine stands that are found within the boundaries of Upper and Lower East Fork allotments. The vast majority of suitable habitat for Whitebark pine is above 9,000 feet in elevation and associated habitat types are not suitable for heavy livestock grazing. The removal of livestock over a given time period will likely continue to cause short-term impacts to the Whitebark pine stands until livestock are completely removed. Livestock tend to seek shade under large Whitebark pine trees. This behavior exacerbates soil compaction and erosion around the tree trunk, can expose the roots and can reduce the likelihood of seedling establishment. As the stocking levels continue to decline over the three-year period, the promotion of long-term viability and habitat condition improvement will continue to increase. The long-term benefits of no grazing within these declining stands will greatly improve the viability of populations and would enable the SNRA to better to meet diversity requirements for under NFMA. As a result of reduced stocking levels over time, stand vigor, stand integrity, and seedling establishment may improve (EPA 2003). Less soil compaction may be a result of excluding livestock and seedling establishment may be more successful. Associated vegetation may recover more quickly than in areas with heavy grazing impacts and stand restoration may be possible. Phasing out livestock use in these fragile forested areas under this alternative may allow for FRLMP Objective 0344 to be met in the long-term. Implementation of this alternative may impact Whitebark pine stands but would not preclude the USFS from meeting NFMA requirements for diversity. Implementation of this alternative may benefit the Whitebark pine populations and their long-term viability.

Cumulative effects

Although not in the control of land managers, climate change could result in the loss of alpine and subalpine forest types including Whitebark pine forests. An estimated 90% of the Whitebark pine habitat could be reduced over the next fifty years by modest warming and drying (EPA, 2003). Changing climatic conditions may cause Whitebark pine forests to be replaced with Douglas fir. The gradual reduction of stress from livestock grazing and associated impacts to soil conditions, species composition, and soil moisture in Alternative 3 could slow this loss and lead to long-term recovery. However, the mountain pine beetle infestation currently within the SNRA could exacerbate the loss of these unique forest stands (Arno and Hoff 1989; Tomback, 2001; Red Tree EA, 2003). Blister rust epidemics, recreational impacts (ORVs, ATVs, and increased weed dispersal) and continued fire exclusion within these subalpine zones may also contribute to the loss of Whitebark pine stands within the allotments.

NON-NATIVE PLANTS

Direct and Indirect Effects

Alternative 3 will provide for long-term benefits and habitat recovery of upland vegetation found within the boundaries of Upper and Lower East Fork allotments. However, over the three-year phase out period, short-term negative impacts where livestock serve as non-native plant vectors, could continue. As such, the likelihood of new levels of infestations and establishment will decrease over time. Range monitoring will occur over a large portion of both allotments during the phase-out. However, the ability to detect and contain non-native species establishment in remote areas may be moderate. Following the three-year phase-out period, new establishments may occur in remote areas and may go undetected for long periods of time. Thus, such infestations will be more difficult to treat and contain.

Non-native plant establishment can directly alter:

- the amount of annual and perennial vegetation present,
- the percent of soil ground cover,
- the quality of terrestrial wildlife cover
- the composition of rare plant habitat.

Non-native plant establishment can indirectly alter:

- the vegetative species' composition of an area,
- shrub canopy closure patterns and distribution,
- individual plant vigor,
- soil surface erosion rates,
- the level of sediment affecting water quality,
- the soil productivity of a site,
- water runoff volume or rate,
- the quality of threatened and endangered species habitat,
- aquatic and terrestrial habitat condition,
- fire regimes, big game winter range,
- the level of shrub and tree regeneration

(Final EIS, Southwest Idaho Ecogroup, 2003).

The main weed of concern for this area is spotted knapweed, a highly invasive species, which is currently found in small, scattered populations. Under Alternative 3, this species will likely remain in isolated, small populations adjacent to roads and trails given the ability for range managers to detect new infestation in conjunction with range monitoring over the next three years. Infestations of musk thistle, black henbane, dalmatian toadflax, yellow toadflax and cheatgrass area also found along roads and trails.

Recreation use under this alternative will likely allow for continued tracking of non-native plant populations and treatment of these isolated populations along roads and trail. Current weed management plans will be used to direct treatment and containment strategies. The ability to detect and monitor weed populations will influence the size and density of new weed populations.

Cumulative Effects

Current infestations of spotted knapweed can be found along roads and trails in Carbonate Creek and Bowers Creek. These are semi-contained. However, large infestations on adjacent private and BLM lands may serve as a seed source for increased infestation and establishment. Recreational and other land uses (such as mining, vegetation management) may allow for infestations and establishment of invasive species.

Under Alternative 3, recreational impacts and uses will likely remain the same or increase given current recreational use trends. Increased recreational use and associated disturbance may allow for non-native plant establishment. ORV's and ATV's may increase the incidence of non-native plant introduction and establishment. Such vehicles may encounter infestations within the allotments or along adjacent trails or roads and may serve as vectors to more remote locations. Additionally, these vehicles could introduce new highly invasive species from other sources. Introductions of such species in remote locations could lead to new invasive species establishing within the allotments and may make treatment and containment difficult.

No foreseeable mining activities have been identified at this time. However, activities associated with the reclamation of Livingston Mine may introduce potential impacts or may provide the opportunity to treat invasive species. The largest infestation of Dalmatian toadflax is found with the Livingston mill area along Big Boulder Creek. Treatment of this population prior to or in conjunction with restoration efforts may reduce spread to other locations.

The risk of exotic plant infestations occurring within wildfire areas is a concern under all alternatives. No foreseeable prescribed fire activities have been identified. Wildland fire is always a risk and could contribute to the spread of established populations.

Issue - Fisheries / Hydrology

Hydrologic Integrity – Common to All Alternatives

Direct and Indirect Effects

Livestock grazing on the East Fork allotments has resulted in the loss or partial loss of riparian function on some reaches of some streams. The ability of these reaches to handle flood events, transport sediment, and maintain local water tables has been reduced by alteration of the channel morphology (Rosgen 1996, Platts 1984). The channel morphologies have been altered through stream bank trampling and chiseling by livestock and through reduction in the vigor and density of riparian vegetation by both wildlife and livestock (Auble, Friedman and Scott 1994, Kovalchik and Elmore 1991). As a result, stream damage that is often attributed to “the flood”, can often be more accurately attributed to the chronic

loss of riparian and streambank integrity that preceded the flood due to excessive grazing. Where dense and deep-rooted riparian vegetation is ultimately completely lost, so is the means with which fine textured soils are bound in place. A common consequence in western landscapes has been the entrenchment (incision) of streams into their floodplains. Although not extensive, some entrenchment has occurred within the allotments.

The severity of livestock effects on physical riparian and hydrologic function is related to both the stocking density and the time cattle spend within riparian areas (Platts 1984). Higher stocking rates increase the opportunity to affect the physical and vegetative components of the area. In comparing the alternatives, those that include practices or standards specifically designed to address causative factors, by limiting the number of livestock or time spent within streamside areas, will be deemed more effective and timely in restoring or maintaining riparian and hydrologic function (Magilligan and McDowell 1997).

Prediction of the effects of various grazing scenarios on all aspects of future hydrologic function is speculative. There have been few attempts to quantitatively predict the changes in flood susceptibility, ground water storage, channel morphology, or sediment production as related to changes in grazing systems or stocking rates. The extreme variability in the physical and vegetative parameters, coupled with variability in permit administration and compliance, make quantified predictions very difficult. Consequently, the following assessment contrasting the difference among alternatives will be primarily qualitative.

This analysis also assumes that where functional benefits can be derived by riparian and aquatic habitats from the presence and habits of grazing/browsing ungulates, that these benefits are maximized with the native ungulates with whom they evolved, when within their historic densities. For example, monitoring by the Sawtooth NF of areas closed to livestock grazing has documented strong habitat recovery even with the continued presence of large numbers of elk (Hudak 1992, 1993, 1993b, 1997, Hudak, et. al 1996). With few exceptions, ungulates native to central Idaho remain present within the East Fork allotments (Merriam 1891).

Improvement of riparian attributes after the implementation of grazing controls in riparian areas has been well documented (Benneyfield and Svoboda 1998, Platts 1984). Platts and Rinne (1985) describe 17 examples of riparian recovery after control of livestock in riparian areas.

Recovery of impaired, low to moderate gradient, response channels, if not severely entrenched in their floodplains, generally follows a predictable progression (Benneyfield and Svoboda 1998). The level of impairment, at the time in which the disturbance ends, determines the starting point in the recovery sequence.

- Existing vegetation along the stream margin increases in both vigor and density.
- Vegetation begins to trap sediments, causing deposition and building of the stream banks.
- As streambank deposition continues, the stream narrows, causing a decrease in width/depth ratio. In the coming years, as the channel continues to narrow, floods are

no longer contained in the channel, but, instead, spread out on the floodplain. This serves to reduce channel erosion, and also results in greater exchange of water between the channel, floodplain, and riparian soils, eventually establishing a local water table that is more resilient to seasonal fluxes in streamflow and climate. The narrow channel also becomes more efficient in transporting sediments, and excess in-channel deposition is reduced.

- The maintenance of these physical riparian functions eventually leads to the soil/water conditions necessary for the reestablishment of native streamside vegetation, such as willows and sedges, in the composition and densities necessary to assure long-term maintenance of the entire suite of physical, chemical, and biological riparian functions, that is, the desired condition.

However, where channels have become severely entrenched, stream recovery follows a much different initial response, and requires a much greater period to achieve pre-entrenched desired conditions (Van Haveren and Jackson 1987, Harvey and Watson 1986). The vertical walls of an entrenched gully fully contain substantial floods and are subject to their full energies. As a result the gully walls first give way and widen until an energy balance is achieved – essentially a new floodplain width is shaped. At this point the sequence described above occurs within this inner floodplain and the gully floor rises through annual deposition until, many decades later, it may achieve the elevation of the former valley floor. Entrenchment is a catastrophic event in that it establishes a new sequence of events that must occur, over many years, before returning to a former state. (Lockwood and Lockwood, 1993). Sediment quantities and the overall magnitude and duration of effects are considerably greater than non-entrenched conditions.

Cumulative Effects to Hydrologic Integrity

Cumulatively, grazing of domestic livestock remains the single greatest landscape activity within the East Fork drainage, on both public and private lands, and likely results in the largest and most widespread effects on stream and river integrity. Grazing has persisted for over a century throughout the drainage. Sheep grazing in the late 1800s and early 1900s was widespread and extreme in grazing intensity (USDA 1941). The greatest alterations by sheep were to upland conditions. The widespread conversion to cattle in the 1950s and 1960s refocused the effects of grazing, to a greater degree, on streamside areas. Private lands within the drainage are also typically grazed, and often more intensively than the public lands. The extensive cottonwood floodplains that once occupied the East Fork valley bottom have mostly given way to irrigated pasture.

From streams within 11 of 12 major drainages described in Chapter 3, water is removed for irrigation purposes, typically near their mouths. These diversions are dependent on a reliable supply of water from upstream sources on public lands. Upstream effects such as soil compaction, changes to riparian vegetation, and channel widening or incision, can cause changes to water infiltration and retention. This in turn can cause less water to be available for streamflows during the low flow irrigation periods. Removal of substantial quantities of water from streams over years can also result in significant changes in the channel and streamside characteristics below the diversions, such as reduced channel capacity, conversion of streamside vegetation, and, consequently, destabilization.

Roads primarily occur within the lower valley bottoms of the East Fork and the largest tributaries on both public and private land. Often they remain on or near alignments that they were established on many decades ago as the “easiest route”. These routes often conflict with the natural paths of streams and rivers, and numerous actions have been taken to protect the facilities from meandering streams.

Currently, active mining within the vicinity of the East Fork allotments is limited to little more than pick and shovel assessment work. Mining activities that have occurred in the last century have been much more substantial. By far the largest effect to streams has been from the construction and use of the numerous roads, often in very steep and erosive sites, constructed to access the claims. Many of these persist with either direct effects continuing from the road (e.g. erosion), or from the indirect effects from destabilized stream or gully conditions initiated earlier.

Private lands within the East Fork continue to experience ever greater pressure for subdivision. New non-traditional homes and small ranches appear with increasing frequency. Some of these continue grazing within their acquired parcels, and others do not. Where these developments occur along streams, and where grazing does not remain, nor is replaced by a similar intensive streamside activity, actual improvement in some stream features would be expected, particularly riparian extent and integrity. However, increased development within these floodplains could accelerate instream modifications, for pleasure or convenience, or in response to perceived threats or emergencies. With these developments also follows the associated utilities and services. Fiber optic lines are currently extending into the many areas. Lines have been installed to much of the private land in the East Fork in recent years. In 2003 a fiber optic line was routed to Slate Creek parcels. Erosion and sedimentation effects can result, but are typically temporary.

Each permittee associated with the East Fork allotments currently owns associated private pastures along the East Fork Salmon River, or, with one permittee, along Sullivan Creek. These associated private pastures typically serve as the land base where livestock reside during a portion, and often the majority, of the year when not on public land. In some cases, additional, more distant pastures may also be used. As such, segments of the East Fork and Sullivan Creek within the private pastures experience many of the same effects to streams and fish habitats as those on public lands, but without the benefit of established limits (i.e. standards). When grazing seasons are cut short on public lands because of drought conditions or administrative failures, the balance of the season is likely to be picked up by the private pastures. When this occurs, effects avoided on public lands may simply be transferred to habitats within the private pastures. Likewise, when permitted numbers are permanently reduced or eliminated on the public land allotment, permittees may increase their reliance of their private lands through even more intensive use, leading to even greater detrimental effects to river and stream habitats.

As a consequence of these many influences within the watershed, the functional integrity of the East Fork has been substantially altered. In response, many treatments have been engineered and implemented by the landowners as well as other public and private groups. In recent years some riverbanks have been fenced to exclude livestock in order to help reestablish resilient native vegetation. In addition, many treatments have used hard features (e.g. riprap, barbs, drop structures) to control the river energy. However, despite these well

intended objectives to better control the river's energy, the results appear to have been mixed, typically fighting against this low gradient river's natural tendency to meander. High flows continue to substantially alter river conditions particularly, it appears, in areas where native floodplain vegetation is absent. As such, the natural hydrologic functionality, as well as habitat complexity and productivity, remains diminished.

THREATENED, ENDANGERED, AND SENSITIVE FISH

Common to All Alternatives

Direct and Indirect Effects

Since fish reside in streams, the cause and effects described in the previous section (Hydrologic Integrity) are directly pertinent here, and contribute towards the basis for determining effects to fisheries. Essentially, fish are one of the life forms that can be affected when their physical habitats within streams are altered. The effects of livestock grazing on listed fish and critical habitat are related, in part, to the biophysical attributes of each specific area (watersheds vulnerability, climate, vegetation, etc). Effects of livestock grazing on stream habitat and fish populations can be separated into direct and indirect (chronic) effects. Direct effects are those that contribute to the immediate loss of individual fish, and loss of specific habitat features (undercut banks, spawning substrate, etc) or localized reductions in habitat quality (sedimentation, loss of riparian vegetation, etc.). Chronic effects are those, which, over a period of time, result in loss or reductions of entire populations of fish, or widespread reductions in habitat quantity and/or quality. Chronic effects of grazing result when upland and riparian areas are exposed to activity and disturbance levels that exceed the assimilative abilities of a given watershed. Both direct and indirect fish mortality are possible, and the potential for mortality extends to all life cycle phases.

For Endangered Snake River sockeye salmon, no measurable difference would be apparent between the three alternatives. Sockeye use the Salmon River, lying roughly a mile north of the Lower East Fork Allotment, for migratory habitat to and from the Pacific Ocean and their natal lakes within Sawtooth Valley upstream. Although differences would exist between the alternatives on the quality and temporal quantity of water that would reach the Salmon River from tributaries within the allotments, these differences would be overwhelmingly masked by conditions within the much larger volume of the Salmon River. As such, differences in the influence on sockeye migratory conditions would be indistinguishable and considered negligible, and will not be evaluated further.

Effects of livestock on spawning behavior and success of salmonids is most applicable to adult chinook salmon and bull trout, since their late summer spawning periods correspond to the period when livestock are most likely to linger in cool streamside areas. Although some early season grazing may overlap with the spring spawning periods of steelhead, redband, and cutthroat, livestock are far less likely to occupy these streamside areas. In addition, high stream stage during this period also provides greater security cover to fish, and a greater deterrent to livestock from entering streams.

Anadromous chinook salmon and fluvial bull trout returning to their natal streams must reach spawning grounds at the proper time and with sufficient energy reserves to complete their life cycles (Bjornn and Reiser 1991). Before ever reaching habitats within the SNRA, chinook salmon have traveled nearly 900 miles since leaving their ocean environment, and surmounted numerous obstacles (Lee et. Al. 1997). Feeding generally ends when this

migration begins. When not delayed, chinook begin arriving within the SNRA in late May and June. Bull trout will also typically begin moving into their natal tributaries beginning in mid-summer. Between their arrival and the spawning period, behavior is driven by the need to conserve energy, and adults hold up in low velocity deep pools, large wood, or bank and boulder cavities.

As the spawning period nears, chinook and bull trout begin to move, attracting and appraising potential mates, as well evaluating potential spawning habitats. Salmonids instinctually evaluate a number of natural conditions in selecting optimum spawning locations such as; substrate size and condition, water flow through the substrate, water depth and velocity, proximity to cover, and absence of perceived threats (Bjornn and Reiser, 1991). However, spawning substrates, deposited naturally within riffles and the tails of pools, can be considerably more exposed than the deep cover these fish would normally occupy. As a consequence, in-channel and bankside grazing activities may disrupt spawning behavior by driving spawning pairs to other, potentially less suitable, habitats, or delay spawning, or perhaps cause spawning to be abandoned altogether. Once a preferred spawning site is selected, and a mate attracted, the pair settle into the river current and excavation of the redd begins. When actively spawning, effects from in-channel or bankside grazing activities could result from both the effects of reduced adult energy reserves, or from compromised eggs or redd construction.

Salmonid vulnerability to direct effects of grazing is greatest during early development stages, when fish have little or no capacity for mobility, and large numbers of embryos or young are concentrated in small areas. Cattle entering spawning areas can trample redds, and destroy or dislodge embryos and fry. The vulnerability of embryos and fry to mortality from trampling and other types of disturbance decrease as fish become more mature and mobile. Salmonid incubation periods, described in Chapter 3, can overlap with grazing seasons.

Grazing can lead to increased contributions of sediment from uplands and adjacent stream banks and riparian areas through increased surface erosion, decrease in effective vegetative ground cover and root binding strength, streambank instability, and stream channel incision. Increased sediment can result in higher suspended sediments, which can directly affect fish health. If delivered in sufficient quantity, interstitial spaces of stream substrates are filled, impeding water flow through redds, reducing dissolved oxygen levels, and restricting removal of wastes from redds. This may lead to increased embryo and fry mortality (Bjornn and Reiser 1991). Excess sedimentation, especially in low gradient channels can also fill larger habitats such as juvenile rearing or adult holding pools. Increased sediment, increased width to depth, and reduced vegetative cover can also lead to an increase in summer stream temperatures and loss of winter thermal cover.

Recruitment of young willows, cottonwoods, and other desirable riparian plant species may be reduced from direct livestock grazing. The reduction in streamside vegetation increases stream temperature and reduces allochthonous inputs and decreases sediment filtration capability. Increased sedimentation from in-stream, riparian and upland sources, and decreased instream, riparian and upland water storage capacity, work in concert to reduce the health and vigor of stream biotic communities (Armour et al. 1991, Platts 1991, Chaney et al. 1990). Increased sediment loads reduce primary production in streams.

Response reaches that consist of lower gradients and wider valleys with lush vegetation are preferred by livestock, but also commonly contain the most productive fish habitats, as well as the most sensitive streams to disturbance. Within these reaches, vegetation, rather than bedrock, provides stability. However, because of the availability of water, forage, and thermal cover, livestock often linger in such riparian areas. Overgrazing can alter streamside vegetation, diminish vegetative productivity, increase soil compaction, and decrease plant cover and soil surface litter. This can in turn change plant composition leading to less instream cover, less woody and herbaceous riparian vegetation, and reduced terrestrial and aquatic insects for juvenile and resident fish species. Persistent degraded conditions adversely influence resident fish populations (Meehan 1991). Grazing such areas can also trample or chisel away bank habitats and destabilize stream banks, and reduce herbaceous and woody vegetation along stream banks and within riparian areas (Platts 1991), or change the composition of stream bank species from plants with deep soil-holding root structures to less desirable, shallow-rooted species. This, in turn, contributes even greater volumes of sediment delivered to ever more wide, shallow, and exposed stream conditions with less off channel habitats – all creating undesirable and unproductive habitat conditions for aquatic species.

Soil compaction, changes to riparian vegetation, and channel widening or incision can cause changes to water infiltration and retention. This can cause less water to be available to instream habitat during low flow conditions.

Cumulative Effects to TES Fish

The legacy of historic human activities, acting upon the landscape within and surrounding the East Fork allotments, has narrowed the ability of aquatic systems to support abundant, diverse, and connected salmonid populations.

Cumulative effects occur from grazing of domestic livestock on other public and private lands, which exist along most streams within the drainages surrounding the East Fork allotments, particularly within the East Fork Salmon River drainage. Since private lands have typically been grazed more intensively than the public lands over the last century, the best habitat conditions are thought to exist on public lands. For example, the extensive cottonwood floodplains that once occupied the East Fork valley bottom have mostly given way to irrigated pasture. Nevertheless, with the low numbers of recent chinook returns, an excess of suitable spawning habitat is still available along the private lands of the East Fork, and little spawning has occurred in the headwaters or tributaries in recent decades. This mainstem spawning may result in even greater mortality during the critical egg to smolt period for both chinook and steelhead (Kiefer and Lockhart 1995).

Irrigation diversions remove water from streams within 11 of 12 major drainages described in Chapter 3, typically near their mouths. Some of these are screened to prevent juvenile fish entrainment, but many are not. All reduce the quantity and quality of aquatic habitats downstream, some substantially. The volume of water removed, and its proportion of the total, varies by diversion, season, and the year-to-year influence of climate. In some locations the remaining instream flows below a single, or series of diversions, can become insufficient not only for habitats within, but also for migration through, rendering upstream habitats also inaccessible and unusable. Rapid changes in stream stage due to diversion controls can also strand fish in isolated pools and lead to mortality.

Overall, numerous other cumulative effects occur to TES fish within areas contained by and surrounding the East Fork allotments. Those discussed in the previous section (Hydrologic Integrity) such as roads, mining, and floodplain development, that have caused, or may cause, alteration to stream habitats and channel integrity, apply directly to effects on the fish that occupy them through the mechanisms already discussed. Generally habitat conditions on private lands have been altered and simplified, reducing both quantity and quality of the habitats, and such effects would be expected to continue.

Effects by Alternative

Table IV-1: Contrast of stream characteristics between Alternatives 1 and 2 within the groups of major hydrologic drainages of the existing East Fork allotments.

Drainage Groups	total stream miles within the drainage	stream miles within the allotment boundaries									
		total		estimate of critical habitat for chinook and steelhead		proposed critical habitat for bull trout		generally accessible to cattle		with streamside areas not moving towards vegetation management objectives	
		Alt 1	Alt 2	Alt 1	Alt 2	Alt 1	Alt 2	Alt 1	Alt 2	Alt 1	Alt 2
Slate, Mill, Holman, French, Sullivan	157.6	83.1	60.1	1.5	1.5	5.9	3.9	63.1	46.1	18.7	11.5
Big Lake	65.0	46.1	44.5	0	0	0	0	37.0	36.2	16.7	15.8
Big Boulder, Little Boulder, Wickiup	96.9	71.7	3.0	5.4	0	17.7	0	47.8	2.8	9.0	0
Germania	93.3	45.3	0	5.0	0	10.7	0	18.3	0	0	0
Bowery	39.5	39.5	5.9	0	0	7.1	0.7	27.4	4.8	5.5	0.5
West Pass, Upper East Fork	149.4	129.7	94.5	17.7	15.3	31.6	24.1	51.6	40.0	8.2	8.1
Total	601.9	415.6	208.0	29.6	16.8	73.1	28.8	245.2	129.8	58.0	36.0

Alternative #1

Direct and Indirect Effects - Summary

Implementation of Alternative 1 – maintaining current permitted numbers, seasons, and standards – would make the least progress toward achieving the desired condition. Largely, it is this alternative that has led to, or at least maintained, the existing condition. Current physical conditions and trend of the stream channels and their habitats would remain relatively unchanged.

Channels that are currently flowing through riparian areas not moving toward FLRMP vegetation objectives would continue to receive the same level of use that led to the conditions described in Chapter 3. Those channels where riparian integrity has been lost or severely damaged would also remain at risk of catastrophic change through entrenchment

(Rosgen 1996). Small channels, typically having less natural resilience than larger channels, would remain the most compromised.

In grazed areas where these effects are observable and/or measurable, stream channels generally contain more fine sediment, stream banks are less stable, banks are less undercut, and summer water temperatures are higher than is the case for streams in ungrazed areas. Therefore, populations of salmonids and other aquatic biota sensitive to these changes would continue to experience reduced reproduction, recruitment, and growth (Platts 1991).

Where livestock have direct access to the streams, or stream or lakeside areas, urine and fecal matter can influence water quality via the nutrient budget. The introduction of nutrients, in particular nitrogen and phosphorus, can result in increased primary production followed by increases in biomass within stream dwelling invertebrate and vertebrate populations. Such changes may be considered beneficial within these low nutrient environments up to a point where species composition and community changes occur. Water quality can also be reduced with the introduction of bacteria and other microorganisms into stream and lake waters, although the effects to native biota are not well studied. These effects to water quality are not monitored within the East Fork allotments. Therefore this analysis simply assumes that, when compared to background levels, nutrient and bacteria levels would be periodically higher due to the presence of livestock under Alternative 1.

Successful implementation of existing annual use standards would allow recovery under most circumstances (Clary and Webster 1989), however the demonstrated consistent difficulty in meeting current standards, when implementing the current action, would be expected to perpetuate the existing compromised conditions. Should this typical outcome reverse, and intensive management consistently achieve use standards, Alternative 1 would still result in the greatest risk and require the longest period to achieve the desired condition – simply due to the greatest number of livestock on the greatest land base area. Streamside areas associated with 58 stream miles, in 11 of the 12 major drainages described in Chapter 3, would continue to fail to move toward FLRMP vegetation management objectives. In these areas, bank trampling and chiseling would continue to compromise stream function and habitat capability. Likewise, when located within headwater seeps, springs, and wet meadows, such areas would also continue to be physically damaged and have their productivity diminished through compaction, pedestal formation, soil puddling, and excessive browse.

An estimated 30 miles of designated critical habitat of chinook and steelhead, and 73 miles of proposed critical habitat of bull trout would also remain within the allotment boundaries. The relative abundance of bull trout populations, patch size, as well as their spatial distribution would be expected to remain unchanged for this MIS (FLRMP SWGO13).

Consistency with FLRMP direction would remain tenuous. Although conditions in most areas have reversed from the declining trends that were occurring prior to the listing of ESA fish a decade ago, recovery remains static or very slow with current use. Therefore, with the implementation of Alternative 1, in most areas, habitat recovery would be expected to remain in rough balance with annual degradation due to grazing ungulates (FLRMP SWST04, 0317, 0322, SWGO02, SWGO03, SWGO10, SWGO14, 0334). Water quality would likewise show little change. In most areas, water quality would continue to support beneficial uses, but in

particular streams, or situations (such as elevated sediment in small streams), diminished conditions would be expected to persist (FLRMP SWST01, SWST07, SWGO06, SWGO07, SWGO08). In some areas detrimental disturbance to soils would remain in excess of the 15% threshold (FLRMP SWST02, SWGO01).

Fish habitat would generally experience only temporary, annual, effects, and slow short and long term improvement (FLRMP TEST006, 0302, 0342). Measures would continue that prevent conflicts between livestock and spawning or incubating ESA listed fish (FLRMP TEST25, SWGO11). As such, the fisheries values of the Sawtooth NRA would avoid additional decline, but experience little recovery (FLRMP 0301, 0302).

Cumulative Effects - Summary

The effects of continued implementation of the no change alternative would result the same current cumulative effects within watersheds draining the East Fork allotments. Current conditions and trends, both on and off the allotments, would remain unchanged.

In one aspect, Alternative 1 presents the greatest cumulative future risk to habitats within the associated private pastures because it would sustain the greatest number of livestock on the allotments, which would then annually shift to the private lands. However, it could also be concluded that Alternative 1, with the greatest continued use of public lands, presents the least risk to private pasture habitats since there would be less incentive for the permittees to maximize livestock production on their private lands.

Grazing public lands typically increases the risk and spread of noxious weeds. Although best management practices are followed, treatments of noxious weeds on public lands present some risk to water quality, riparian habitats, and aquatic fauna. Therefore, the more animals or area permitted, the higher the risk from future noxious weed treatments. Alternative 1 would permit the greatest number of livestock, over the largest area, and, as a result, present the greatest future risk to stream and streamside habitats from possible subsequent noxious weed treatments.

Slate/Silver Rule, Holman/Mill, French, and Sullivan Direct and Indirect

Within the drainages of the existing French Creek Pasture, approximately 76 percent of the estimated 83 miles of mapped streams would remain open and generally accessible to cattle. Of these 63 miles, riparian conditions adjacent to 30 percent (19 miles) would be maintained in their current identified condition of not moving toward FLRMP vegetation management objectives. Habitat conditions within the French Creek ACS priority subwatershed would see only slow short and long-term improvement (FLRMP 0330, 0343).

An estimated 1½ miles of designated critical habitat for chinook and steelhead, and 6 miles of proposed critical habitat for bull trout would remain within the permitted allotment boundary. Direct effects to listed fish would be mostly avoided with existing timing mitigations, except ¾ mile of Slate Creek where steelhead incubation and spawning chinook may be at risk, should they reestablish. Neither is known to have occupied Slate Creek in recent decades. Incubation effects to cutthroat trout may occur in early summer within occupied reaches that are also accessible to livestock.

Cumulative Effects

No change would occur within these drainages to hydrologic function or habitat conditions. Continued grazing of the Lower East Fork Allotment, combined with downstream grazing on other Forest Service, BLM, and private pastures, as well as irrigation withdrawals, roads, private land developments, and highway barriers, would continue to diminish hydrologic functions and fish populations within these drainages.

Big Lake**Direct and Indirect Effects**

Within the Big Lake drainage of the existing Big Lake Pasture, approximately 80 percent (37 miles) of the estimated 46 miles of mapped streams would remain open and generally accessible to cattle. Riparian conditions adjacent to 45 percent (17 miles) would be maintained in their current identified condition of not moving toward FLRMP vegetation management objectives. Stream and streamside habitat conditions within the Big Lake Creek drainage, particularly its tributaries, would see only slow short and long term improvement (FLRMP 0343).

No designated critical habitat for chinook and steelhead, or proposed critical habitat for bull trout would be located within the permitted allotment boundary. Incubation effects to redband trout may occur in early summer within occupied reaches of Big Lake Creek that are also accessible to livestock.

Cumulative Effects

No change would occur within the Big Lake drainage to hydrologic function or habitat conditions. Continued grazing of the Lower East Fork Allotment, combined with downstream grazing on adjacent BLM, would continue to diminish hydrologic functions and fish populations within tributaries of Jimmy Smith Lake.

Big Boulder, Little Boulder, and Wickiup**Direct and Indirect Effects**

Within the Big Boulder, Little Boulder, and Wickiup drainages of the existing Boulder Pasture, approximately 48 miles of mapped streams (67 percent of the total within the allotment boundaries) would remain open and generally accessible to cattle. Of these, riparian conditions adjacent to 9 miles (19 percent) would be maintained in their current identified condition of not moving toward FLRMP vegetation management objectives. Stream reaches where bank stability and pool frequency are less than the desired conditions, would likely remain so (FLRMP 0343).

An estimated 5½ miles of designated critical habitat for chinook and steelhead, and 18 miles of proposed critical habitat for bull trout would remain within the permitted allotment boundary. Direct effects to listed fish would be mostly avoided with existing timing mitigations, except approximately 3 miles within Big and Little Boulder Creeks where chinook spawning may be at risk of direct effects during early August, should they reestablish. Chinook have not been documented within the boundary of the allotment in either drainage in recent periods.

Cumulative Effects

No change would occur within these drainages to hydrologic function or habitat conditions. Continued grazing of the Lower East Fork Allotment, combined with recreational stock grazing in headwater meadows, and downstream grazing on BLM, State, and private pastures, as well as irrigation withdrawals, roads, mining, and private land developments, would continue to diminish hydrologic functions and fish populations within these drainages.

Road 667 was constructed to access the Livingston Mill and continues to contribute large quantities of sediment into Big Boulder Creek annually. This situation has been recognized for many years, but options for treatment are few, difficult, and expensive, given the precarious alignment of the road above the creek. Concepts to improve the most immediate sources of erosion (i.e. tread, and cut and fill slopes) are being developed. Should they be determined feasible and implemented, a temporary increase in sediments from construction delivered to Big Boulder Creek would be expected, while immediately followed by a sizable decrease.

The Livingston Mill, itself, is inactive and is currently listed as a CERCLA site due to EPA's assessment of possible environmental risks. Actual risks are currently being determined. The type of site rehabilitation ultimately prescribed would determine the short and long term effects, of both positive and negative to water and streams. It is reasonable to conclude that the associated disturbance with implementing the rehabilitation plan would lead to a temporary increase in sediments delivered to Big Boulder Creek. However, if successful, the long-term result should be a benefit over the bare and erosive current conditions.

Germania

Direct and Indirect Effects

Within the Germania Creek drainage of the existing Boulder Pasture, approximately 18 miles of mapped streams (40 percent of the total) would remain open and generally accessible to cattle. As discussed in Chapter 3, riparian conditions adjacent to all these are currently identified as meeting FLRMP vegetation management objectives or moving toward. However, bank stability and pool frequency fall below desired conditions in some mainstem reaches. These inconsistencies still suggest that some level of stream and riparian effects are occurring, or have occurred in the past, but are not to the degree of other areas of the allotments. Implementation of Alternative 1 would make no change to these conditions and trends.

An estimated 5 miles of designated critical habitat for chinook and steelhead, and 11 miles of proposed critical habitat for bull trout would remain within the permitted allotment boundary. Direct effects to listed fish would be avoided with existing timing mitigations. The endemic bull trout population above the falls would be maintained but would continue to experience some influence from livestock (FLRMP 0326). Approximately 5 miles of Germania Creek below the falls may be used for steelhead incubation during periods when cattle are within the pasture. However, Germania Creek in this lower segment is a large stream which is likely inaccessible to livestock during snowmelt, which corresponds with the steelhead incubation period.

Cumulative Effects

No change would occur within the Germania Creek drainage to hydrologic function or habitat conditions. Continued grazing of the Lower East Fork Allotment, combined with sheep grazing, roads, and remnant effects from past mining in the headwaters, would continue to influence hydrologic functions and fish populations within the Germania drainage. Effects from the 2001 debris flows will also continue to alter habitats, both positive and negative, in the near future.

Bowery**Direct and Indirect Effects**

Within the Bowery Creek drainage of the existing Upper East Fork Allotment, approximately 27 miles of mapped streams (70 percent of the total) would remain open and generally accessible to cattle. The heavily vegetated mainstem of Bowery Creek would remain generally protected and inaccessible to cattle and retain the functioning conditions. However, the open and exposed headwater areas would continue to be a focus of livestock grazing, and damaging effects. Riparian conditions adjacent to 5 ½ miles (20 percent) of accessible streams would be maintained in their current identified condition of not moving toward FLRMP vegetation management objectives.

No designated critical habitat for chinook and steelhead is located with the permitted allotment boundary, however 7 miles of proposed critical habitat for bull trout would remain within the boundary. Direct effects to listed fish would be avoided with existing timing mitigations.

Cumulative Effects

No change would occur within the Bowery Creek drainage to hydrologic function or habitat conditions. Continued intensive grazing within the headwaters of the Bowery Creek Pasture, combined with the minor effects from the trail and recreational use, as well as the effects to stream flows and fish passage from the irrigation diversion at the mouth, would continue to diminish hydrologic functions and fish populations within the Bowery drainage.

West Pass and the Upper East Fork**Direct and Indirect Effects**

Within the West Pass and the upper East Fork drainages of the existing Upper East Fork Allotment, approximately 52 miles of mapped streams (40 percent of the total in these drainages) would be open and generally accessible to cattle. Segments along the mainstems of these two drainages, as well as springs and seeps on the high ridges above the lower segments of the East Fork, would continue to be a focus of livestock grazing, and damaging effects. Riparian conditions adjacent to 8 miles (16 percent) of accessible streams would be maintained in their current identified condition of not moving toward FLRMP vegetation management objectives. Stream reaches where bank stability and pool frequency are less than the desired conditions would likely remain so (FLRMP 0343). Habitat conditions within the upper East Fork ACS priority subwatershed would see only slow short and long-term improvement (FLRMP 0330).

These two drainages contain more estimated miles (18 miles) of designated critical habitat for chinook and steelhead than the sum all other drainages included in this analysis. They also contain 43 percent (32 miles) of the total proposed critical habitat for bull trout. However, direct effects to listed fish would be avoided with existing timing mitigations (FLRMP TEST25, 0331). Approximately 8 miles of the mainstem of the East Fork may be used for steelhead incubation during periods when cattle are within the pasture. However, the East Fork within this segment is a large river which is likely inaccessible to cattle during snowmelt, which corresponds with the steelhead incubation period.

Cumulative Effects

No change would occur within the West Pass and upper East Fork drainages to hydrologic function or habitat conditions. Continued grazing of the Upper East Fork Allotment, combined with grazing on private pastures, irrigation diversions, roads, mining, and private land developments, would continue to diminish hydrologic functions and fish populations within these drainages.

Alternative #2

Direct and Indirect Effects - Summary

Implementation of Alternative 2 – adjusting the allotment boundaries, and revising permitted numbers, seasons, and standards – would make progress toward achieving desired conditions. Within those areas where grazing would no longer be permitted, the effects would be much as those described in Alternative 3. Where grazing remains, the effects would be much like those described in Alternative 1, except that with the reduced levels of permitted livestock, and adherence to achieving standards, a slow progression of recovery would occur within the formerly damaged aquatic and riparian habitats. Although some level of annual damage would still occur, the net annual result would be towards recovery (Clary and Webster 1989).

The length of time to achieve recovery would be determined by the existing condition of each stream initially, and the amount of annual disturbance still occurring. Where existing vegetation is relatively dense and vigorous and the stream hasn't become entrenched, the desired condition may well be reached within a decade. Where vegetation is absent from banks, and width to depth ratios are large, then recovery can be expected to take longer. If entrenched, the recovery period can be many decades.

Recovery would progress immediately, and at natural rates, in areas no longer permitted for grazing. These would principally include the Sullivan, Big Boulder, Little Boulder, Wickiup, Germania, and Bowery drainages. Elsewhere, the level of permitted livestock would be reduced and slow progress towards recovery would be expected to commence. Although the density of stock concentrated in riparian areas may vary from pasture to pasture, adherence to utilization standards would be expected to keep the annual disturbances comparable and recovery progressing in each.

The continued disturbance provided by livestock grazing has the potential to stall recovery anywhere between the existing condition and the desired condition. It's possible that a given

level of disturbance would allow the attainment one level in the process, but would prevent further progression. The ability to further adapt the action in the future is important to address such future situations as necessary.

As discussed in Alternative 1, where livestock have direct access to streams, or stream or lakeside areas, urine and fecal matter can influence water quality via the nutrient budget. Under Alternative 2, in those areas remaining within the allotments, when compared to background conditions, nutrient and bacteria levels would periodically be higher due to the presence of permitted cattle. Elsewhere, remnant nutrient influences would be expected to be quickly utilized or flushed from the systems.

Successful implementation of existing standards and guidelines would allow recovery under most circumstances (Clary and Webster 1989). Alternative 2 would result in a reduced risk of effects to streams from not meeting annual use standards – simply due to a reduced number of livestock on the reduced land base area. Beginning the first year of implementation, grazing would be removed from the majority of the drainage area in 6 of the 12 major drainages described in Chapter 3. Roughly half the 250 miles of mapped streams that were formerly generally accessible to livestock within the East Fork allotments would no longer be subject to the annual disturbance of grazing from domestic livestock. A similar reduction would occur with designated critical habitat of chinook and steelhead (from 30 to 17 miles), while segments of proposed critical habitat of bull trout would be reduced by 60 percent (from 73 to 29 miles). Within these segments conditions would primarily return to natural processes. Overall, the relative abundance of bull trout populations, patch size, as well as their spatial distribution would be expected to improve with the implementation of Alternative 2 for this MIS (FLRMP SWGO13). With removal of the Boulder and Bowery Units from the allotments, a majority of bull trout habitat currently within the allotment would return to natural conditions. This would include occupied and proposed critical habitat in Big Boulder, Little boulder, Wickiup, Bowery Creeks, and Germania Creek including the endemic population above the falls in Germania Creek (FLRMP 0326).

However, grazing would continue, at reduced levels, along the other half of the existing streams. Approximately 22 miles of streams, where their adjacent riparian areas were formerly identified as not moving towards vegetation standards, would see a slow progression of recovery as grazing intensity is lessened slightly and standards are more consistently achieved. Likewise headwater seeps, springs, and wet meadows, may continue to experience annual effects due to grazing, but the net annual recovery would be expected to be greater, resulting in a slow recovery of formerly damaged habitats.

The difference between Alternatives 2 and 3 is manifested in the extent of recovery that actually takes place on damaged stream reaches, and the time it takes for the desired condition to be achieved. There would be no adverse direct effects from implementing Alternative 2, but rather, only long-term positive effects. Realization of these benefits requires a period of recovery and is dependent on successful implementation of the standards.

Alternative 2 would see more rapid and greater consistency with FLRMP soil, water, and aquatic direction. In areas closed to livestock grazing, recovery towards desired habitat conditions would occur at natural rates. Where grazing remains, over a smaller land base with slightly fewer animals, it is assumed that annual use standards would be more

consistently achieved. As such, recovery would occur in these areas more rapidly than under Alternative 1, but nevertheless still slow in the short and long term (FLRMP SWST04, 0317, 0322, SWGO02, SWGO03, SWGO10, SWGO14, 0334). Water quality would continue to support beneficial uses, and promptly return to natural conditions in the areas closed to grazing. The water quality of Deer and Wickiup Creeks, where IDEQ monitoring concluded water quality was currently compromised, would see positive effects as they are closed to grazing. Elsewhere, in most areas remaining open to livestock grazing, water quality would continue to support beneficial uses, but see only slow added benefits. In some situations, such as with elevated sediment levels in small, low energy, streams, diminished conditions would be slow to show positive trends (FLRMP SWST01, SWST07, SWGO06, SWGO07, SWGO08). In areas where grazing continues, some temporary annual disturbance to soils would occur. However no net increase in the long-term detrimental disturbance condition would be expected. In areas that may currently exceed the 15% threshold for detrimental disturbance, recovery would be initiated in areas closed to grazing, and remain static to very slow improvement in areas remaining open to livestock grazing (FLRMP SWST02, SWGO01).

Fish habitat would generally experience only temporary, annual, effects, and slow short and long term improvement where livestock remain, and experience only unhindered recovery where grazing is discontinued (FLRMP TEST006, 0302, 0342). Measures would continue that prevent conflicts between livestock and spawning or incubating ESA listed fish (FLRMP TEST25, SWGO11). As such, overall, the fisheries values of the Sawtooth NRA would see a net improvement (FLRMP 0301, 0302).

Cumulative Effects - Summary

The effects of implementing Alternatives 2 would result in cumulative beneficial effects over time and space. As channel conditions and riparian function eventually improves on individual reaches of a given stream, the channel and habitats downstream from the affected reach would benefit from a reduction in sediment, stream energy, and water temperatures (Rosgen 1996). Base flow conditions downstream would also be enhanced as greater quantities are stored during snowmelt in improved headwater streamside habitats. These changes would have subsequent beneficial effects downstream on other aspects of riparian function, such as fisheries, wildlife, and irrigation (Shepard 1989). However, in several drainages, these changes would not be rapid, and/or the benefits quickly overwhelmed by the magnitude of the remaining cumulative effects downstream.

As with Alternative 1, Alternative 2 presents either a possible future benefit or risk to cumulative effects within nearby private pastures. If livestock numbers were similarly reduced on private lands with implementation of Alternative 2, the effects to streams and habitat on private land would be expected to reduce proportionally. However, if the reduction on public land leads to even greater dependence on associated private properties, these effects would increase.

Grazing public lands typically increases the risk and spread of noxious weeds. Although best management practices are followed, treatments of noxious weeds on public lands present some risk to water quality, riparian habitats, and aquatic fauna. Therefore, the more animals or area permitted, the higher the risk from future noxious weed treatments. Alternative 2 would continue to permit livestock grazing on public lands, but over a reduced area and

reduced stocking levels. As such, it would present more risk to stream and streamside habitats from possible subsequent noxious weed treatments than Alternative 3, but less than Alternative 1.

Slate/Silver Rule, Holman/Mill, French, and Sullivan

Direct and Indirect Effects

Within the drainages of the existing French Creek Pasture, approximately 55 percent of the estimated 83 miles of mapped streams would remain permitted and generally accessible to cattle, with the Sullivan drainage, and the highest portions of the Silver Rule drainage being removed. Approximately 7 miles of streams with adjacent riparian conditions formerly identified as not moving toward FLRMP vegetation management objectives would be excluded, including the extensive reaches in the Sullivan drainage. This would reduce, by nearly one half, the total accessible reaches not meeting standards within the existing French Creek Pasture (from 30 percent to 18 percent). In these remaining reaches conditions would be expected to slowly improve as a result of reduced stocking density and as grazing standards are consistently achieved. Where channels have become incised in their floodplains, such as near Sullivan Lake and within Mill Creek, little change in condition would be apparent for some time, as these reaches progress through the long recovery sequence required for such circumstances. Habitat conditions within the French Creek ACS priority subwatershed would see more rapid improvement than under Alternative 1, but nevertheless improvement would still be slow in the short and long term (FLRMP 0330, 0343).

An estimated 1½ miles of designated critical habitat for chinook and steelhead would remain within the permitted boundaries, although segments of proposed critical habitat for bull trout would reduce from 6 to 4 miles. Direct effects to listed fish would be mostly avoided with timing mitigations, except ¾ mile of Slate Creek where steelhead incubation and spawning chinook may be at risk, should they reestablish. Neither is known to have occupied Slate Creek in any recent decade. Incubation effects to cutthroat trout may occur in early summer within occupied reaches accessible to livestock.

Cumulative Effects

Some benefits to the overall health of these watersheds would be expected as a result of implementing Alternative 2, although the cumulative effects would remain substantial. Eventual improvement in channel conditions within these drainages would deliver improved conditions downstream, as discussed in the summary. However, downstream effects from grazing would be expected to remain static, or possibly become even worse within the private pastures along Slate Creek, and within the mouths of French and Sullivan Creeks. Likewise no change would be expected to irrigation withdrawals, roads, private land developments, and highway barriers, described in Chapter 3, that currently diminish hydrologic functions and fish populations within these drainages. Also, although best management practices are prescribed, a small temporary effect from sediment is expected to Slate Creek as a result of installing a fiber optic cable within the lower five miles of the drainage in 2003.

Big Lake

Direct and Indirect Effects

Within the Big Lake drainage of the existing Big Lake Pasture, approximately 78 percent (36 miles) of the estimated 46 miles of mapped streams would remain open and generally accessible to cattle. This represents only a small change from Alternative 1 with the high elevation headwaters removed. Riparian conditions adjacent to 43 percent (16 miles) would begin recovery from their current identified condition of not moving toward FLRMP vegetation management objectives. This slow recovery towards desired conditions would be expected as a result of reduced stocking density and as grazing standards are consistently achieved. Where channels have become incised in their floodplains, such as upstream of the “lava flow”, little change in condition would be apparent for some time, as these reaches progress through the long recovery sequence necessary for such circumstances. Overall, stream and streamside habitat conditions within the Big Lake Creek drainage, particularly its tributaries, would see more rapid improvement than under Alternative 1, but nevertheless improvement would still be slow in the short and long term (FLRMP 0343).

No designated critical habitat for chinook and steelhead, or proposed critical habitat for bull trout would be located within the permitted allotment boundary. Incubation effects to redband trout may occur in early summer within occupied reaches of Big Lake Creek that are also accessible to livestock.

Cumulative Effects

Eventual benefits to the overall health of the Big Lake Creek watershed would be expected as a result of implementing Alternative 2. Improvement in channel conditions within these drainages would deliver improved conditions downstream, as discussed in the summary. However, these benefits would mostly be realized at, and end within, Jimmy Smith Lake. Improved base flow conditions may extend below Jimmy Smith Lake possibly improving conditions for both aquatic habitats and irrigation supplies, although these irrigation withdrawals, as well as the roads, and private land developments near the mouth may negate the small benefits to aquatic habitats.

Big Boulder, Little Boulder, and Wickiup

Direct and Indirect Effects

Within the Big Boulder, Little Boulder, and Wickiup drainages of the existing Boulder Pasture, only 3 miles of mapped intermittent tributaries to Big Boulder Creek, high on the ridge dividing the Big Boulder and Big Lake drainages, would remain open and generally accessible to cattle. All of these are currently identified as meeting or moving toward FLRMP vegetation management objectives, and would be expected to improve further or maintain desired conditions. The remaining 46 miles of streams that have previously been accessible to grazing would no longer be within the allotment and recovery would be expected to begin immediately, and require only time to achieve desired conditions (FLRMP 0343). Where channels have become incised in their floodplains, such within the headwaters of Wickiup Creek, little change in condition would be apparent for some time, as these reaches progress through the long recovery sequence required for such circumstances.

No designated critical habitat for chinook and steelhead, or proposed critical habitat for bull trout would be located within the permitted allotment boundary.

Cumulative Effects

Benefits to the overall health of these watersheds would be expected to begin immediately as a result of implementing Alternative 2, although the cumulative effects would remain substantial, particularly within the Big Boulder drainage. Improvement in channel conditions within these drainages would deliver improved conditions downstream, as discussed in the summary. However, recreational stock grazing in headwater meadows and downstream effects from grazing would be expected to remain static, or possibly become even worse within the private pastures at the mouth of Big Boulder Creek, and along the East Fork. Likewise no change would be expected to irrigation withdrawals, roads, mining, and private land developments, described in Chapter 3, that currently diminish hydrologic functions and fish populations within these drainages.

Road 667, within the Big Boulder drainage, was constructed to access the Livingston Mill and continues to contribute large quantities of sediment into Big Boulder Creek annually. This situation has been recognized for many years, but options for treatment are few, difficult, and expensive, given the precarious alignment of the road above the creek. Concepts to improve the most immediate sources of erosion (i.e. tread, and cut and fill slopes) are being developed. Should they be determined feasible and implemented, a temporary increase in sediments from construction delivered to Big Boulder Creek would be expected, while immediately followed by a sizable decrease. The Livingston Mill, itself, is inactive and is currently listed as a CERCLA site due to EPA's assessment of possible environmental risks. Actual risks are currently being determined. The type of site rehabilitation ultimately prescribed would determine the short and long term effects, of both positive and negative to water and streams. It is reasonable to conclude that the associated disturbance with implementing the rehabilitation plan would lead to a temporary increase in sediments delivered to Big Boulder Creek. However, if successful, the long-term result should be a benefit over the bare and erosive current conditions.

Germania

Direct and Indirect Effects

None of the 18 miles of mapped streams that have previously been accessible to grazing within the Germania drainage of the existing Boulder Pasture would be within the allotment under Alternative 2. Recovery would be expected to begin immediately, and require only time to achieve desired conditions. Stream and habitat conditions within the Germania Creek drainage appear to be healthier relative to other areas of the allotment, and recovery would be expected to progress rapidly where altered previously from livestock. A small area, of approximately 130 acres, high on the ridge separating the Germania and East Fork drainages but within the Germania drainage, would be added to the Upper East Fork Allotment. No mapped streams lie within the area, and no measurable influence to downstream habitats would be expected.

No designated critical habitat for chinook and steelhead, or proposed critical habitat for bull trout would be located within the permitted allotment boundary. The endemic bull trout population above the falls would be maintained with all effects due to livestock grazing removed (FLRMP 0326).

Cumulative Effects

Benefits to the overall health of streams and aquatic and riparian habitats within the Germania drainage would be expected to begin immediately as a result of implementing Alternative 2. Improvement in channel conditions within the mainstem and tributaries would deliver improved conditions downstream, as discussed in the summary. However, continued grazing of sheep, as well as roads, and remnant effects from past mining in the headwaters, would continue to influence hydrologic functions and fish populations within the Germania drainage. Effects from the 2001 debris flows will also continue to alter habitats, both positive and negative, in the near future.

Bowery

Direct and Indirect Effects

Within the Bowery Creek drainage of the existing Upper East Fork Allotment, only 5 miles of mapped streams (12 percent of the existing total) would remain open and generally accessible to cattle within Narrow Canyon and near the mouth. Approximately 5 miles of streams with adjacent riparian conditions formerly identified as not moving toward FLRMP vegetation management objectives would be excluded, including the extensive reaches in the headwaters and Long Tom tributaries. This would leave only ½ mile remaining of the segments not meeting standards of the total accessible reaches within the existing Bowery Creek Pasture (from 20 percent to 2 percent). In segments where grazing is removed, recovery would be expected to begin immediately and require only time to achieve desired conditions. In the short segments remaining, conditions would be expected to slowly improve as a result of reduced stocking density and as grazing standards are consistently achieved.

No designated critical habitat for chinook and steelhead would be located with Alternative 2 allotment boundary, however approximately one mile of proposed critical habitat for bull trout would remain within the boundary. Direct effects to spawning and incubating bull trout would be avoided with timing mitigations.

Cumulative Effects

Benefits to the overall health of streams and aquatic and riparian habitats within the Bowery drainage would be expected to begin immediately as a result of implementing Alternative 2. Improvements to channel and habitat conditions would be most pronounced within the headwaters, and the North Fork and Long Tom tributaries, and would deliver improved conditions downstream, as discussed in the summary. Minor effects may persist from continued grazing of the lower drainage, as well as from the trail and recreational use, but desired conditions should be achievable. However, notable effects to stream flows and fish passage from the irrigation diversion at the mouth would continue to diminish fish populations within the Bowery drainage.

West Pass and the Upper East Fork

Direct and Indirect Effects

Within the West Pass and the upper East Fork drainages of the existing Upper East Fork Allotment, approximately 40 miles of mapped streams would remain open and generally accessible to cattle (as compared to 52 miles currently), with the majority of the South and West Forks removed. All 8 miles (16 percent) of streams with adjacent riparian conditions formerly identified as not moving toward FLRMP vegetation management objectives would remain within the Alternative 2 allotment boundary. In segments where grazing is removed

recovery to natural conditions would be expected to begin immediately. Along the lengthy mainstem segments, as well as the springs and seeps on the high ridges, riparian, bank, and pool frequency conditions currently falling short of desired conditions would be expected to slowly improve as a result of reduced stocking density, and as grazing standards are consistently achieved (FLRMP 0343). Although conditions within the floodplain of the mainstem would be expected to show slow recovery, the highly active nature of the channel itself may require many years before marked improvement is apparent.

Habitat conditions within the upper East Fork ACS priority subwatershed would see more rapid improvement than under Alternative 1, but nevertheless improvement would still be relatively slow in the short and long term (FLRMP 0330).

Although Alternative 2 would exclude 2 ½ miles of designated critical habitat for chinook and steelhead, 15 miles would remain within the allotment within these two drainages, which would be over 90 percent of the total within all drainages remaining in Alternative 2. Similarly, the remaining 25 miles of proposed critical habitat for bull trout within the allotment within these two drainages would be 84 percent of the total within all drainages remaining in Alternative 2. Direct spawning and incubation effects would be avoided with timing mitigations (FLRMP TEST25, 0331). Approximately 8 miles of the mainstem of the East Fork may be used for steelhead incubation during periods when cattle are within the pasture. However, the East Fork within segment is a large river which is likely inaccessible to livestock during snowmelt, which corresponds with the steelhead incubation period.

Cumulative Effects

Some benefits to the overall health of these watersheds would be expected as a result of implementing Alternative 2. Eventual improvement in channel conditions within these drainages would deliver improved conditions downstream, as discussed in the summary. However, effects from grazing the associated private pasture would be expected to remain static, or possibly become worse. Likewise, no change would be expected to irrigation withdrawals, roads, or dispersed camping conditions, as described in Chapter 3, and some diminishing influence to hydrologic functions and fish populations within these drainages would be expected to persist.

Alternative #3

Direct and Indirect Effects - Summary

Removing livestock grazing would lead to the reestablishment of hydrologic and riparian function for all streams in the shortest amount of time. Once the reoccurring disturbance from livestock grazing on stream banks and riparian vegetation are eliminated, recovery would be initiated by the natural tendency of the streams to establish morphology consistent with landscape processes. The rate of recovery of a given stream reach depends on a variety of factors including size of the dominant substrate, the stream flow regime, the sediment supply from the watershed above the reach, and the condition of riparian vegetation (Rosgen 1996). The difference between the existing condition and the desired condition is also a consideration in estimating the relative amount of time necessary for recovery. If bank vegetation remains dense and the differences are primarily a matter of the width/depth ratio, or small changes in entrenchment, or the vigor of existing riparian vegetation, then

implementation of Alternative 3 might lead to recovery relatively quickly, perhaps within a decade. Within these reaches, the vegetation and stream flow regimes would interact to narrow and deepen channels and reestablish the relationship between the stream channels and their floodplains.

However, when the effects from grazing or other disturbances are more substantial, where channel sinuosity, gradient, substrate, or alignment have been altered, and/or riparian communities have shifted to more xeric conditions, the period to achieve recovery may be much greater. In extreme situations, where conditions have ultimately lead to severe entrenchment of the channel, Alternative 3 (no grazing by domestic livestock) would aid in initiating recovery, but may not appreciably shorten the substantial period necessary for recovery.

By removing livestock grazing from the allotments, all direct and indirect effects to individuals/populations of chinook, steelhead, bull trout, or westslope cutthroat trout relative to the purpose and need of this environmental analysis would no longer occur. Implementation of Alternative 3 would initiate the most rapid rate of restoration of stream and riparian habitat critical to populations of TES salmonids, which are dependent upon high quality, diverse, and connected streams, with their associated lakes, ponds, and wetland habitats. For bull trout, an MIS, the relative population abundance, patch size, as well as their spatial distribution would be expected to improve with the implementation of Alternative 3 (FLRMP SWGO13). Removal of livestock grazing would remove the most widespread effect to the population within the former allotments.

As discussed in Alternative 1, where livestock have direct access to streams, or stream or lakeside areas, urine and fecal matter can influence water quality via the nutrient budget. Under Alternative 3, remnant nutrient influences would be expected to be quickly utilized or flushed from the systems.

Under Alternative 3, livestock use of the former allotments would be phased away over a three-year period. During this period, annual disturbance would be expected to reduce incrementally, commensurate with the reducing numbers of livestock permitted. Beginning in year four, approximately 250 miles of mapped streams, that were formerly generally accessible to livestock within the East Fork allotments, would no longer be subject to the annual disturbance of grazing from domestic livestock. An estimated 30 miles of designated critical habitat of chinook and steelhead, and 73 miles of proposed critical habitat of bull trout would also be returned to primarily natural processes. Most of the channels and aquatic habitats within would rapidly return to natural conditions. However, approximately 58 miles of streams, where their adjacent riparian areas were formerly identified as not moving towards vegetation standards, are generally more damaged and recovery to desired conditions may require more than a decade, or in the worst conditions, many more.

Alternative 3 would see the most rapid and widespread consistency with FLRMP soil, water, and aquatic direction. With removal of livestock grazing, recovery towards desired habitat conditions would occur at natural rates (FLRMP SWST04, 0317, 0322, SWGO02, SWGO03, SWGO10, SWGO14, 0334). Water quality would continue to support beneficial uses, and promptly return to natural conditions. Without the annual effect of livestock grazing on water quality, conditions would also be expected to show positive changes in those drainages where IDEQ monitoring has concluded water quality is currently compromised (Table III-2)

(FLRMP SWST01, SWST07, SWGO06, SWGO07, SWGO08). Areas where detrimental disturbance to soil has occurred, recovery to functional conditions would be initiated. Full recovery to desired conditions would depend on their initial conditions when livestock are removed. Conditions, such as severe compaction or hummocking, may require a substantial period to regain their natural productivity and/or appearance (FLRMP SWST02, SWGO01).

Fish habitat would generally experience only unhindered recovery (FLRMP TEST006, 0302, 0342). Potential conflicts between livestock and spawning or incubating ESA listed fish would be avoided completely (FLRMP TEST25, SWGO11). As such, the fisheries values of the Sawtooth NRA would see a substantial improvement (FLRMP 0301, 0302).

Cumulative Effects - Summary

The effects of implementing Alternatives 3 would result in the greatest overall cumulative beneficial effects over both time and space of the Alternatives. As channel conditions and riparian function eventually improves on individual reaches of a given stream, the channel and habitats downstream from the affected reach would benefit from a reduction in sediment, stream energy, and water temperatures (Rosgen 1996). Base flow conditions downstream would also be enhanced as greater quantities are stored during snowmelt in improved headwater streamside habitats. These changes would have subsequent beneficial effects downstream on other aspects of riparian function, such as fisheries, wildlife, and irrigation (Shepard 1989). However, in a few drainages these benefits may be quickly overwhelmed by the magnitude of the remaining cumulative effects downstream.

Alternative 3 presents perhaps the greatest risk of change to the private pastures formerly associated with the East Fork allotments. A reasonable expectation would be that the grazing intensity on these private pastures may increase substantially, leading to a similar increase in damaging effects to both channels and the aquatic habitats within. Increased direct effects to TES fish and their critical habitat would also be expected. The effects of possible subdivision of the private lands are more speculative, with potential positive or negative effects depending on the specific type, location, and intensity of the developments.

Grazing public lands typically increases the risk and spread of noxious weeds. Although best management practices are followed, treatments of noxious weeds on public lands present some risk to water quality, riparian habitats, and aquatic fauna. Removing grazing from the former allotments would also eliminate the added potential risk of expanding noxious weed treatments due to permitted grazing.

Slate/Silver Rule, Holman/Mill, French, and Sullivan

Direct and Indirect

Within the drainages of the existing French Creek Pasture, grazing would be removed from all 63 miles of mapped streams formerly permitted and generally accessible to cattle, including approximately 19 miles of streams where adjacent riparian conditions were formerly identified as not moving toward FLRMP vegetation management objectives. Recovery would initiate immediately with slow improvement occurring during the first 3 years of phase out, and then accelerate with the removal of all grazing thereafter. Where channels have become incised in their floodplains, such as near Sullivan Lake and within Mill Creek, little change in condition would be apparent for some time as these reaches

progress through the long recovery sequence required for such conditions. Also, after the three-year phase out period no direct effects to spawning or incubating salmonids would occur. Habitat conditions within the French Creek ACS priority subwatershed would see recovery at natural rates (FLRMP 0330, 0343).

Cumulative Effects

Substantial long-term benefits to the overall health of these watersheds would be expected as a result of implementing Alternative 3, although the cumulative effects could remain considerable. Consistent recovery of channel conditions within the Lower East Fork Allotment would result in less sediments and stream energy carrying into downstream habitats. Base flow conditions downstream would also be enhanced as greater quantities are stored during the spring in improving upstream streamside habitats. However, downstream effects from grazing would be expected to remain static, or possibly become even worse on private pastures. Likewise no change would be expected to irrigation withdrawals, roads, private land developments, and highway barriers that currently diminish hydrologic functions and fish populations within these drainages. Also, although best management practices are prescribed, small temporary effects from sediment are expected to Slate Creek as a result of installing a fiber optic cable within the lower five miles of the drainage in 2003.

Big Lake

Direct and Indirect Effects

Within the Big Lake drainage of the existing Big Lake Pasture, grazing would be removed from all 37 miles of mapped streams formerly permitted and generally accessible to cattle, including approximately 17 miles of streams where adjacent riparian conditions were formerly identified as not moving toward FLRMP vegetation management objectives. Recovery would initiate immediately with slow improvement occurring during the first 3 years of phase out, and then accelerate with the removal of all grazing thereafter. Where channels have become incised in their floodplains, such upstream of the “lava flow”, little change in condition would be apparent for some time as these reaches progress through the long recovery sequence required for such conditions. Also, after the three-year phase out period no direct effects to spawning or incubating salmonids would occur. Overall, stream and streamside habitat conditions within the Big Lake Creek drainage, particularly its tributaries, would see recovery at natural rates (FLRMP 0343).

Cumulative Effects

Substantial long-term benefits to the overall health of the Big Lake Creek watershed would be expected as a result of implementing Alternative 3. Improvement in channel conditions within these drainages would deliver improved conditions downstream, as discussed in the summary. However, these benefits would mostly be realized at, and end within, Jimmy Smith Lake. Improved base flow conditions would extend below Jimmy Smith Lake possibly improving conditions for both aquatic habitats and irrigation supplies, although these irrigation withdrawals, as well as the roads, and private land developments near the mouth could still negate the benefits to aquatic habitats.

Big Boulder, Little Boulder, and Wickiup

Direct and Indirect Effects

Within the Big Boulder, Little Boulder, and Wickiup drainages of the existing Boulder Pasture, grazing would be removed from all 48 miles of mapped streams formerly permitted and generally accessible to cattle, including approximately 9 miles of streams where adjacent riparian conditions were formerly identified as not moving toward FLRMP vegetation management objectives. Recovery would initiate immediately with slow improvement occurring during the first 3 years of phase out, and then accelerate with the removal of all grazing thereafter (FLRMP 0343). Where channels have become incised in their floodplains, such within the headwaters of Wickiup Creek, little change in condition would be apparent for some time as these reaches progress through the long recovery sequence required for such conditions. Also, after the three-year phase out period, conditions with designated or proposed critical habitat for salmon, steelhead, and bull trout within the former allotment would see no influence from permitted livestock.

Since both Alternatives 2 and 3 ultimately remove the vast majority of these drainages from active grazing, the difference would only be a matter of when full recovery is initiated. Alternative 2 would begin the first year, while Alternative 3 would see slow improvement occurring during the first 3 years of phase out, then accelerate with the removal of all grazing thereafter.

Cumulative Effects

Substantial long-term benefits to the overall health of these watersheds would be expected as a result of implementing Alternative 3, although the cumulative effects could remain considerable, particularly within the Big Boulder drainage. Consistent recovery of channel conditions within the Lower East Fork Allotment would result in less sediments and stream energy carrying into downstream habitats. Base flow conditions downstream would also be enhanced as greater quantities are stored during the spring in improving upstream streamside habitats. However, recreational stock grazing in headwater meadows and downstream effects from grazing would be expected to remain static, or possibly become even worse within the private pastures at the mouth of Big Boulder Creek, and along the East Fork. Likewise no change would be expected to irrigation withdrawals, roads, mining, and private land developments, described in Chapter 3, that currently diminish hydrologic functions and fish populations within these drainages.

Road 667, within the Big Boulder drainage, was constructed to access the Livingston Mill and continues to contribute large quantities of sediment into Big Boulder Creek annually. This situation has been recognized for many years, but options for treatment are few, difficult, and expensive, given the precarious alignment of the road above the creek. Concepts to improve the most immediate sources of erosion (i.e. tread, and cut and fill slopes) are being developed. Should they be determined feasible and implemented, a temporary increase in sediments from construction delivered to Big Boulder Creek would be expected, while immediately followed by a sizable decrease. The Livingston Mill, itself, is inactive and is currently listed as a CERCLA site due to EPA's assessment of possible environmental risks. Actual risks are currently being determined. The type of site rehabilitation ultimately prescribed would determine the short and long term effects, of both positive and negative to water and streams. It is reasonable to conclude that the associated disturbance with implementing the rehabilitation plan would lead to a temporary increase in sediments delivered to Big Boulder Creek. However, if successful, the long-term result should be a benefit over the bare and erosive current conditions.

Germania

Direct and Indirect Effects

All 18 miles of mapped streams that have previously been accessible to grazing within the Germania drainage of the existing Boulder Pasture would be removed from grazing under Alternative 3. Recovery would be expected to begin immediately following the 3-year phase out of grazing, and require only time to achieve desired conditions. Stream and habitat conditions within the Germania Creek drainage appear to be healthier relative to other areas of the allotment, and recovery would be expected to progress rapidly where altered previously from livestock. Also, after the three-year phase out period, conditions with designated or proposed critical habitat for salmon, steelhead, and bull trout within the former allotment would see no influence from permitted livestock. The endemic bull trout population above the falls would be maintained with all effects due to livestock grazing removed (FLRMP 0326).

Since both Alternatives 2 and 3 ultimately remove the vast majority of these drainages from active grazing, the difference would only be a matter of when full recovery is initiated. Alternative 2 would begin the first year, while Alternative 3 would see slow improvement occurring during the first 3 years of phase out, then accelerate with the removal of all grazing thereafter.

Cumulative Effects

Benefits to the overall health of streams and aquatic and riparian habitats within the Germania drainage would be expected to begin immediately following the 3-year phase out of grazing as a result of implementing Alternative 3. Improvement in channel conditions within the mainstem and tributaries would deliver improved conditions downstream, as discussed in the summary. However, continued grazing of sheep, as well as roads, and remnant effects from past mining in the headwaters, would continue to influence hydrologic functions and fish populations within the Germania drainage. Effects from the 2001 debris flows will also continue to alter habitats, both positive and negative, in the near future.

Bowery

Direct and Indirect Effects

Within the Bowery Creek drainage of the existing Upper East Fork Allotment, grazing would be removed from all 27 miles of mapped streams formerly permitted and generally accessible to cattle, including approximately 5 ½ miles of streams where adjacent riparian conditions were formerly identified as not moving toward FLRMP vegetation management objectives. Recovery would initiate immediately with slow improvement occurring during the first 3 years of phase out, and then accelerate with the removal of all grazing thereafter. Where channels have become incised in their floodplains, such within some headwater areas, little change in condition would be apparent for some time as these reaches progress through the long recovery sequence required for such conditions. Also, after the three-year phase out period, conditions with proposed critical habitat for bull trout within the former allotment would see no influence from permitted livestock.

Since both Alternatives 2 and 3 ultimately remove the majority of the Bowery drainage from active grazing, the difference would be primarily a matter of when full recovery is initiated.

Alternative 2 would begin the first year, while Alternative 3 would see slow improvement occurring during the first 3 years of phase out, then accelerate with the removal of all grazing thereafter.

Cumulative Effects

Substantial long-term benefits to the overall health of streams and aquatic and riparian habitats within the Bowery drainage would be expected as a result of implementing Alternative 3. Improvements to channel and habitat conditions would be most pronounced within the headwater areas of Bowery Creek and the North Fork, Long Tom, and Narrow Canyon tributaries, and would deliver improved conditions downstream, as discussed in the summary. Minor effects may persist from the trail and recreational use, but desired conditions should be achievable. However, notable effects to stream flows and fish passage from the irrigation diversion at the mouth would continue to diminish fish populations within the Bowery drainage.

West Pass and the Upper East Fork

Direct and Indirect Effects

The contrast between Alternative 2 and 3 is perhaps most pronounced in these drainages. Alternative 3 would remove livestock from all 52 miles of mapped streams formerly permitted and generally accessible to cattle. Unlike Alternative 2, with Alternative 3 livestock would be removed from all 8 miles of streams where adjacent riparian conditions were formerly identified as not moving toward FLRMP vegetation management objectives. Recovery would initiate immediately with slow improvement occurring during the first 3 years of phase out, and then accelerate with the removal of all grazing thereafter (FLRMP 0343). Habitat conditions within the upper East Fork ACS priority subwatershed would see improvement (FLRMP 0330). However, although conditions within the floodplain of the mainstem would be expected to show accelerating recovery, the highly active nature of the channel itself may require many years before marked improvement is apparent.

As described with the effects of Alternative 1, these two drainages contain a large and disproportionate share of the current total within the entire East Fork allotments of designated critical habitat for chinook and steelhead, and proposed critical habitat for bull trout (60 and 43 percent respectively). Alternative 2 would still retain 52 and 33 percent respectively of this existing total. However, after the three-year phase out period, Alternative 3 would remove grazing from all these habitats.

	Total miles of habitat within current East Fork allotments	Alternative 1 Percent of current total within the West Pass and upper East Fork drainages	Alternative 2 Percent of current total within the West Pass and upper East Fork drainages	Alternative 3 Percent of current total within the West Pass and upper East Fork drainages
Chinook and steelhead designated critical habitat	30 miles	60%	52%	0%
Bull trout proposed critical habitat	73 miles	43%	33%	0%

Cumulative Effects

Substantial long-term benefits to the overall health of these watersheds would be expected as a result of implementing Alternative 3. Improvement in channel conditions within these drainages would deliver improved conditions downstream, as discussed in the summary. However, effects from grazing the associated private pasture near the mouth of West Pass Creek would be expected to become worse in the absence of public grazing opportunities. Likewise, no change would be expected to existing irrigation withdrawals, roads, or dispersed camping conditions, as described in Chapter 3, and some diminishing influence to hydrologic functions and fish populations within these drainages would be expected to persist.

Issue - Wildlife

Throughout this section, estimates were made using the following methods:

- Vegetation condition and trend were classified by vegetation management specialists.
- All habitat calculations except riparian were determined using ArcView GIS 3.2 and the vegetation classification by Univ. of Montana: Covertypes from: Redmond, R.L., T.P. Tady, F.B. Fisher, M. Thornton, and J.C. White. 1997. Landsat Vegetation Mapping of the Southwest and central Idaho Ecogroups, Final Report, Contract # 53-0261-6-25. Wildlife Spatial Analysis Lab, Montana Coop. Wildlife Research Unit, Univ. of Montana, Missoula, MT.
- Riparian area acres were estimated as a function of channel gradient and size of perennial streams.
- Accessible refers to the areas that are estimated to be accessible to cattle based on topography and forest/non-forest areas.

Alternative #1

Effects under this alternative were analyzed following the assumptions described for Alternative 1 under Livestock Distribution and Management.

THREATENED AND ENDANGERED SPECIES

Gray wolf

Direct and Indirect Effects

Cattle use of riparian areas and aspen forests within elk winter range would continue to inhibit regeneration of willow and aspen. Within deer winter range, the potential for some forage competition to occur would continue to exist as well, though this effect is likely small. Cattle would continue to graze within bighorn sheep winter range, potentially reducing forage availability for bighorn sheep during the winter. However, based on past knowledge

of wolf vital rates (reproduction and survival rates) within the East Fork Salmon River watershed, prey availability has been sufficient for successful reproduction and survival.

Predator control efforts by the federal government are a reasonably foreseeable action under this alternative. The presence of cattle in these allotments would contribute low to moderate risk for lethal control based on past history of depredations in the East Fork Salmon River watershed. All depredations to date have occurred off of the East Fork allotments. Implementation of this alternative is consistent with the Gray Wolf Recovery Plan (USDI Fish and Wildlife Service 1987) and the Nonessential Experimental Population Rule (Federal Register, Vol. 59, No.224, p. 60266-60281, 1994), which permits lethal control of wolves that depredate on livestock when six or more breeding pairs exist in central Idaho. Implementation of this alternative would not likely jeopardize the continued existence of the gray wolf.

Cumulative Effects

The allotments in their entirety are considered wolf habitat. The entire SNRA is also considered wolf habitat therefore an estimated 15% of wolf habitat within the SNRA occurs on the allotments. Livestock grazing occurs on areas adjacent to the allotments on the Salmon-Challis National Forest, private lands, and BLM lands. Depredations by wolves on livestock have occurred on private lands within the East Fork Salmon River watershed, but not within the Upper and Lower East Fork allotments. Lethal control actions have taken place within the allotments. It is reasonably foreseeable that depredations would continue under this alternative when a pack establishes in the area. Depredations may occur on the allotments, but more likely would occur on private lands (based on past incidences). Subsequently, direct mortality to wolves would continue to occur from lethal control actions, which could take place on the allotments (assuming livestock grazing remains on Salmon-Challis NF, BLM, and private lands in the East Fork Salmon River).

The desired condition for wolves on the SNRA, as directed in the Sawtooth FLRMP, is consistent with the Nonessential Experimental Population Rule (Federal Register, Vol. 59, No.224, p. 60266-60281, 1994). This rule allows for lethal control of wolves that depredate on livestock when six or more breeding pairs exist in central Idaho.

Canada lynx

Direct and Indirect Effects

Livestock grazing under this alternative would affect habitat of certain prey species of the lynx, primarily snowshoe hare, but voles and other litter-dwelling birds and small mammals as well. Livestock grazing would continue to cause reductions in the amount of litter available for these species. Both high elevation willow riparian areas and aspen forests provide winter forage and cover for hares. The riparian areas that are not moving toward FLRMP vegetation management objectives and are in low seral stages would continue in their current trend. Aspen stands that are not moving toward FLRMP vegetation management objectives and show poor or no regeneration would also continue in their current trend. Predicted denning habitat would not be reduced. This alternative is not completely consistent with the Lynx Conservation and Assessment Strategy. The following two standards would not be achieved on portions of both allotments.

- Manage grazing in aspen stands to ensure sprouting and sprout survival sufficient to perpetuate the long-term viability of the clones.
- Within lynx habitat, manage livestock grazing in riparian areas and willow carrs to maintain or achieve mid seral or higher condition to provide cover and forage for prey species.

In the Lower East Fork Allotment, an estimated 75% of aspen stands are not moving toward the desired objective and an estimated 27% of riparian areas are not moving toward the desired objective. In the Upper East Fork Allotment, an estimated 75% of aspen stands are not moving toward the desired objective and an estimated 18% of riparian areas are not moving toward the desired objective. Given stocking levels and allotment boundaries, this condition is not expected to change.

Cumulative Effects

Predicted lynx habitat within the allotments under this alternative, comprise 12% of the total predicted lynx habitat within the boundaries of the SNRA. In the Upper East Fork Allotment an estimated 12,750 acres of predicted lynx habitat are within the allotment boundary. In the Lower East Fork Allotment an estimated 21,900 acres of predicted lynx habitat are within the allotment boundary. In the three LAUs that contain both allotments, 21% of predicted lynx habitat is not within an allotment or subject to grazing by permitted livestock. (SNF Predicted Lynx Habitat Map)

Lynx foraging habitat would continue to be affected by cattle grazing, generally concentrated in riparian areas and aspen forests as described under direct and indirect effects. Livestock grazing has mainly affected the quality of foraging habitat for lynx in these areas. Foraging habitat would continue to be affected throughout the allotments. Areas not moving toward FLRMP vegetation management objectives would continue in this trend. There is a general lack of historical and current information on the presence of lynx in these allotments as well as within the East Fork of the Salmon River watershed. Therefore much uncertainty exists in determining how the predicted effects to habitat within the allotments would influence the survival and reproduction of a lynx and how this might contribute to the lynx population as a whole.

Bald eagle

Direct and Indirect Effects

Within the Lower East Fork Allotment livestock grazing would continue to affect foraging habitat associated with Sullivan Lake. Grazing and trampling by livestock would continue to reduce vegetative cover for waterfowl and FLRMP vegetation management objectives would not be met. Implementation of this alternative may affect, but would not likely adversely affect, the bald eagle.

Cumulative Effects

The allotments contain a small portion of the suitable foraging bald eagle habitat on the SNRA, therefore the magnitude of the effect to eagle habitat within the SNRA is low. It is unlikely that implementation of this alternative would result in a measurable effect to survival or reproductive success of bald eagles.

Peregrine falcon**Direct and Indirect Effects**

Livestock grazing would continue to affect suitable foraging habitat, mainly along riparian areas, wetlands, and springs that are not moving toward FLRMP vegetation management objectives. Grazing and trampling of vegetation by livestock would continue to remove cover of prey species such as waterfowl, shorebirds, and several species of passerine birds that nest on or near the ground. Implementation of this alternative may affect, but would not likely adversely affect, the peregrine falcon.

Cumulative Effects

The allotments contain a small portion of the suitable foraging peregrine falcon habitat on the SNRA, therefore the magnitude of the effect to peregrine falcon habitat within the SNRA is low. While effects to foraging habitat would continue, it is unlikely that implementation of this alternative would result in a measurable effect to breeding success or survival of peregrine falcons.

SENSITIVE SPECIES

Refer to (Sensitive Species Table III-6) for estimated acres of habitat for sensitive species within the allotments by alternative.

Spotted bat and Townsend's big-eared bat**Direct and Indirect Effects**

Livestock grazing would continue to affect suitable foraging habitat for these species, mainly in riparian areas, wetlands, and springs that are not moving toward FLRMP vegetation management objectives. Vegetation has been reduced in many riparian areas and spring/seep areas from livestock grazing and trampling. This condition is unfavorable to food and cover of many nocturnal insect species that bats forage upon. This alternative would not affect roosting sites or hibernacula.

Cumulative Effects

The allotments contain an estimated 10% of the suitable spotted bat and Townsend's big-eared bat foraging habitat on the SNRA, therefore the magnitude of the effect to these species' habitat within the SNRA is low. While effects to foraging habitat would continue, it is unlikely that implementation of this alternative would result in a measurable effect to breeding success or survival of spotted bats or Townsend's big-eared bat.

Wolverine**Direct and Indirect Effects**

Livestock grazing would continue to affect foraging habitat of wolverine by reducing the amount food and cover for species such as snowshoe hares, pikas, voles, marmots, and other litter-dwelling small mammal species. Both high elevation willow riparian areas and aspen forests provide winter forage and cover for hares. The riparian areas that are not moving toward FLRMP vegetation management objectives and are in low seral stages would continue in their current trend. Aspen stands that are not moving toward FLRMP vegetation management objectives and show poor or no regeneration would also continue in their current trend. Within alpine and subalpine areas such as upper Wickiup Creek and upper Big Boulder Creek, habitat for marmots and pika would continue to be affected by livestock grazing through reduced food and cover. A small portion of reproductive denning habitat

would continue to be accessible to livestock grazing. No direct disturbance to female wolverine during the denning period would occur because livestock are not on the allotments during this time.

Cumulative Effects

Because wolverine use many different habitats for foraging, most of the allotments are considered suitable habitat as well as most of the SNRA. The allotments make up approximately 15% of the SNRA. The allotments contain an estimated 7% of the predicted reproductive denning habitat on the SNRA, though only about 5% of this area (150 acres) is considered accessible to cattle, due to topography. Therefore the magnitude of the effect to wolverine habitat within the SNRA is low to moderate. While effects to foraging habitat would continue, it is unlikely that implementation of this alternative would result in a measurable effect to breeding success or survival of wolverine.

Fisher

Direct and Indirect Effects

Livestock grazing would continue to affect foraging habitat of fisher by reducing the amount food and cover for species such as snowshoe hares, voles, and other litter-dwelling small mammal species. Fisher forage mostly within forested areas that are not affected by livestock. However they also use small openings within forest. In areas such as Sullivan Creek and upper Silver Rule Creek, which contain numerous small openings interspersed within the forested areas, livestock grazing would continue to affect fisher foraging habitat through removal of food and cover for prey species.

Cumulative Effects

The allotments contain 12% of the suitable fisher habitat on the SNRA, therefore the magnitude of the effect to fisher habitat within the SNRA is moderate. This alternative would continue the current trend in not moving toward FLRMP vegetation management objectives within some fisher foraging habitat. However, there is a general lack of historical and current information on the presence of fisher in these allotments as well as within the East Fork of the Salmon River watershed. Therefore uncertainty exists in determining how the predicted effects to habitat within the allotments would influence the survival and reproduction of a fisher and how this might contribute to the fisher population as a whole.

Northern goshawk

Direct and Indirect Effects

Livestock grazing would continue to affect foraging habitat of goshawk by reducing the amount food and cover for species such as snowshoe hares and mountain cottontail. Both willow riparian areas and aspen forests provide winter forage and cover for hares and rabbits. Large, mature aspen trees are used as nest trees and several prey species use aspen for part of their life history such as blue grouse, northern flicker, hairy woodpecker, and red-naped sapsucker. The continued disturbance to aspen regeneration would affect the long-term potential of these stands to provide nesting habitat. The riparian areas that are not moving toward FLRMP vegetation management objectives and are in low seral stages would continue in their current trend. Aspen stands that are not moving toward FLRMP vegetation management objectives and show poor or no regeneration would also continue in their current trend.

Cumulative Effects

The allotments contain an estimated 12% of the suitable goshawk habitat on the SNRA, therefore the magnitude of the potential effect to goshawk habitat within the SNRA is moderate. Successful breeding has been documented within the Lower East Fork Allotment. Therefore, while effects to foraging and aspen nesting habitat would continue, it is unlikely that implementation of this alternative would result in a measurable effect to breeding success or survival of the goshawk.

Boreal owl**Direct and Indirect Effects**

Livestock grazing would continue to affect foraging habitat of boreal owl by reducing the amount food and cover for species such as red-backed vole and shrews, particularly in aspen forests. Large, mature aspen trees are used as nest trees and red-backed voles use aspen, as well as coniferous forest. The continued disturbance to aspen regeneration would affect the long-term potential of these stands to provide nesting habitat. Aspen stands that are not moving toward FLRMP vegetation management objectives and show poor or no regeneration would continue in their current trend.

Cumulative Effects

The allotments contain an estimated 17% of the suitable boreal owl habitat on the SNRA, though effects from livestock grazing would exist mainly within aspen areas. The allotments contain an estimated 11% of aspen stands on the SNRA. The magnitude of the potential effect to boreal owl habitat within the SNRA is moderate. While effects to foraging and nesting in aspen forests would continue, it is unlikely that implementation of this alternative would result in a measurable effect to breeding success or survival of boreal owl.

Flammulated owl**Direct and Indirect Effects**

Livestock grazing under this alternative would have no effect on the flammulated owl. This species nests, roosts, and forages in coniferous forests, which would not be affected by cattle grazing.

Cumulative Effects

The allotments contain an estimated 13% of the suitable flammulated owl habitat on the SNRA, therefore the magnitude of the potential effect to flammulated owl habitat within the SNRA is moderate. However, it is unlikely that livestock grazing is causing a measurable effect to habitat. Implementation of this alternative would not result in any effects to breeding success or survival of flammulated owls.

Northern three-toed woodpecker**Direct and Indirect Effects**

Livestock grazing under this alternative would have no effect on the three-toed woodpecker. This species nests, roosts, and forages in coniferous forests, which would not be affected by cattle grazing.

Cumulative Effects

The allotments contain an estimated 14% of the suitable three-toed woodpecker habitat on the SNRA, therefore the magnitude of the potential effect to three-toed woodpecker habitat

within the SNRA is moderate. However, it is unlikely that livestock grazing is causing a measurable effect to habitat. Implementation of this alternative would not result in any effects to breeding success or survival of three-toed woodpeckers.

Columbia spotted frog

Direct and Indirect Effects

The riparian areas that are not moving toward FLRMP vegetation management objectives and that are in low seral stages would continue in their current trend. Areas where willow abundance has decreased or been eliminated altogether due to livestock grazing would continue in this condition. Areas such as Frog Lake, Little Frog Lake, Sullivan Lake, and the meadows surrounding them would continue in their current trend as well, with reduction of riparian vegetation, trampling, and soil compaction as a result of cattle grazing.

Cumulative Effects

The allotments contain an estimated 10% of the suitable Columbia spotted frog habitat on the SNRA, therefore the magnitude of the effect to these species' habitat within the SNRA is low. However, the effects to habitat within the Frog Lake area are of concern because this area is considered a key habitat for frogs due to its high productivity potential. Because this species has relatively low vagility, it is less able to move away from areas that are in poor condition. Implementation of this alternative may result in a measurable effect to breeding success or survival of Columbia spotted frogs, particularly within the Lower East Fork Allotment.

MANAGEMENT INDICATOR SPECIES

Refer to (MIS Table III-7) for estimated acres of habitat for management indicator species within the allotments by alternative.

Greater sage-grouse

Direct and Indirect Effects

Riparian meadows that are not moving toward FLRMP vegetation management objectives within sage-grouse habitat would continue this trend. Both structure and species composition of the vegetation in these areas has been simplified, resulting in a reduction of the quantity and quality of forbs available for attracting insects for sage grouse hens and their broods, and by reducing the amount of cover available to successfully escape from predators. Additionally, spring developments have likely degraded the wet meadows associated with the springs.

Cumulative Effects

The allotments contain an estimated 12% of greater sage-grouse range on the SNRA. The East Fork Salmon River and Sawtooth Valley are the only known occurrences of sage-grouse on the SNRA. The magnitude of the area effect to sage-grouse range within the SNRA is moderate. Livestock grazing has mainly affected the quality of brood rearing habitat for sage-grouse within riparian areas, wet meadows, and springs through reduction of vegetation for food sources and cover. It is not known if these effects are contributing to decreased chick survival.

Pileated woodpecker

Direct and Indirect Effects

The continued disturbance to aspen regeneration from livestock grazing would continue to affect the long-term potential of these stands to provide nesting habitat. Aspen stands that are not moving toward FLRMP vegetation management objectives and show poor or no regeneration would continue in their current trend.

Cumulative Effects

The allotments contain an estimated 13% of the suitable pileated woodpecker habitat on the SNRA, therefore the magnitude of the potential effect to pileated woodpecker habitat within the SNRA is moderate, though effects from livestock grazing would exist mainly within aspen areas. The allotments contain an estimated 13% of aspen stands on the SNRA. It is unlikely that livestock grazing is causing a measurable effect to pileated woodpecker habitat within coniferous forest, which makes up most of the potential nesting habitat for this species in the allotments. Therefore it is unlikely that implementation of this alternative would result in a measurable effect to breeding success or survival of pileated woodpeckers.

UNGULATE HABITATS

Elk

Direct and Indirect Effects

Cattle use of riparian areas and aspen forests within elk winter ranges would continue to inhibit regeneration of willow and aspen. Riparian areas and aspen forests that are not moving toward FLRMP vegetation management objectives would continue in their current trend. However, because this herd has increased in number over the past 10 years, the effect to winter survival is likely small.

Cumulative Effects

The allotments contain an estimated 25% of the elk winter range on the SNRA and an estimated 32% of winter range identified within the East Fork Salmon River watershed, which includes the salmon-Challis National Forest, BLM, state, and private lands. The magnitude of the effect to overall elk winter range within the SNRA and for this elk herd is high. Total elk numbers in this Unit have increased over the past 10 years, indicating that any forage competition that may be taking place between elk and cattle is small. Therefore, while effects to willow and aspen would continue for at least the length of the permit period, it is unlikely that implementation of this alternative would result in a measurable effect to winter survival of this elk herd.

Bighorn Sheep

Direct and Indirect Effects

Competition for forage with livestock is likely occurring in bighorn sheep winter ranges within the Wyoming big sagebrush/bluebunch wheatgrass areas that are accessible to cattle. An estimated 2,800 acres of bighorn sheep winter range on the Lower East Fork Allotment are considered accessible to cattle grazing and an estimated 850 acres of sagebrush community types are accessible to cattle. Forage competition between livestock and bighorn sheep would continue to decrease forage availability for bighorn sheep within this 850 acre area. The current upland utilization standard may not be adequate (40%) to retain enough forage for bighorn sheep in these areas.

Cumulative Effects

The Lower East Fork Allotment contains all of the bighorn sheep winter range on the SNRA and an estimated 22% of the winter range for this herd. The remaining winter range occurs on the Salmon-Challis National Forest, BLM, state, and privately managed lands (Based on information from East Fork Salmon River Bighorn Sheep Habitat Management Plan 1977). The magnitude of the area effect to overall bighorn sheep winter range within the SNRA and for this herd is high. Additionally, total bighorn sheep numbers in this Unit have declined over the past 10 years. Implementation of this alternative with current utilization standards would likely result in forage competition between livestock and bighorn sheep for bluebunch wheatgrass to the degree that may affect survival of bighorn sheep.

Mountain Goat

Direct and Indirect Effects

Because both mountain goats and cattle desire bluebunch wheatgrass, the potential for forage competition would continue within high elevation areas. Additionally, high elevation areas that are accessible to cattle and easily damaged would continue to be affected by livestock through vegetation removal and trampling and soil compaction. A relatively small proportion of these areas within the allotments are considered accessible to cattle (an estimated 900 acres or 3% within the allotments) due to topography and slope.

Cumulative Effects

The allotments contain an estimated 12% of the mountain goat range on the SNRA and an estimated 36% within the Boulder/White Clouds population. The magnitude of the area effect to overall mountain goat range within the SNRA is moderate and is high for the Boulder/White Clouds population. Total mountain goat numbers in this Unit have decreased over the past 10 years. The cause or causes for this decline are unknown. Effects to mountain goat forage would continue under this alternative for at least the length of the permit period, but due to the small area within the allotments that is accessible to cattle, it is unlikely that implementation of this alternative would result in a measurable effect to breeding success or survival of this mountain goat population.

Mule deer

Direct and Indirect Effects

Livestock grazing would continue within mule deer winter range, which consists mainly of sagebrush and bitterbrush communities. The potential for forage competition between cattle and deer would continue, particularly during late summer when cattle are more likely to use browse species.

Cumulative Effects

The allotments contain an estimated 55% of the mule deer winter range on the SNRA and an estimated 25% of the winter range for this herd. The remaining winter range occurs on Salmon-Challis National Forest, BLM, state, and privately managed lands. The magnitude of the area effect to overall deer winter range within the SNRA and for this deer herd is high. Total deer numbers in this Unit have remained stable over the past 10 years, indicating that any forage competition that may be taking place between deer and cattle is small. Therefore, while effects to winter range would continue for at least the length of the permit period, it is

unlikely that implementation of this alternative would result in a measurable effect to winter survival of this deer herd.

NEOTROPICAL MIGRATORY BIRDS

Direct and Indirect Effects

Livestock grazing under this alternative would affect species requiring heavy shrub or herbaceous ground cover for nesting and foraging, mainly in riparian areas and aspen stands such as yellow warbler and MacGillivray's warbler, which are considered high priority species. Ground-nesting birds within these habitats would continue to be vulnerable to livestock grazing through loss of nest cover and the potential for trampling of nests. See the project file for a list of birds that occur in the allotments and their nest substrate.

Riparian areas that are not moving toward FLRMP vegetation management objectives and that are in low seral stages would continue in their current trend. Areas where willow abundance has decreased or been eliminated altogether due to livestock grazing would continue in this condition affecting species that are dependent upon riparian areas in late seral condition, such as willow flycatcher and Wilson's warbler. Aspen stands that are not moving toward FLRMP vegetation management objectives and show poor or no regeneration would also continue in their current trend. In the long-term, as aspen stands continue to decline without adequate regeneration, this habitat would decline within the allotments. Implementation of this alternative would continue to benefit species that increase with grazing such as mountain bluebird, robin, and brown-headed cowbird. Idaho Partners In Flight priority species that would be affected by this alternative are listed in Species Effects Table IV-2.

Water troughs without escape ramps located throughout the allotments would continue to allow for mortality of some species of birds from drowning.

This alternative is not compliant with the EO 13186 because the analysis does not completely meet our obligation as defined under the January 16, 2001 MOU between the USDA-FS and USDI-FWS designed to complement EO 13186. As required under this MOU, this alternative: (1) Identifies management practices that may affect high priority species as defined in the MOU and Partners in Flight, but does not fully (2) develop conservation measures to avoid or minimize impacts to migratory birds. Vegetation management objectives and standards have not been met in many areas, based on past monitoring information. Continued livestock grazing, under this alternative, in both allotments would continue to affect habitats of several high priority species associated with riparian and aspen habitats (Species Priority Table III-8).

Cumulative Effects

Habitats of concern within the allotments include riparian areas and aspen forests. The allotments contain 10% of riparian areas within the SNRA. An estimated 23% of the riparian areas in both allotments combined are not moving toward FLRMP vegetation management objectives. The allotments contain 13% of aspen forests within the SNRA and an estimated 75% of the aspen forests in the allotments show inadequate regeneration from livestock grazing.

SMALL MAMMALS, REPTILES, AND AMPHIBIANS

Direct and Indirect Effects

A common effect to vegetation from livestock grazing in the allotments under this alternative is a reduction of litter and residual ground vegetation, which is particularly evident in those areas that are not moving toward FLRMP vegetation management objectives. Because adequate residual vegetation is important for many species of small mammals, reptiles, and amphibians, livestock grazing under this alternative would affect those species that require high levels of litter and residual vegetation, particularly in riparian areas and aspen forests. A brief discussion of species that would likely be affected due to loss of vegetation within the allotments follows.

Small mammal species such as western jumping mouse, redback vole, and mountain vole are particularly susceptible to the reduction of litter and residual vegetation as a result of livestock grazing. Shrews, which are insectivorous and tend to be associated with riparian areas and wet meadows, require high vegetative cover for both habitat for prey species as well as cover to escape from predators. Foraging habitat for bats would be affected, mainly in riparian areas, wetlands, and springs. Reduction in vegetation from livestock grazing is unfavorable to food and cover of many nocturnal insect species that bats forage upon. Livestock grazing would also most affect habitat for reptile species that depend on riparian areas. Garter snakes, which commonly use riparian areas to forage on fish and amphibians, require abundant residual vegetation for both foraging and thermal cover. Amphibians, such as spotted frog and western boreal toad, require residual ground cover as well as shrub cover, particularly willows.

Water troughs without escape ramps located throughout the allotments would continue to allow for mortality of some species of small mammals from drowning.

Cumulative Effects

Habitats of concern for small mammals, reptiles and amphibians for this project are foremost within riparian areas. The allotments contain 10% of riparian areas within the SNRA. An estimated 23% of the riparian areas in both allotments combined are not moving toward FLRMP vegetation management objectives.

PREDATORS

Direct and Indirect Effects

Predators, including raptors, mustelids, canids, felids, and black bears, would be affected from livestock grazing under this alternative through effects to prey habitat. These effects have been described in the previous discussions of sensitive species, NTMB, small mammals, reptiles, and amphibians. These effects to prey habitat are generally negative to the long-term reproductive success and survival of these prey species. However, removal of vegetation can make some prey more vulnerable to predation, which can benefit a predator in the short term.

Predator control efforts by the federal government are a reasonably foreseeable action under this alternative. Presence of cattle within the allotments would continue the chance of mortality on certain species such as wolves, coyotes, mountain lions, and black bears, which

may prey upon livestock. These species are most likely to be killed from predator control efforts by the federal government and permittees.

Cumulative Effects

Predator control efforts within grazing allotments occur throughout the 26 allotments that cover 45% of the SNRA. Predator control also takes place on the Salmon-Challis National Forest, BLM, state, and privately owned land within the East Fork Salmon River watershed where livestock grazing occurs. It is reasonably foreseeable to assume that depredations would continue under this alternative and that subsequently lethal predator control would continue. Implementation of this alternative would contribute to the overall lethal control effort by the federal government.

CUMULATIVE EFFECTS TO HABITATS OF CONCERN

Livestock grazing within the East Fork Salmon River and SNRA have affected riparian areas and aspen forest for over a century. The chronic effects to vegetation have reduced vigor and changed species composition over time. Past mining and road construction and maintenance have also affected riparian areas by removing vegetation, confining channels, increasing sediment into streams, and decreasing water quality.

Cattle and sheep are grazing occur throughout the SNRA within 26 allotments. Range condition of the SNRA allotments is variable. Livestock grazing also occurs on the Salmon-Challis National Forest, BLM, state, and privately owned lands adjacent to the allotments. Haying on private lands also occurs within riparian areas and has altered the species composition where it occurs. Some mining activity in the area continues, though with the establishment of the SNRA in 1972 no new claims can be established. Current mining activity can be characterized as sporadic.

Year round range for elk occur in both allotments. Where riparian areas, aspen stands, and seeps and springs are used in common by elk and livestock in both time and space, it can be difficult to differentiate livestock use from elk use. Monitoring of areas used by elk in other areas of the SNRA where livestock grazing has been removed show general improvement in riparian conditions. Evidence of elk use tends to be spotty and light ((Hudak 1992, Hudak 1993, Hudak 1993b, Hudak 1994, Hudak et al. 1996) suggesting that elk use does not tend to hinder riparian area recovery or cause impacts observed in the Upper and Lower East Fork allotments

Recreational use depends on the time of year. In general, recreational activity is increasing within the SNRA and East Fork Salmon River watershed. Within the East Fork Salmon River the amount of use varies by season and area. Within the White Clouds heavy use by campers, hikers, horseback riders, and fishermen occurs during the summer. Use by hunters within Bowery Creek and the South Fork of the East Fork of the Salmon increases during the fall and receives less use during the summer by recreationists. Many dispersed camping sites occur throughout the allotments within riparian areas. Use of these sites in many places has resulted in affects similar to those of livestock grazing (though not to the same extent), including removal and trampling of vegetation. Recreational stock use also contributes to the overall grazing effects within some riparian areas and lakeshores.

No reasonably foreseeable activities that would affect riparian vegetation or aspen forests are known within the analysis area at this time.

Continued livestock grazing under this alternative would contribute to the cumulative effects to riparian and aspen forest vegetation condition. Refer to the Direct and Indirect Effects discussions under this alternative for species that use these habitats and to the species Cumulative Effects discussions for more information on the context of the effects within the SNRA.

POLLINATORS

Direct and Indirect Effects

This alternative would allow for livestock grazing and associated impacts to occur in areas that are currently permitted as well as allow for unauthorized use access in key alpine areas and will likely contribute to pollinator decline. Current livestock management has resulted in the alteration of vegetation composition of much of the allotments' upland and riparian areas. In some areas, a conversion from a diversity of native sedges and forbs to bluegrass and weedy species has occurred. This conversion of flowering forbs to graminoid species has likely resulted in a negative effect to diversity and/or abundance of insect pollinators.

In general, large mammal grazing can lead to important shifts in community composition by impacting the demography of species and communities. Plant community responses to grazing may include: increased shift to woody less palatable species, decreased dominance of tall perennial species, increased annual and weedy species, and decreased species richness, which leads to decreased pollinator diversity and abundance (Cottam et al., 1986; Noy-Meyer et al., 1989; Schupp, 1990; Murray, 2001). Under Alternative 1, the conversion of vegetation conditions to less attractive species or poor pollen sources and the decline in diversity and abundance of pollinators will likely continue. Additionally, under Alternative 1 direct and indirect effects of livestock grazing will likely continue and may result in: reducing plant species (pollen or nectar sources) needed by certain pollinators, decreased plant vigor, trampling of vegetation, nest destruction for of ground-nesting species, conversion of seeps and spring to livestock troughs, and decreased water availability for pollinators.

Cumulative Effects

Trampling by ORVs, ATVs, pack animals, and dispersed camping could directly and indirectly impact pollinators through soil compaction, vegetation alteration, and introduced non-native plants.

Herbicide drift from agricultural communities poses a major threat to pollinators. Chemical-spraying efforts for non-native species and exotic weed species can also impact pollinators and their progeny. Many of the TEPCS species are dependent upon pollinators for sexual reproduction and seed set. The application of insecticides to reduce non-native pests can jeopardize important native pollinator populations, thus negatively impact the seed production and viability of TEPCS species.

Many pollinators are extremely vulnerable to insecticides and pesticides that may be used on private and public lands (Tepedino, 1979). Applications of insecticides during foraging and mating periods of pollinators could prevent formation of entire colonies. By reducing the number of worker bees through chemical treatments, fewer queens are produced for the following year. Additionally, remaining workers can become vectors of contaminated nectar or pollen back to the nest, thus reducing the chance of progeny survival for future years (Pierson and Tepedino, 2000).

Spring burning can be used to meet fire use goals although most plants are not adapted to fire at this time of year. Spring burning interferes with flowering, fruiting, and other physiological impacts, and could affect life history patterns with pollinators. No prescribed burns are scheduled for these allotments.

Alternative #2

Effects under this alternative were analyzed following the assumptions described for Alternative 2 under Livestock Distribution and Management.

In both allotments, the same proportion of aspen stands not moving toward the desired vegetation management objectives (75%) would exist upon initial implementation, though the amount of acres in this condition would be lower. In the Lower East Fork Allotment an estimated 14% and in the Upper East Fork Allotment, an estimated 16% of riparian areas that are accessible to cattle and are currently not moving toward the FLRMP vegetation management objectives would continue to be available for livestock grazing upon initial implementation of this alternative (determined based on the riparian areas accessible to cattle within the affected environment), a decrease from 27% and 19% respectively. Primarily as a result of allotment boundary changes and provisions for strict adherence to utilization levels, these areas would move toward the desired vegetation conditions over time. Within the areas removed from the allotment vegetation management objectives would move toward the desired objectives at a higher rate than areas where livestock grazing would continue. See Habitat Table III-9

THREATENED AND ENDANGERED SPECIES

Gray wolf

Direct and Indirect Effects

Under this alternative less elk and deer winter range would be available for livestock grazing in the Lower East Fork Allotment (MIS Table III-7). The amount of riparian areas and aspen forests within winter range that are currently not moving toward FLRMP vegetation management objectives would be reduced. Riparian areas in low seral condition and aspen forests with poor regeneration would likely improve. There would be no change in the amount of elk and deer winter range available for livestock grazing in the Upper East Fork Allotment. There would be no change in the amount of bighorn sheep winter range in the Lower East Fork Allotment, though a lower upland forage utilization standard would be applied within bighorn sheep winter range.

Predator control efforts by the federal government are a reasonably foreseeable action under this alternative. The presence of cattle in these allotments would contribute low to moderate risk for lethal control based on past history of depredations in the East Fork Salmon River watershed. All depredations to date have occurred off of the East Fork allotments.

However, implementation of this alternative is consistent with the Gray Wolf Recovery Plan (USDI Fish and Wildlife Service 1987) and the Nonessential Experimental Population Rule (Federal Register, Vol. 59, No.224, p. 60266-60281, 1994), which permits lethal control of wolves that depredate on livestock when six or more breeding pairs exist in central Idaho. Implementation of this alternative would not likely jeopardize the continued existence of the gray wolf.

Cumulative Effects

The allotments in their entirety are considered wolf habitat. The entire SNRA is also considered wolf habitat, therefore an estimated 8% of wolf habitat within the SNRA would occur on the allotments under this alternative. Livestock grazing occurs on areas adjacent to the allotments on the Salmon-Challis National Forest, private lands, and BLM lands.

Depredations by wolves on livestock have occurred on private lands within the East Fork Salmon River watershed, but not within the Upper and Lower East Fork allotments. Lethal control actions have taken place within the allotments. It is reasonably foreseeable to assume that depredations would continue under this alternative when a pack establishes in the area. Depredations may occur on the allotments, but more likely would occur on private lands based on past incidences. Subsequently, direct mortality to wolves would continue to occur from lethal control actions, which could take place on the allotments. There would be no difference in the probability of mortality to wolves from lethal control from alternative 1 (assuming livestock grazing remains on Salmon-Challis NF, BLM, and private lands in the East Fork Salmon River).

Additionally, the desired condition for wolves on the SNRA, as directed in the Sawtooth FLRMP, is consistent with the Nonessential Experimental Population Rule (Federal Register, Vol. 59, No.224, p. 60266-60281, 1994). This rule allows for lethal control of wolves that depredate on livestock when six or more breeding pairs exist in central Idaho.

Canada lynx

Direct and Indirect Effects

Less predicted lynx habitat would be available for use by livestock, particularly the amount of aspen and riparian areas (Habitat Table III-9 exposed to livestock grazing, where cattle effects to snowshoe hare habitat are most pronounced). The riparian areas and aspen forests that are currently not moving toward FLRMP vegetation management objectives and are in low seral stages or have poor regeneration would begin to move toward the vegetation management objectives. Areas closed to livestock grazing would attain vegetation management objectives at a higher rate. Predicted denning habitat would not be reduced. This alternative would be consistent with the Lynx Conservation and Assessment Strategy

Cumulative Effects

Predicted lynx habitat in the allotments under this alternative would comprise 6% of the total predicted lynx habitat within the boundaries of the SNRA. In the Upper East Fork Allotment an estimated 9,600 acres of predicted lynx habitat would be within the allotment boundary.

In the Lower East Fork Allotment an estimated 8,000 acres of predicted lynx habitat would be within the allotment boundary. In the three LAUs that contain both allotments, 55% of predicted lynx habitat would not be within an allotment or subject to grazing by permitted livestock. (SNF Predicted Lynx Habitat Map)

Lynx foraging habitat in riparian areas and aspen forests would improve as described under direct and indirect effects. Implementation of this alternative would begin to allow attainment of FLRMP vegetation management objectives and foraging habitat would begin to improve. As stated in alternative 1, there is a general lack of historical and current information on the presence of lynx in these allotments as well as within the East Fork of the Salmon River watershed. Taking into account the uncertainty of presence of lynx within the SNRA and given the reduced effects to habitat, it is unlikely that implementation of this alternative would result in a measurable effect to breeding success or survival of lynx.

Bald eagle

Direct and Indirect Effects

Within the Lower East Fork Allotment this alternative would discontinue livestock grazing at Sullivan Lake, which would allow habitat for prey species of bald eagle to improve through increased vegetative cover for waterfowl. Implementation of this would not affect the bald eagle.

Cumulative Effects

The allotments under this alternative would contain a very small portion of the suitable foraging bald eagle habitat on the SNRA (the head of Jimmy Smith Lake), therefore the magnitude of the effect to eagle habitat within the SNRA would be very low. With Sullivan Lake no longer grazed by livestock, it is assumed that implementation of this alternative would result in a measurable effect to survival or reproductive success of bald eagles.

Peregrine falcon

Direct and Indirect Effects

The amount of suitable foraging habitat, mainly along riparian areas, wetlands, and springs, open to livestock grazing would be reduced. The amount of riparian areas that are not moving toward FLRMP vegetation management objectives would be reduced accordingly (Habitat Table III-9) and areas that continue to be grazed by livestock would begin to attain vegetation management objectives. This situation would improve habitat for prey species such as waterfowl, shorebirds, and several species of passerine birds that nest on or near the ground. Implementation of this alternative may affect, but would not likely adversely affect, the peregrine falcon.

Cumulative Effects

The allotments under this alternative would contain a small portion of the suitable foraging peregrine falcon habitat on the SNRA, therefore the magnitude of the effect to peregrine falcon habitat within the SNRA would be low. Effects to foraging habitat would improve over alternative 1, therefore it is unlikely that implementation of this alternative would result in a measurable effect to breeding success or survival of peregrine falcons.

SENSITIVE SPECIES

Refer to (Sensitive Species Table III-6) for estimated acres of habitat for sensitive species within the allotments by alternative.

Spotted bat and Townsend's big-eared bat

Direct and Indirect Effects

The amount of suitable foraging habitat, mainly along riparian areas, wetlands, and springs, open to livestock grazing would be reduced (Sensitive Species Table III-6). The amount of riparian areas that are not moving toward FLRMP vegetation management objectives would be reduced accordingly and areas that continue to be grazed by livestock would begin to attain vegetation management objectives. This situation would improve habitat for insects associated with riparian areas.

Cumulative Effects

The allotments under this alternative would contain an estimated 5% of the suitable spotted bat and Townsend's big-eared bat foraging habitat on the SNRA, therefore the magnitude of the effect to these species' habitat within the SNRA would be very low. Some effects to foraging habitat would continue in areas that would remain open to livestock grazing, however it is unlikely that implementation of this alternative would result in a measurable effect to breeding success or survival of spotted bats or Townsend's big-eared bat.

Wolverine

Direct and Indirect Effects

The area available to livestock grazing within wolverine foraging habitat would be reduced (Sensitive Species Table III-6). The amount of riparian areas and aspen forests that are not moving toward FLRMP vegetation management objectives would also be reduced and riparian and aspen areas that continue to be grazed would begin to attain vegetation management objectives. Within alpine and subalpine areas no longer available for livestock grazing, such as upper Wickiup Creek and upper Big Boulder Creek, habitat for marmots and pika would begin to recover with increased food and cover availability. No reproductive denning habitat would be open to livestock. No direct disturbance to female wolverine during the denning period could occur (in the event of unauthorized livestock using the area) because livestock are not on the allotments during this time.

Cumulative Effects

Because wolverine use many different habitats for foraging most of the allotments are considered suitable habitat as well as most of the SNRA. The allotments under this alternative would make up approximately 8% of the SNRA and contain no predicted reproductive denning habitat. Therefore the magnitude of the effect to wolverine habitat within the SNRA would be low. While some effects to foraging habitat would continue in areas that would remain open to livestock grazing, it is very unlikely that implementation of this alternative would result in a measurable effect to breeding success or survival of wolverine.

Fisher

Direct and Indirect Effects

The area available to livestock grazing within fisher foraging habitat would be reduced (Sensitive Species Table III-6). Small openings of foraging habitat in Sullivan Creek and upper Silver Rule Creek, would no longer be available for livestock grazing. Habitat for prey species would improve over time as residual cover increases providing more food and cover resources.

Cumulative Effects

The allotments under this alternative would contain 6% of the suitable fisher habitat on the SNRA, therefore the magnitude of the effect to fisher habitat within the SNRA would be low. Most foraging habitat within the allotments would be within forested areas and therefore, little affected by cattle. Taking into account the uncertainty of presence of fisher within the SNRA and given the reduced effects to habitat, it is unlikely that implementation of this alternative would result in a measurable effect to breeding success or survival of fisher.

Northern goshawk

Direct and Indirect Effects

The area available to livestock grazing within goshawk habitat would be reduced (Sensitive Species Table III-6). The area of the known goshawk nesting territory in the Lower East Fork Allotment would no longer be available to livestock grazing. The amount of riparian areas and aspen forests that are not moving toward FLRMP vegetation management objectives would also be reduced (Habitat Table III-9) and riparian and aspen areas that continue to be grazed by livestock would begin to attain vegetation management objectives.

Cumulative Effects

The allotments under this alternative would contain an estimated 6% of the suitable goshawk habitat on the SNRA, therefore the magnitude of the potential effect to goshawk habitat within the SNRA would be low. Therefore, while some effects to foraging and aspen nesting habitat would continue in areas that would remain open to livestock grazing, it is unlikely that implementation of this alternative would result in a measurable effect to breeding success or survival of the goshawk.

Boreal owl

Direct and Indirect Effects

The area available to livestock grazing within boreal owl habitat would be reduced (Sensitive Species Table III-6). The amount of aspen forests that are not moving toward FLRMP vegetation management objectives would be reduced accordingly (Habitat Table III-9) and aspen areas that continue to be grazed by livestock would begin to attain vegetation management objectives.

Cumulative Effects

The allotments under this alternative would contain an estimated 8% of the suitable boreal owl habitat on the SNRA, though effects from livestock grazing would exist mainly within aspen areas. The allotments under this alternative would contain an estimated 8% of aspen stands on the SNRA. The magnitude of the potential effect to boreal owl habitat within the SNRA would be low. Some effects to foraging and nesting in aspen forests would continue in areas that would remain open to livestock grazing, though it is unlikely that implementation of this alternative would result in a measurable effect to breeding success or survival of boreal owl.

Flammulated owl**Direct and Indirect Effects**

Livestock grazing under this alternative would have no effect on the flammulated owl. This species nests, roosts, and forages in coniferous forests, which would not be affected by cattle grazing.

Cumulative Effects

The allotments under this alternative would contain an estimated 6% of the suitable flammulated owl habitat on the SNRA, therefore the magnitude of the potential effect to flammulated owl habitat within the SNRA would be low. However, it is unlikely that livestock grazing is causing a measurable effect to habitat. Implementation of this alternative would not result in any effects to breeding success or survival of flammulated owls.

Northern three-toed woodpecker**Direct and Indirect Effects**

Livestock grazing under this alternative would have no effect on the three-toed woodpecker. This species nests, roosts, and forages in coniferous forests, which would not be affected by cattle grazing.

Cumulative Effects

The allotments under this alternative would contain an estimated 7% of the suitable three-toed woodpecker habitat on the SNRA, therefore the magnitude of the potential effect to three-toed woodpecker habitat within the SNRA would be low. However, it is unlikely that livestock grazing is causing a measurable effect to habitat. Implementation of this alternative would not result in any effects to breeding success or survival of three-toed woodpeckers.

Columbia spotted frog**Direct and Indirect Effects**

The amount of suitable spotted frog habitat, mainly along riparian areas, wetlands, and springs, open to livestock grazing would be reduced (Sensitive Species Table III-6). Areas where willow abundance has decreased or been eliminated altogether due to livestock grazing would begin to improve. The amount of riparian areas that are not moving toward FLRMP vegetation management objectives would be reduced accordingly, and areas that continue to be grazed by livestock would begin to attain vegetation management objectives. Frog Lake, Little Frog Lake, Sullivan Lake, and the meadows surrounding them would no longer be available for livestock grazing, allowing riparian vegetation and soil condition to improve.

Cumulative Effects

The allotments under this alternative would contain an estimated 5% of the suitable Columbia spotted frog habitat on the SNRA, therefore the magnitude of the effect to these species' habitat within the SNRA would be low. The Frog Lake area, which is considered a key habitat for frogs due to its high productivity potential would not be grazed by livestock. Implementation of this alternative would not result in measurable effects to breeding success or survival of Columbia spotted frogs.

MANAGEMENT INDICATOR SPECIES

Refer to (MIS Table III-7) for estimated acres of habitat for management indicator species within the allotments by alternative.

Greater sage-grouse

Direct and Indirect Effects

The amount of suitable sage-grouse habitat, mainly in riparian areas and wet meadows, open to livestock grazing would be reduced (MIS Table III-7 and Habitat Table III-9). The amount of riparian areas that are not moving toward FLRMP vegetation management objectives within sage-grouse habitat would be reduced accordingly, and areas that continue to be grazed by livestock would begin to attain vegetation management objectives. Both structure and species composition of the vegetation in these areas would begin to improve, resulting in an improvement of the quantity and quality of forbs available for attracting insects for sage grouse hens and their broods, and by increasing amount of cover available to successfully escape from predators. The existing spring developments (16 troughs and 25 ponds), which have likely degraded the wet meadows associated with the springs, would remain.

Cumulative Effects

The allotments under this alternative would contain an estimated 10% of greater sage-grouse range on the SNRA. The East Fork Salmon River and Sawtooth Valley are the only known occurrences of sage-grouse on the SNRA. The magnitude of the area effect to sage-grouse range within the SNRA would be moderate. Livestock grazing under this alternative would mainly affect the quality of brood rearing habitat for sage-grouse within riparian areas, wet meadows, and springs through reduction of vegetation for food sources and cover. It is not known if these effects are contributing to decreased chick survival, though the potential for effects is lower than under alternative 1 due to less habitat available for livestock grazing.

Pileated woodpecker

Direct and Indirect Effects

The area available to livestock grazing within pileated woodpecker habitat would be reduced (MIS Table III-7). The amount of aspen forests that are not moving toward FLRMP vegetation management objectives would also be reduced (Habitat Table III-9) and aspen areas that continue to be grazed by livestock would begin to attain vegetation management objectives.

Cumulative Effects

The allotments under this alternative would contain an estimated 6% of the suitable pileated woodpecker habitat on the SNRA, therefore the magnitude of the potential effect to pileated woodpecker habitat within the SNRA would be low. Effects from livestock grazing would exist mainly within aspen areas. The allotments under this alternative would contain an estimated 8% of aspen stands on the SNRA. It is unlikely that livestock grazing is causing a measurable affect to pileated woodpecker habitat within coniferous forest, which makes up most of the potential nesting habitat for this species in the allotments. Therefore It is unlikely that implementation of this alternative would result in a measurable effect to breeding success or survival of pileated woodpeckers.

UNGULATE HABITATS

Elk

Direct and Indirect Effects

The amount of suitable elk winter range, mainly along riparian areas and in aspen forests, open to livestock grazing would be reduced within the Lower East Fork Allotment (MIS Table III-7). Areas where willow abundance has decreased or been eliminated altogether due to livestock grazing would begin to improve. The amount of riparian areas and aspen forests that are not moving toward FLRMP vegetation management objectives would also be reduced, and areas that continue to be grazed by livestock within both allotments would begin to attain vegetation management objectives.

Cumulative Effects

The allotments under this alternative would contain an estimated 24% of the elk winter range on the SNRA and an estimated 26% of winter range identified within the East Fork Salmon River watershed. The magnitude of the effect to overall elk winter range within the SNRA and for this elk herd would be high. Total elk numbers in this Unit have increased over the past 10 years, indicating that any forage competition that may be taking place between elk and cattle is small. Therefore, while effects to willow and aspen would continue in areas that would remain open to livestock grazing, it is unlikely that implementation of this alternative would result in a measurable effect to winter survival of this elk herd.

Bighorn Sheep

Direct and Indirect Effects

No bighorn sheep summer range would be available for livestock grazing. There would be no change in the amount of winter range available for livestock grazing (MIS Table III-7) from Alternative 1. Competition for forage between bighorn sheep and livestock would be reduced with implementation of a 30% upland utilization standard within bighorn sheep winter range. The construction of the approximately one-mile long Big Lake Drift Fence (from upper Big Lake Creek to the ridge to the north) and the removal of the existing one-half mile Carbonate Creek Drift Fence (located on the ridge) would result in a gain of an estimated one-half mile of fence within bighorn sheep transitional range. The fence would be constructed to allow bighorn sheep to pass under so their migration would not be hindered.

Cumulative Effects

The Lower East Fork Allotment contains all of the bighorn sheep winter range on the SNRA and an estimated 22% of the winter range for this herd. The remaining winter range occurs on the Salmon-Challis National Forest, BLM, state, and privately managed lands (Based on information from East Fork Salmon River Bighorn Sheep Habitat Management Plan 1977). The magnitude of the area effect to overall bighorn sheep winter range within the SNRA and for this herd is high. Total bighorn sheep numbers in this Unit have declined over the past 10 years. Implementation of this alternative with 30% upland utilization standards would reduce forage competition between livestock and bighorn sheep and would increase the likelihood of winter survival of bighorn sheep.

Mountain Goat

Direct and Indirect Effects

No livestock grazing would be available within mountain goat habitat within the Lower East Fork Allotment. Within the Upper East Fork Allotment in areas accessible to cattle a small area of habitat would be available for livestock grazing (MIS Table III-7). Within this area the potential for forage competition between mountain goats and cattle would persist.

Cumulative Effects

The allotments under this alternative would contain an estimated 6% of the mountain goat range on the SNRA and an estimated 18% within the Boulder/White Clouds. The magnitude of the area effect to overall mountain goat range within the SNRA would be low and for the Boulder/White Clouds population would be moderate. Total mountain goat numbers in this Unit have decreased over the past 10 years. The cause or causes for this decline are unknown. Effects to mountain goat forage would continue under this alternative in the Upper East Fork Allotment, but due to the very small area within the allotment that is accessible to cattle, it is unlikely that implementation of this alternative would result in a measurable effect to breeding success or survival of this mountain goat population.

Mule deer**Direct and Indirect Effects**

Livestock grazing within suitable mule deer winter range would be reduced within the Lower East Fork Allotment (MIS Table III-7), mainly within sagebrush and bitterbrush communities. Where livestock grazing would occur, the potential for forage competition between cattle and deer would remain.

Cumulative Effects

The allotments under this alternative would contain an estimated 21% of the mule deer winter range on the SNRA and an estimated 15% of the winter range for this herd. The magnitude of the area effect to overall deer winter range within the SNRA would be high and for this deer herd would be moderate. Total deer numbers in this Unit have remained stable over the past 10 years, indicating that any forage competition that may be taking place between deer and cattle is small. Therefore, while effects to winter range may continue in areas that would remain open to livestock grazing, it is unlikely that implementation of this alternative would result in a measurable effect to winter survival of this deer herd.

NEOTROPICAL MIGRATORY BIRDS

The amount of riparian areas and aspen forests that are not available for livestock grazing would be reduced (Habitat Table III-9). Riparian and aspen areas that continue to be grazed by livestock would begin to attain FLRMP vegetation management objectives.

Implementation of this alternative would allow more residual ground cover and increased willow abundance and age diversity within riparian areas and increased regeneration potential within aspen forests. This situation would benefit several high priority species (Species Effect Table IV-2). Implementation of this alternative would be less beneficial to species that increase with grazing than alternative 1. Idaho PIF priority species that would be affected by this alternative are listed in Species Effects Table IV-2.

Water troughs without escape ramps located throughout the allotments would continue to allow for mortality of some species of birds from drowning. However one trough in the

Upper East Fork allotment and three troughs in the Lower East Fork allotment would be removed in this alternative.

This alternative is compliant with the EO 13186 because the analysis meets our obligation as defined under the January 16, 2001 MOU between the USDA-FS and USDI-FWS designed to complement EO 13186. As required under this MOU, this alternative: (1) Identifies management practices that may affect high priority species as defined in the MOU and Partners in Flight, (2) develops conservation measures to avoid or minimize impacts to migratory birds. Under this alternative the amount of habitat available for livestock grazing would be lower than in Alternative 1 (Habitat Table III-9). FLRMP vegetation management objectives would be achieved over time in areas that would continue to be grazed by livestock and should result in adequate habitat conditions.

Cumulative Effects

Habitats of concern within the allotments include riparian areas and aspen forests. The allotments under this alternative would contain 5% of riparian areas within the SNRA. An estimated 15% of the riparian areas in both allotments combined would not be moving toward FLRMP vegetation management objectives upon initial implementation of the alternative. Over time, these areas would move toward attainment of these objectives. The allotments contain 8% of aspen forests within the SNRA and an estimated 75% of the aspen forests in the allotments show inadequate regeneration from livestock grazing.

SMALL MAMMALS, REPTILES, AND AMPHIBIANS

Direct and Indirect Effects

The amount of riparian areas and aspen forests that are not available for livestock grazing would be reduced (Habitat Table III-9). Litter and residual ground vegetation would increase over time benefiting habitat for species discussed under Alternative 1. Areas that would not have livestock grazing would attain these characteristics and attain vegetation management objectives at a higher rate than areas where livestock grazing would continue to occur.

Water troughs without escape ramps located throughout the allotments would continue to allow for mortality of some species of small mammals from drowning. However one trough in the Upper East Fork allotment and three troughs in the Lower East Fork allotment would be removed in this alternative.

Cumulative Effects

Habitats of concern for small mammals, reptiles and amphibians for this project are foremost within riparian areas. The allotments under this alternative would contain 5% of riparian areas within the SNRA. An estimated 15% of the riparian areas in both allotments combined that would be available for livestock grazing under this alternative would not be moving toward FLRMP vegetation management objectives upon initial implementation of the alternative. Over time, these areas would move toward attainment of these objectives.

PREDATORS

Direct and Indirect Effects

The amount of prey habitat affected by livestock grazing would be reduced under this alternative. The effects have been described in the previous discussions of sensitive species, NTMB, small mammals, reptiles, and amphibians under this alternative. These effects to prey habitat would generally result in improvements over time to food and cover resources compared to Alternative 1.

Predator control efforts by the federal government are a reasonably foreseeable action under this alternative. Presence of cattle within the allotments would continue the chance of mortality on certain species such as wolves, coyotes, mountain lions, and black bears, which may prey upon livestock, similar to Alternative 1.

Cumulative Effects

Under this alternative livestock grazing would occur on 26 allotments that would cover 37% of the SNRA. Predator control efforts within grazing allotments would occur throughout this area. Predator control would also take place on the Salmon-Challis National Forest, BLM, state, and privately owned land within the East Fork Salmon River watershed where livestock grazing occurs. It is reasonably foreseeable to assume that depredations would continue under this alternative and that subsequently lethal predator control would continue. Implementation of this alternative would contribute to the overall lethal control effort by the federal government.

CUMULATIVE EFFECTS TO HABITATS OF CONCERN

Refer to cumulative effects to “Habitats of Concern” in Alternative 1 for a description of activities that contribute to cumulative effects within the East Fork Salmon River watershed.

Livestock grazing under this alternative would contribute to the cumulative effects to riparian and aspen forest vegetation condition. The effects from livestock grazing under this alternative would be less extensive than those described in alternative 1 due to the boundary change and the reduced area available to livestock grazing. Refer to the direct and indirect effects discussions under this alternative for species that use these habitats and to the species cumulative effects discussions for more information on the context of the effects within the SNRA.

POLLINATORS

Direct and Indirect Effects

Major alteration of the allotment boundaries in Alternative 2 will remove livestock impacts for large portions of native vegetation in both allotments. However, this alternative would still allow for livestock grazing in portions of the allotments that are currently permitted and may allow for continued moderate to locally heavy negative impacts native vegetation.

Current livestock management has resulted in the alteration of vegetation composition of much of the allotments’ upland and riparian areas. Alternative 2 would allow for much of these areas to begin recovering and native vegetation composition and pollinators would be benefited. In some areas, a conversion from a diversity of native sedges and forbs to mainly bluegrass and weedy species has occurred. This conversion of flowering forbs to graminoid species has likely resulted in a negative effect to diversity and/or abundance of insect

pollinators. By reducing stocking numbers, redefining the boundaries of the allotments, and allow for vegetation recovery, long-term pollinator diversity and abundance improve.

Under Alternative 2 direct and indirect effects of livestock grazing will likely continue in the redefined allotment boundaries and may result in: reducing plant species (pollen or nectar sources) needed by certain pollinators, decreased plant vigor, trampling of vegetation, nest destruction for of ground-nesting species, conversion of seeps and spring to livestock troughs, and decreased water availability for pollinators.

Cumulative Effects

Under Alternative 2, recreational impacts could increase in certain high use areas given the removal of livestock and the perceived improved recreational experience (See Chapter IV-recreation). Trampling by ORVs, ATVs, pack animals, and dispersed camping could directly and indirectly impact pollinators through soil compaction, vegetation alteration, and introduced non-native plants. Cumulative effects to pollinators from insecticides, herbicides, and spring burning are the same as under Alternative 1.

Spring burning can be used to meet fire use goals although most plants are not adapted to fire at this time of year. Spring burning interferes with flowering, fruiting, and other physiological impacts, and could affect life history patterns with pollinators. No prescribed burns are currently scheduled for the project area.

Alternative #3

Under this alternative livestock grazing would continue for three years within the current allotment boundaries and then no livestock grazing would be permitted. After the three year period the habitats that are currently affected by livestock, which are mainly riparian areas, wet meadows, springs, and aspen forests would begin to move towards FLRMP management objectives. Water troughs and fences would be removed after livestock grazing would be discontinued. The rate of attaining FLRMP vegetation management objectives would be higher than under alternative 2. All areas that currently show effects from livestock grazing would have the chance to fully recover to standards yet higher than those described in the FLRMP. Conditions would improve without the chance of experiencing setbacks from livestock grazing. The following discusses the direct and indirect affects of this alternative that apply to specific species or species groups.

THREATENED AND ENDANGERED SPECIES

Gray wolf

The presence of cattle in these allotments for the first five years after implementation of this alternative would contribute low to moderate risk for lethal control based on past history of depredations in the East Fork Salmon River watershed. All depredations to date have occurred off of the East Fork allotments. After livestock no longer occur on the allotments, assuming that livestock grazing would continue to occur on the Salmon-Challis National Forest, BLM, state, and private lands within the East Fork Salmon River watershed, the absence of cattle on Sawtooth Forest managed lands would not decrease the likelihood of mortality to wolves from predator control efforts by livestock owners and the federal government from Alternatives 1 or 2.

MANAGEMENT INDICATOR SPECIES

Greater sage-grouse

No grazing within the Lower East Fork Allotment would benefit brood rearing habitat of sage grouse. Exclusion of livestock would allow maximum forb and flower production for attracting insects. Additionally, springs and wet meadows that have been affected by water developments would improve. This situation would allow riparian and wet meadow areas to recover to a higher productivity.

UNGULATE HABITATS

Competition between bighorn sheep and cattle for forage on bighorn sheep winter range would be eliminated. This would increase forage availability and use by bighorn sheep increasing chance for winter survival.

NEOTROPICAL MIGRATORY BIRDS

Water troughs located throughout the allotments would be removed. Mortality of birds from drowning in these troughs would be eliminated under this alternative.

This alternative is compliant with the EO 13186 because the analysis meets our obligation as defined under the January 16, 2001 MOU between the USDA-FS and USDI-FWS designed to complement EO 13186. As required under this MOU, this alternative: (1) Identifies management practices that may affect high priority species as defined in the MOU and Partners in Flight, and (2) develops conservation measures to avoid or minimize impacts to migratory birds. The exclusion of livestock grazing from both allotments would benefit habitat for several high priority species, particularly those associated with riparian and aspen habitats.

SMALL MAMMALS

Water troughs located throughout the allotments would be removed. Mortality of small mammals from drowning in these troughs would be eliminated under this alternative.

PREDATORS

Assuming that livestock grazing would continue to occur on the Salmon-Challis National Forest, BLM, state, and private lands within the East Fork Salmon River watershed, the absence of cattle on Sawtooth Forest managed lands would not decrease the likelihood of mortality to wide-ranging predators such as wolves, mountain lions, and bears from predator control efforts by livestock owners and the federal government.

CUMULATIVE EFFECTS TO HABITATS OF CONCERN

Livestock grazing would continue to occur on the Salmon-Challis National Forest, BLM, state, and privately owned lands adjacent to the allotments. Haying on private lands would continue to occur within riparian areas. This situation would continue to affect habitats within the East Fork Salmon River watershed. If livestock are removed from the SNRA, recovery in riparian and aspen habitats would accelerate, decreasing the cumulative effects to these habitats within the East Fork Salmon River watershed.

POLLINATORS

Direct and Indirect Effects

Alternative 3 will provide for long-term benefits and habitat recovery for the upland vegetation and pollinator diversity that is found within the boundaries of Upper and Lower East Fork allotments. However, over the three-year phase out period short-term negative impacts and livestock impacts to pollinators and vegetation would continue. Current livestock management has resulted in the alteration of vegetation composition of much of the allotments' upland and riparian areas. Alternative 3 would allow for the gradual recovery native vegetation composition and pollinators would be benefited. Larger populations of flowering plants would be available for insect pollinators, particularly in riparian areas, aspen understories, and upland vegetation communities. Exclusion of livestock would also result in higher vigor of flowering plants maintaining suitability for pollinators. Additionally, the risk of nest trampling and the effects from water troughs would be eliminated.

Under Alternative 3 direct and indirect effects of livestock grazing will likely continue until the three-year phase out period is complete. During the three-year phase out, plant species (pollen or nectar sources) needed by certain pollinators would be reduced, decreased plant vigor, trampling of vegetation, nest destruction of ground-nesting species, and decreased water availability for pollinators.

Cumulative Effects

Herbicide drift from agricultural communities poses a major threat to pollinators. Chemical spraying efforts for non-native species and exotic weed species can also impact pollinators and their progeny. Many of the TEPCS species are dependent upon pollinators for sexual reproduction and seed set. The application of insecticides to reduce non-native pests can jeopardize important native pollinator populations, thus negatively impact the seed production and viability of TEPCS species. Cumulative effects to pollinators from insecticides, herbicides, and spring burning are the same as under Alternative 1.

Table IV-2. Idaho Partners In Flight priority species and summary of effects by alternative

Species ^a	Alt.1 Effect ^b	Alt. 2 Effect	Alt. 3 Effect	Rationale for Effects ^c
Sharp-shinned hawk			+	Aspen nesting
Northern goshawk			+	Aspen nesting
Ruffed grouse			+	Ground nesting, aspen nesting and foraging
Blue grouse			+	Ground nesting, aspen nesting and foraging
Greater sage-grouse			+	Ground nesting, wet meadow foraging/brood rearing
Short-eared owl			+	Ground nesting
Calliope hummingbird			+	Riparian and aspen nesting, riparian foraging
Rufous hummingbird			+	Riparian nesting and foraging
Species ^a	Alt.1 Effect b	Alt. 2 Effect	Alt. 3 Effect	Rationale for Effects ^c

Lewis' woodpecker	+	+	+	Cottonwood riparian and aspen nesting and foraging, open forest structure
Williamson's sapsucker			+	Aspen nesting
Willow flycatcher			+	Riparian nesting and foraging
Dusky flycatcher			+	Riparian and aspen nesting and foraging
Sage thrasher			+	Ground nesting
American dipper			+	Riparian foraging
Yellow warbler			+	Riparian nesting and foraging
MacGillivray's warbler			+	Ground nesting, riparian nesting and foraging
Lark sparrow			+	Ground nesting
Brewer's sparrow			+	Ground nesting, riparian migrating

^aOnly priority species with a negative or positive effect from the alternatives are listed. Species with neutral effects are not listed.

^bEffects symbols: (-) negative effect to species' habitat, (+) positive effect to species' habitat, () overall improving trend to species' habitat.

^cSee Chapter 3, Direct and Indirect Effects to Neotropical Migratory Birds for further discussion of effects

Issue – Recreation and Aesthetic Values

Recreation and Aesthetic Effects Common to All Action Alternatives:

- The desired ROS Class acreages are maintained under all three alternatives.
- Recreation and Aesthetic effects were determined using assumptions described under the Livestock Distribution and Management Effects section, above.
- The Upper and Lower East Fork Allotments are outside the Pastoral Envelope identified in the revised Sawtooth Forest Plan, Appendix I, page I-29.

Alternative #1

Direct Effects

Upper East Fork Allotment

The direct effect would be no change to the experience of recreationists using or passing through the Upper East Fork allotment from what they currently experience. Complaints from recreationists who think livestock negatively affect their experience could be expected to continue or increase. Cattle would continue to be present in all five Concentrated Use Areas (CUAs) within the allotment for at least part of the recreation use season. Campsites would continue to be affected by cattle loafing and shading up causing root exposure and soil compaction, and the presence of manure in campsites would continue. All 21.8 mile of trails would continue to be open to grazing and possibly affected by trailing cattle and manure.

Bare soil, manure piles and braided trails would continue to affect the quality of meadows in the area. Areas with a VQO of "Preservation" that are currently being impaired by grazing will likely continue to be affected. FLRMP direction to maintain or restore recreation resources in the Bowery and Upper East Fork drainages through improved management and adjustments to livestock grazing capacities as necessary and to retain a natural-appearing landscape consistent with the scenic values for which the SNRA was established, would likely not be achieved under this alternative. The allotment management objective of limiting grazing where recreation use is high or concentrated would not likely be met under this alternative as well.

For visitors who think livestock enhance their experience, the opportunity to view livestock in rural and backcountry settings would be available at the current level.

Lower East Fork Allotment

Direct effects on recreationists using or passing through the Lower East Fork Allotment would continue to occur. Complaints from recreationists who think livestock negatively affect their experience could be expected to continue or increase. Cattle would continue to be present in all ten CUAs through at least part of the recreation use season. Campsites would continue to be affected by cattle loafing and shading up, causing root exposure and soil compaction, and the presence of manure in campsites would continue. All 59 miles of trails, including the heavily used Big and Little Boulder Creek trails, would continue to be open to grazing and possibly affected by trailing cattle and manure. This alternative would not move toward FLRMP direction to mitigate degradation to Forest System trails from other resource management activities, and maintain or restore recreation resources in the Big Lake, Sullivan, French Creek, Little Boulder, and Big Boulder Creeks. Likewise, allotment management objectives to limit grazing where there is high recreation value, or where recreation use is high or concentrated, and to close Frog and Little Redfish Lakes to grazing during the managed recreation use season would not likely be met.

Users passing through the allotment to access the heavily used Baker Lake, Boulder Chain Lakes, Big Boulder Lakes basin, and Quiet and Noisy Lakes, beyond the allotment boundaries, would continue to be affected by damage to trails and campsites. There would continue to be no road-accessed dispersed camping areas without cattle present through at least part of the high-use season.

Hummocking, bare soil, manure piles and braided trails would continue to affect the scenic quality of meadows in the area. Areas with a VQO of "Preservation" that are currently being impaired by grazing will likely continue to be affected. FLRMP direction to retain a natural-appearing landscape will likely not be achieved.

Resting pastures every third year, as required by this alternative, reduces the effects of the presence of cattle for that year in that pasture, but the effects of previous years' use would continue to affect the recreation experience. Past use has shown that cattle will often be present in pastures that are scheduled for rest, so the effects of cattle presence in rested pastures may not be eliminated.

For visitors who think livestock enhance their experience, the opportunity to view livestock in rural and backcountry settings would be available at the current level.

Indirect Effects (Alt. 1)

Upper East Fork Allotment

The indirect effects would be that use outside the allotment boundaries in Grand Prize Gulch and East Pass Creek would likely continue as past grazing has shown that cattle are difficult to contain within the allotment boundaries. Effects on campsites and trails and impacts to recreationists' experience in these areas would likely continue. Some recreationists may choose not to recreate in the area due to the effects of cows on their recreation and aesthetic experience.

Lower East Fork Allotment

Lack of topographic barriers or impediments would likely result in continued use of high recreation use areas outside the allotment boundaries by cattle such as Washington and Chamberlain Basins, Three Cabins Creek Trailhead dispersed campsites, and at Washington and Fourth of July Lakes. Monitoring of past use under this alternative shows that it is extremely difficult to keep cows out of the Frog and Little Redfish Lake areas, as required by the FLRMP and Annual Operating Instructions. Livestock effects to lakeshores and campsites and impacts to recreationists' experience in these high-use areas would likely continue and not move toward FLRMP direction to maintain or restore recreation resources in Little and Big Boulder Creeks.

Cumulative Effects (Alt. 1)

Upper East Fork Allotment

Visitors to road-accessed and backcountry dispersed areas on the east side of the White Cloud mountain range would not have access to recreation opportunities unaffected by cattle. Trail users would continue to be affected on all trails within the allotment. It is unlikely that FLRMP direction for the SNRA to provide for livestock forage in a manner that is consistent with other resource management direction and uses would be met because all CUAs and trails within both Upper and Lower East Fork Allotments would remain open to the current level of grazing. Continued livestock use of areas outside the allotments would affect the quality of recreationists' experience in a much larger area. Possible displacement of recreationists from areas affected by grazing into areas with little or no livestock damage may be affecting recreation experience in those non-permitted areas.

Effects to campsites from recreational packstock use will continue. Locally heavy grazing by packstock in Bowery Creek will likely continue and add to the effects from livestock grazing. Campsites and vegetation damaged by past livestock and recreation use will not have the opportunity to recover. Education and regulations should continue to reduce the impacts from recreationists use, but if livestock continue to frequent the same areas, recovery is unlikely and attempts at restoration would probably be unsuccessful.

Alternative 1

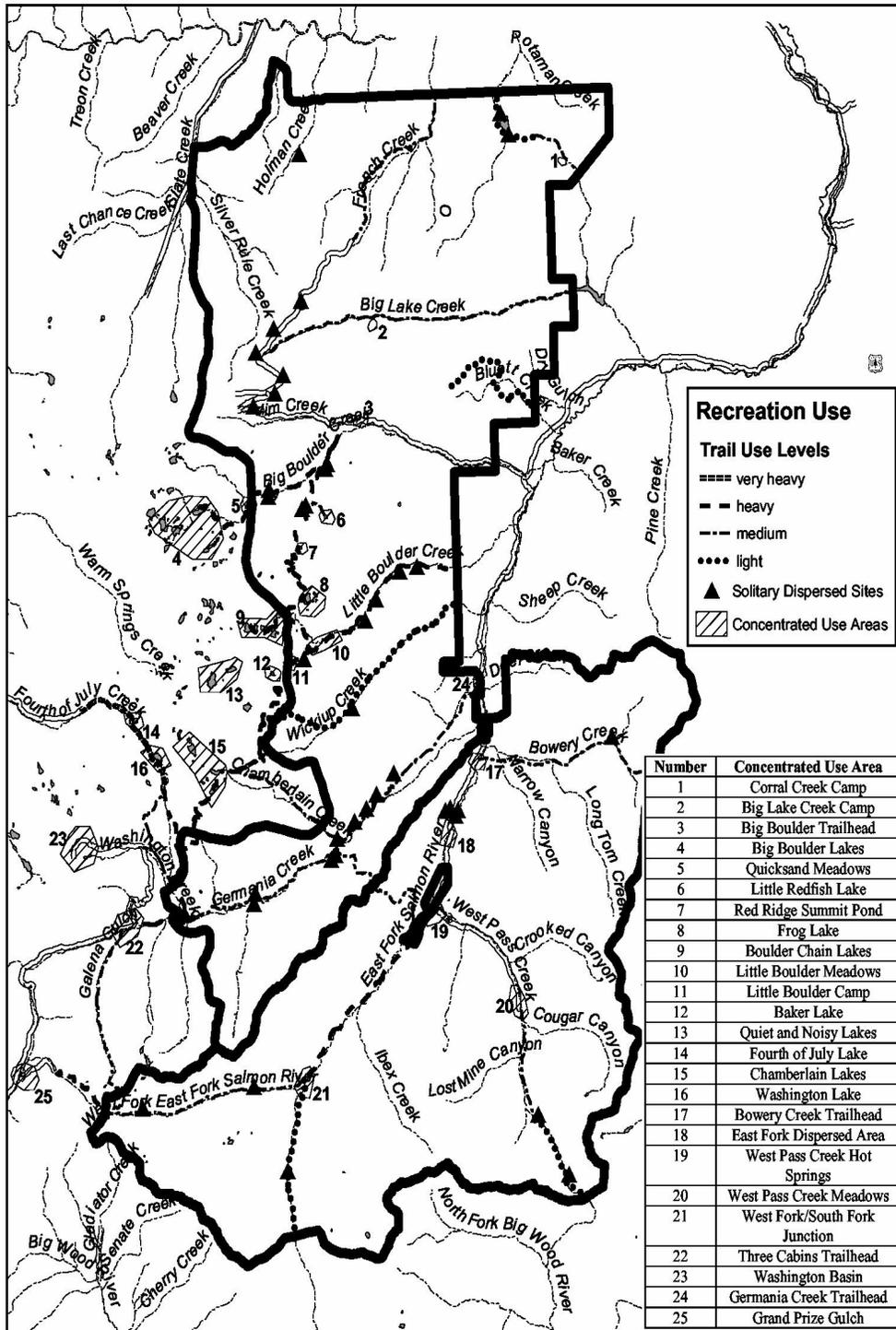


FIGURE IV-1. ALTERNATIVE 1 – RECREATION

Lower East Fork Allotment

Visitors to road-accessed and backcountry dispersed areas on the east side of the White Cloud mountain range would not have access to recreation opportunities unaffected by cattle. All trails within the Lower and Upper East Fork Allotments would continue to be open to grazing. Continued grazing use in areas outside the allotments and in areas within the allotments but off-limits to grazing would reduce the quality of recreationists' experience in those areas. On the east side of the White Cloud mountain range, FLRMP direction to provide for livestock forage within allotments in a manner that is consistent with other resource management direction and uses, and visual objectives in areas with a Preservation VQO, would likely not be met. Objectives to limit grazing conflicts with recreation and scenic values within this allotment would be difficult to achieve because cattle impacts would still affect recreationists accessing or using all CUAs and on all trails.

Effects to campsites from recreational packstock use will continue. Grazing by packstock in some areas, such as Frog Lake, Little Boulder Meadows, and Quicksand Meadows, will likely continue and add to the effects from livestock grazing. Off-trail and off-road use by off-highway vehicles will likely continue, especially in the Railroad Ridge area, and add to the effects of livestock grazing.

Campsites and vegetation damaged by past livestock and recreation use will not have the opportunity to recover. Education and regulations should continue to reduce the impacts from recreationists, but if livestock continue to frequent the same areas, recovery is unlikely and attempts at restoration would probably be unsuccessful.

Possible displacement of recreationists from areas affected by grazing into areas with little or no livestock damage may affect recreation experience in those ungrazed areas.

Alternative #2**Direct effects - Upper East Fork Allotment**

The direct effects of grazing on recreationists in the Upper East Fork Allotment would be reduced considerably. Complaints from recreationists who believe livestock negatively affects their experience could be expected to decrease. Effects on road-accessed CUAs would continue in most areas within the allotment, but would be reduced due to a reduction in grazing pressure and reduced or eliminated at the East Fork dispersed area, due to the construction of the fence around the campsites. Livestock impacts would be eliminated from approximately four solitary dispersed campsites. Grazing would continue at approximately six sites, but these sites would likely be less impacted due to the reduction in grazing pressure.

Approximately 9.8 miles of trails would remain accessible to livestock under this alternative. The 4.5 mile East Fork trail, which receives heavy recreation use, would still be open to grazing, but due to reduced stocking rates and season of use, the effects would be less than under Alternative 1. The Bowery Cutoff trail and about one mile of the Bowery Creek trail would likewise be open to grazing, but would realize a reduction in effects due to reduced grazing pressure. Twelve miles of medium use trails, including five miles of the West Fork

East Fork trail, three miles of the South Fork East Fork trail, and four miles of the Bowery Creek trail, would no longer be in the allotment thereby eliminating or reducing cattle impacts on trail users.

Trail cattle guards would allow most trail users to pass through drift fences unimpeded. Recreational pack and saddle stock users would be required to open and close drift fence gates on the West Fork of the East Fork and well as the South Fork of the East Fork. In addition to the minor inconvenience, the possibility that cattle would escape onto adjacent non-permitted National Forest land would continue if the gate were not closed. This alternative would move toward FLRMP direction to protect Forest Service trails from grazing impacts and to maintain or restore recreation resources in Bowery Creek and the Upper East Fork drainages. This alternative would also move towards FLRMP objectives for recreation and visual resource conditions. Scenic objectives for areas with a VQO of Preservation would be achieved. . Allotment management objectives to limit grazing in high value and high use recreation areas would be met.

For visitors who think livestock enhance their experience, the opportunity to view cows in rural and backcountry settings would be available at a reduced level.

Direct effects:

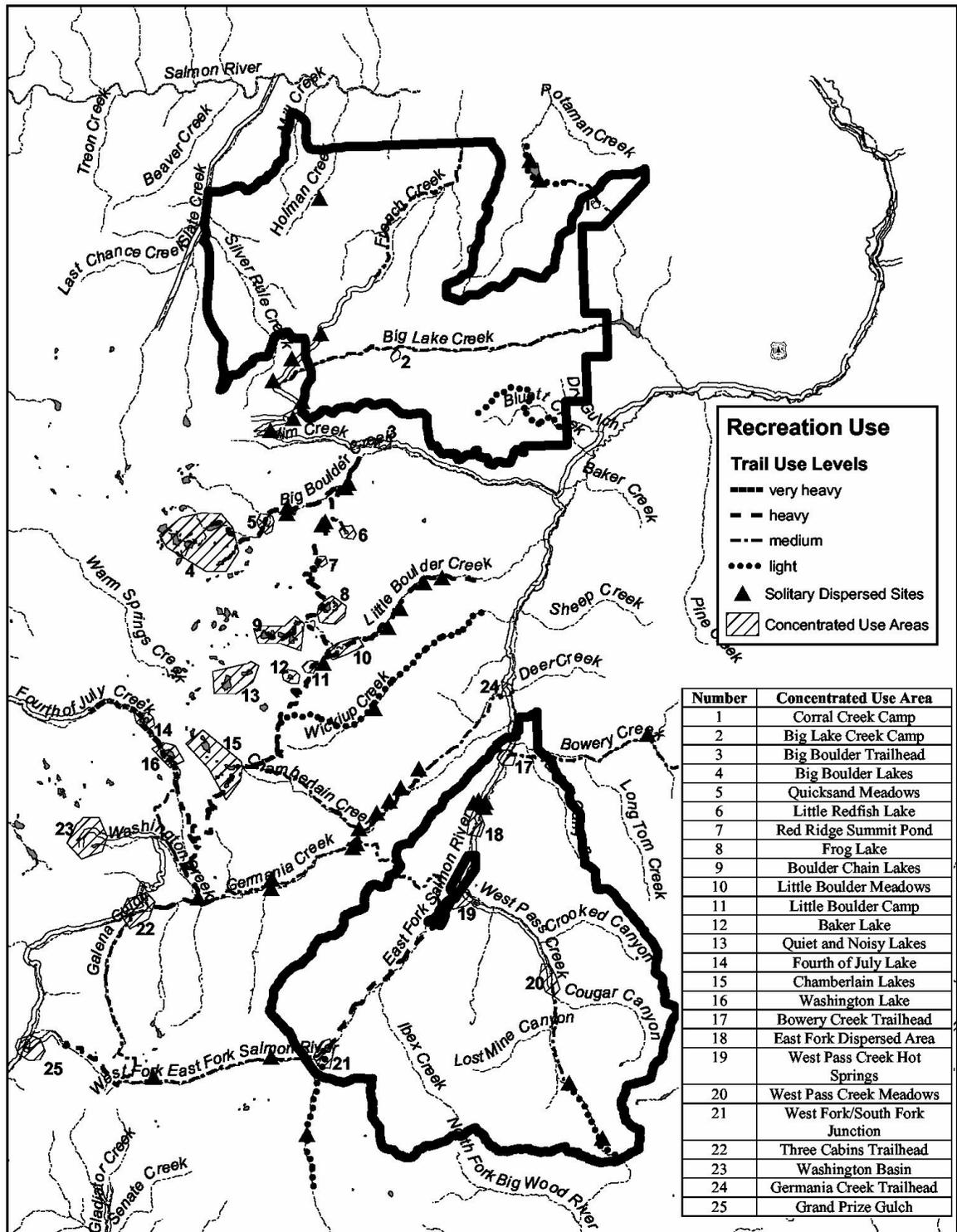
Lower East Fork Allotment (Alt. 2)

Impacts on the recreation experience and scenic values will be reduced considerably on the Lower East Fork Allotment. Complaints from recreationists who think livestock negatively affect their experience would be expected to decrease. The most heavily used recreation areas on the east side of the White Cloud mountain range would be closed to grazing, eliminating impacts to campsites from trampling, manure, and cattle presence. Two CUAs would remain within grazed areas, but they are outfitter assigned camps that are used mainly during hunting season, when cows are removed from the allotment.

Grazing would be eliminated from approximately 28 solitary dispersed campsites. A few solitary sites would remain within the allotment boundary, but they are more lightly used, and are primarily used during hunting season when the cows are off the allotment. This alternative would move toward or achieve FLRMP objectives.. Allotment management objectives to limit grazing in high value and high use recreation areas would be met.

Livestock impacts to trails would be reduced considerably under this alternative. All high-use trails would be closed to livestock. Fourteen miles of medium use trails and five miles of light use trails would remain in areas open to livestock. Over 16 miles of heavy use trails, including the Big and Little Boulder Creek trails, which see over 400 users each per season, would be closed. Eleven miles of medium use and 13.5 miles of light use trails would also be closed. Recreationists accessing popular CUAs beyond the allotment boundaries, including Baker Lake, Boulder Chain Lakes, the Big Boulder Lakes basin, and Quiet and Noisy Lakes would not be affected by cattle impacts on trails and campsites.

Alternative 2



Sawtooth NF, pcs\sws0136:C:\files\office\gisedit\whitcid_reco\recreation_alt2.mxd

FIGURE IV-2. ALT. 2 RECREATION USE

Meadows and lakeshores would begin to restore themselves, regaining their natural appearance and function over time.

For visitors who think livestock enhance their experience, the opportunity to view cows in rural and backcountry settings would be available at a reduced level.

Indirect effects:

Upper East Fork Allotment (Alt. 2)

The potential for excess use in Grand Prize Gulch and East Pass Creeks would be effectively eliminated. There may continue to be some effects to trails outside the adjusted allotment boundary if cows are not properly contained, but it is much less likely they would make it as far as Grand Prize and East Pass Creek. Reduced impacts from grazing could lead to a more desirable recreation experience, possibly increasing camping and trail use.

Lower East Fork Allotment (Alt. 2)

The likelihood of cattle wandering off the allotment onto heavily used CUAs such as Chamberlain and Washington Basins, Fourth of July and Washington Lakes, and the Three Cabins Trailhead, would be eliminated.

The likelihood of cows continuing to graze the Frog and Little Redfish Lake areas would be greatly reduced, allowing restoration of impacted campsites and visual resources, while improving the recreation experience at those locations.

Cumulative effects:

Upper East Fork Allotment (Alt. 2)

Overall recreation experience in the East Fork Salmon River Canyon would be much improved. There would be considerably more backcountry camping and trail use opportunities with impacts from cattle grazing reduced or eliminated. The opportunity for road-accessed dispersed camping with little or no impacts from grazing would be more available in the Upper and Lower East Fork Allotments.

Effects to campsites from recreational packstock use would continue. Locally heavy grazing by packstock in Bowery Creek will likely continue but is unlikely to occur at a level that would prevent recovery. Under this alternative, the areas adjacent to camps would not have been grazed prior to hunting season, providing more available forage. Campsites and vegetation damaged by past livestock and recreation use would likely have the opportunity to recover. Education and regulations should continue to reduce the impacts from recreational use over time.

Lower East Fork Allotment (Alt. 2)

Opportunities for backcountry and road-accessed camping without grazing impacts would be abundant on the east side of the White Cloud mountain range. Within the Upper and Lower East Fork Allotments, approximately 50 miles of Forest Service trails would be closed to grazing, providing numerous opportunities for trail users to avoid the impacts of cattle. This alternative would likely move toward or meet FLRMP objectives provide for livestock forage within existing allotments in a manner consistent with other resource management direction and uses. Scenic objectives for all Management Areas would be achieved.

The reduction of impacts from grazing would improve the recreation experience. If use did increase at a level that prevented attainment of FLRMP standards, additional management of recreation activities would become necessary.

Effects to campsites from recreational packstock use would continue. Grazing by packstock in some areas, such as Frog Lake, Little Boulder Meadows, and Quicksand Meadows, would likely continue but at such a low level that campsites and vegetation damaged by past livestock and recreation use should recover. Off-trail and off-road use by off-highway vehicles will likely continue, especially in the Railroad Ridge area. Education and regulations should continue to reduce the impacts from recreational use over time.

Alternative #3

Direct effects

The direct effects of livestock grazing on recreation and scenic resources would be eliminated on both the Upper and Lower East Fork Allotments. Complaints from recreationists who think livestock negatively affect their experience could be expected to cease after three years. Livestock effects would be removed from fifteen CUAs that are currently open to grazing and 41 solitary dispersed campsites. Livestock effects would be eliminated on 80.8 miles of National Forest system trails. The potential for grazing to conflict with recreation use would be eliminated on both allotments.

Grazing effects on meadows and lakeshores would be eliminated.

Meadows and lakeshores would begin to restore themselves, regaining their natural appearance and function over time.

Visitors who believe viewing the presence of cows enhances their recreation experience would not have that opportunity on the SNRA portion of the East Fork canyon. Grazing on private and adjacent public lands would likely continue, so that opportunity would likely still be available in the East Fork Canyon though at a reduced level.

Indirect effects:

The indirect effects of this alternative would be that the likelihood of cattle straying from Forest Service allotments onto non-permitted National Forest Lands would be eliminated.

Cumulative effects:

Visitors to the East Fork Canyon would have abundant opportunities to recreate without being affected by cattle. Conditions at campsites and on trails over a large area would improve, though effects to these locations from recreationists would continue. Restoration of impacted sites would more likely meet with success if the additional effects of livestock use were removed.

Effects to campsites from recreational packstock use would continue. Locally heavy grazing by packstock at Frog Lake, Little Boulder Meadows, Quicksand Meadows, and Bowery Creek will likely continue but is unlikely to occur at a level that would prevent recovery.

Campsites and vegetation damaged by past livestock and recreation use would likely have the opportunity to recover. Off-trail and off-road use by off-highway vehicles will likely continue, especially in the Railroad Ridge area. Education and regulations should continue to reduce the impacts from recreational use over time.

The reduction of impacts from grazing would improve the recreation experience, and could lead to increased recreation use. Such an increase could lead to more impacts on trails and campsites. Because the lake basins are already popular destinations, it is likely that any increase would be small as a percentage of use. If use did increase at a level that prevented attainment of FLRMP standards, additional management of recreation activities would become necessary.

Issue – Social and Economic

Throughout this EIS, there are references to permitted use, actual use, and allowable use. Permitted use refers to the amount of grazing use that is authorized by term grazing permit. This use is described as the number of livestock (generally cow/calf pairs) and the grazing season these animals are permitted on the allotments. Eleven years of monitoring the effects of grazing on the East Fork allotments show that full permitted numbers exceed what is necessary to meet Sawtooth FLRMP standards.

Actual use refers to the actual number of livestock that have grazed and the actual period of use they were on the allotments. It is displayed in terms of numbers of animals and season of use or actual head months of grazing use that occurred on the allotment during a given year or averaged for a series of years. Actual use on both Upper and Lower East Fork Allotments from 1992 through 2002 average approximately 75% of permitted use. From 1999 through 2002, actual use has averaged roughly half of the permitted use.

Allowable use is calculated by comparing actual use numbers with the results of monitoring compliance checks and grazing management standards on the allotments, then calculating grazing levels that would have fully met applicable management standards and permit terms and conditions. This calculation is based on a determination of when actual numbers of livestock would have needed to be removed from the allotment to meet the management standards. If management standards were not met, allowable use would be less than actual use. Allowable use is generally described in terms of head months of grazing use. “Allowable use” equals “proposed use” for both Alternatives 1 and 2.

Use (HMs)	Upper East Fork		Lower East Fork	
	Alt 1	Alt 2	Alt 1	Alt 2
Permitted	1,016		1,993	
Actual (10yrs)	777		1461	
Actual (3yrs)	531		914	
Allowable	553		962	
Proposed	553	349	962	590

Effects Common to All Alternatives - It is assumed that there are no practical substitutes

for summer range, and any reductions in summer grazing are directly met by corresponding reductions in herd size and/or use.

Alternative #1

Direct effects

Permitted use numbers would be reduced to approximately 553 HMs use on the Upper East Fork Allotment and 962 HMs on the Lower East Fork Allotment, reductions of 46% and 52% respectively from current grazing permits. As a result of good faith efforts made by the affected grazing permittees to meet the terms and conditions of grazing permits, FLRMP requirements and terms under Biological Opinions (issued under the Endangered Species Act), actual use on the allotments between 2000 – 2002 averaged 531 HMs and 914 HMs respectively.

Actual use numbers on the ground would be reduced as a result of the inability to meet proper use requirements. The necessity for early removal of livestock associated with proper use triggers could require permittees to find alternative feed sources or to sell off portions of their stock. Permit actions are likely to continue resulting in reductions in actual use numbers and leading to changes on the face of the grazing permit. Given the past experience of operating under the current grazing system, this alternative may not meet FLRMP objective SEOB01 or providing a predictable supply of goods and services within a sustainable level.

Economic impacts on permittees, consisting of the expenses of fence and water development maintenance, required herding and riding to meet permit conditions, and changes in actual use numbers would increase as compared to recent years.

Administrative costs to the Forest service would remain similar or greater than those of recent years. This could pose difficulties if SNRA budget allocations are further reduced.

Indirect effects

As described in *An Estimate of Cattle and Sheep Ranch Employment Dependent on the Boise, Payette, and Sawtooth National Forests* (Robison and Peterson, 1999), the Forest Service range program creates approximately \$165,000 in annual earnings within the community of Challis. The Upper and Lower East Fork Allotments constitute approximately 25% of the permitted livestock use on the SNRA. As such, they contribute approximately \$40,000 of the \$165,000 in annual earnings within Challis. Under this alternative, annual earnings may be reduced as a result of adjustments in actual use numbers. This same study found that the Forest Service range program does not create any range-linked jobs within the community of Stanley. Therefore, minimal effects to the community of Stanley are expected as a result of this alternative.

Alternative #2

Direct effects

As shown in the table above, the average number of cow/calf pairs grazed during the years 2000, 2001, and 2002 (“actual use” averaged over three years) equates to roughly half of the maximum number of cow/calf pairs authorized on term grazing permits. This is true for both allotments, and is the result of good faith efforts made by the affected grazing permittees to meet the terms and conditions of grazing permits, Forest Plan requirements and terms under Biological Opinions (issued under the Endangered Species Act).

Alternative 2 proposes allotment boundary adjustments and corresponding stocking rate reductions. While the term grazing permit reflects 1,016 HMs on the Upper East Fork Allotment, actual use equated to 531 HMs. The reduction from actual use (531 HMs) to the proposed use level of 349 HMs represents a 34% reduction and a 66% reduction from permitted use levels. On the Lower East Fork Allotment, the term grazing permit authorizes livestock grazing not to exceed 1993 HMs. During the last three years, use has averaged 914 HMs. The reduction from actual use (914 HMs) to the proposed use level of 590 HMs represents a 35% reduction and 70% from permitted use.

Permit actions resulting in further reductions are not expected to continue. Fluctuations in actual use numbers are expected to stabilize over time. Alternative 2 stocking levels are within the carrying capacity for the acres allotted. This would remove uncertainties about the amount of summer forage available, providing for a more stable, although considerably reduced income to the permittees. This alternative should meet FLRMP goal SEGO03 of developing sustainable land uses and management strategies that contribute to economic goals. It should also meet FLRMP objective SEOB01 of providing a predictable supply of Forest goods and services.

Under Alternative 2, economic impacts on permittees, consisting of the expenses of fence and water development maintenance, required herding and riding to meet permit conditions, and changes in actual use numbers would be reduced.

Given the reduced grazing areas and lower potential for livestock control issues, Forest Service permit administrative workload for these allotments would be significantly reduced. Control problems and potential for permit violations would be diminished.

Indirect effects

Greater herd control, resulting in a high probability of reduced permit violations, would provide for more secure and stable grazing operations in the long term.

There is a probability that one or more of the permittees may not be able to continue grazing from an economics standpoint under this alternative. As this alternative constitutes a 35% reduction over actual use realized under Alternative 1, annual earnings in the community of Challis are likely to be reduced by approximately \$14,000. As described under Alternative 1, minimal direct or indirect effects to Stanley are anticipated as a result of this alternative. It is also possible that this could result in consolidation of allowable use into fewer grazing permits between current or new permittees in the long-term.

If one or more permittees can no longer sustain viable livestock operations, they may choose to subdivide and sell off their private lands in the East Fork Valley. The effects of subdivision and increase in population density would have unpredictable social and

economic effects in the valley. Effects could be severely detrimental or beneficial depending on the lifestyles, enterprises or land management decisions of new owners. If the removal of livestock and subsequent increase in natural characteristics on the allotments resulted in increased recreational use, this may offer recreation service-associated economic opportunities for residents in the valley.

Alternative #3

Direct effects: Due to the lack of alternative summer range with comparable costs, the loss of all permitted HMs on the Upper and Lower East Fork Allotments would most likely render traditional cow-calf operations of some permittees no longer viable.

The overall grazing permit administrative workload on the entire SNRA would be reduced by approximately 25% - the portion dealing with the East Fork Allotments, allowing for greater attention to other allotments which have recurrent resource problems and conflicts.

This alternative may not meet FLRMP goal SEGO03 of developing sustainable land uses and management strategies that contribute to economic goals, or FLRMP objective SEOB01 of providing a predictable supply of Forest goods and services.

Indirect effects

Under this alternative, a permittee whose entire operation is dependent upon grazing in the Upper and Lower East Fork allotments would no longer have an economically viable operation. There is also the possibility that other permittees, particularly those that do not have BLM, State or private permits, would not be able to continue grazing from an economics standpoint under this alternative.

With the complete elimination of grazing under this alternative, annual earnings in the community of Challis are likely to be reduced by approximately \$40,000. As described under Alternative 1, minimal direct or indirect effects to Stanley are anticipated as a result of this alternative

Cumulative effects

If permittees can no longer sustain viable livestock operations, they may choose to subdivide and sell off their private lands in the East Fork Valley. The effects of subdivision and increase in population density would have unpredictable social and economic effects in the valley. Effects could be severely detrimental or beneficial depending on the lifestyles, enterprises or land management decisions of new owners. If the removal of livestock and subsequent increase in natural characteristics on the allotments result in increased recreational use, this may offer recreation service-associated economic opportunities for residents in the valley.

Subdivision and associated loss of open space may also have significant effects on resource values. Subdivision into ranchettes or smaller parcels could increase impacts on riparian and other resources along the East Fork of the Salmon River where these ranch operations are located. Effects on listed fish species and other riparian dependent wildlife from potential

subdivision is uncertain and certainly dependent on the uses and impacts that may be associated with the new ownership uses and patterns.

Issue – Heritage

Under the National Historic Preservation Act (NHPA), a significant, or adverse effect is one which may diminish the integrity of a heritage resource's location, design, setting, materials, workmanship, feeling, or associations (36 CFR 800.9[b]). Livestock grazing has the potential to affect heritage resources in three distinct ways. The first is the physical destruction, damage, or alteration of all or part of a resource as a consequence of concentrated grazing activities or construction of grazing facilities within or adjacent to a resource. The second is isolation of a resource from its setting or alteration of the character of its setting. The third is the introduction of visual, audible, or atmospheric elements that alter its setting or are out of character with a resource.

Alternative #1

Effects under this alternative were analyzed following the assumptions described for Alternative 1 under Livestock Management. Field survey and site monitoring found that there are currently no known sites being affected by cattle grazing activities. Section 106 compliance will be conducted prior to any ground-disturbing activities such as construction of new facilities such as fences, troughs, ponds, and pipelines or maintenance of existing facilities. If significant cultural resources are located during the Section 106 field review, avoidance and or mitigation of potential impacts would be developed in consultation with appropriate Tribes and the Idaho State Historic Preservation Office.

Cumulative effects will continue from impacts from concentrated recreation activities within the assessment area.

There is always the possibility that cattle will be concentrated in areas where an archaeological site may also be present. If this occurred, there is the possibility that a significant cultural resource would be damaged.

Alternative #2

Effects under this alternative were analyzed following the assumptions described for Alternative 2 under Livestock Management. Field survey and site monitoring found that there are currently no known sites being affected by cattle grazing activities. Section 106 compliance will be conducted prior to any ground-disturbing activities such as construction of new facilities such as fences, troughs, ponds, and pipelines or maintenance of existing facilities. If significant cultural resources are located during the Section 106 field review, avoidance and or mitigation of potential impacts would be developed in consultation with appropriate Tribes and the Idaho State Historic Preservation Office. The reduced acreage may create more concentrated grazing in areas where an archaeological site may also be present. If this occurred, there is the possibility that a significant cultural resource would be damaged. On the other hand, the reduced acreage proposed for this alternative would decrease the chance of impacts to as yet undiscovered sites that may be within the areas excluded from grazing.

Cumulative effects for heritage are the same as stated in Alternative 1 heritage effects.

Alternative #3

Effects under this alternative were analyzed following the assumptions described for Alternative 3 under Livestock Management. Field survey and site monitoring found that there are currently no known sites being affected by cattle grazing activities. Section 106 compliance will be conducted prior to any ground-disturbing activities such as construction of new facilities such as fences, troughs, ponds, and pipelines or maintenance of existing facilities. If significant cultural resources are located during the Section 106 field review, avoidance and or mitigation of potential impacts would be developed in consultation with appropriate Tribes and the Idaho State Historic Preservation Office. The primary advantage of this alternative is that there would be no possibility of effects from grazing after it is completely phased out.

Cumulative effects are the same as stated in Alternative 1.

The information presented in this section differs from that in the DEIS because additional information from background research and a field investigation conducted during the 2003 summer field season have been included in the heritage analysis.

Other Required Disclosures

NEPA at 40 CFR 1502.25(a) directs “to the fullest extent possible, agencies shall prepare draft environmental impact statements concurrently with and integrated with ...other environmental review laws and executive orders.”

Short-term Uses and Long-term Productivity

NEPA requires consideration of “the relationship between short-term uses of man’s environment and the maintenance and enhancement of long-term productivity” (40 CFR 1502.16). As declared by the Congress, this includes using all practicable means and measures, including financial and technical assistance, in a manner calculated to foster and promote the general welfare, to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans (NEPA Section 101).

Short-term uses are those uses that generally occur annually (i.e., grazing livestock). Long-term productivity refers to the ability of the land to produce a continuous supply of a resource. Grazing available forage under the Proposed Action is not expected to affect the long-term productivity of soils, except in isolated areas around water developments and trails along fences.

Irreversible and Irretrievable Commitments of Resources

Irreversible commitments of resources are those that cannot be regained, such as the extinction of a species or the removal of mined ore. Irretrievable commitments are those that

are lost for a period of time such as the temporary loss of timber productivity in forested areas that are kept clear for use as a power line rights-of-way or road.

No resources would be irreversibly committed under the proposed action. The main resource involved is forage, which is used by both wildlife and domestic livestock. Forage is renewable and when managed under FLRMP standards and guides, adequate amounts of forage would return the following growing season.

Energy Requirements and Conservation Potential

Grazing management requires very limited amounts of energy use for installation of improvements and the management and monitoring of livestock. Forest-wide, energy requirements are not great. For the East Fork allotments, expected energy requirements will be small. No conflicts with other jurisdictions are anticipated because of the proposed action or alternatives.

Possible Conflicts With Plans and Policies of Other Jurisdictions

No conflicts with other jurisdictions are anticipated because of the proposed action or alternatives.

Probable Adverse Environmental Effects That Cannot Be Avoided

Potential adverse impacts are identified in all the areas addressed in this analysis. However, most are minor and all could be mitigated through either the alternatives considered in the analysis or the cited mitigation requirements.

Critical Elements of the Human Environment

Elements that are subject to requirements specified in statute, regulation or executive order that are addressed throughout Chapter III include cultural resources, water quality, American Indian religious concerns, threatened or endangered species, and wetlands/riparian zones. Because no wetlands or floodplains will be altered, the goal and intent of Executive Order 11988 (Floodplain Management) and 11990 (Protection of Wetlands) would be met. Riparian ecosystems located within the planning area would be protected through compliance with FLRMP standards and guides. Other elements that would not be affected because they do not exist in the study area include Wilderness or designated Areas of Critical Environmental Concern. Effects on the human environment are documented in Chapter 4 of this FEIS. The civil rights of any American citizens, including women and minorities, would not be differentially affected by implementation of any alternative

Environmentally Preferred Alternative

Alternative 3, Grazing Phased Out is the environmentally preferred alternative. This alternative causes the least damage to the biological and physical environment and best protects, preserves and enhances historic, cultural, and natural resources.

Prime Farmland, Rangeland, and Forestland

All alternatives associated with this proposal are in accordance with Secretary of Agriculture Memorandum 1827 and Department Regulation 9500-3 for prime farmland, rangeland and forest land.

Research Natural Areas

No Research Natural Areas would be affected by the Proposed Action or alternatives.

Environmental Justice (E.O. 12898)

During the course of this analysis, none of the alternatives considered resulted in any identifiable effects or issues specific to any minority or low-income population or community. The agency considered all public input from persons or groups regardless of age, race, income status, or other social/economic characteristics.

Examination of community composition, as required under E.O. 12898, found no minority or low-income communities to be disproportionately affected under any of the alternatives. This was not raised as an issued during scoping.

National Forest Management Act

The Proposed Action is consistent with direction in the 1987 FLRMP and the National Forest Management Act of 1976.

Federal Licenses and Permits

No federal licenses or permits would be required.