BUFFALO
FIELD CAMPAIGN

June 12, 2015

Governor Steve Bullock
Office of the Governor
PO Box 200801
Helena MT 59620-0801

Superintendent Daniel Wenk
Yellowstone National Park
Yellowstone Bison Management Plan EIS
PO Box 168
Yellowstone National Park, WY 82190

Dear Governor Steve Bullock and Superintendent Daniel Wenk,

Buffalo Field Campaign is requesting the state of Montana and Yellowstone National Park evaluate managing wild buffalo like wild elk on public lands in Montana as an alternative in the Bison Management Plan. The *Manage Wild Buffalo like Wild Elk in Montana* alternative supports buffalo's freedom to roam America's public lands.

The alternative would ensure wild buffalo are allowed to inhabit public lands and establish a population in Montana. Like wild elk, wild buffalo would be managed by hunting based on sustainable populations in available habitat in Montana.

The habitat to sustain a wild buffalo population exists on public lands in Montana. What remains missing is a commitment by Montana's Governor to allow wild buffalo to inhabit National Forests and other public lands beyond Yellowstone National Park.

As practiced by the state of Montana and Yellowstone National Park, adaptive management has been a dismal failure. Despite several changes to the plan, the framework continues to operate on faulty assumptions and outdated information. The public has roundly criticized adaptive management and an independent review by the U.S. Government Accountability Office found fundamental problems that persist to this day. We strongly encourage using the best available science to guide informed management decisions.

The *Manage Wild Buffalo like Wild Elk in Montana* alternative meets the mandate from the U.S. Congress to conserve and leave buffalo "unimpaired for the enjoyment of future generations." The alternative adheres to National Park Service policies and directives requiring that "natural values, processes, systems, and values" be preserved. The alternative also fulfills Montana's public trust responsibilities for "each generation as trustee of the environment for succeeding generations."

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It is long past time for the state of Montana and Yellowstone National Park to transition away from a destructive and costly management plan to a sustainable and respectful plan for wild buffalo.

The alternative to manage buffalo by hunting based on sustainable populations in available habitat in Montana is a viable alternative that fits the four corners of a sound wildlife management plan. But it requires the state of Montana and Yellowstone National Park to reject continued slaughter of buffalo.

Government slaughter of buffalo eliminates wildlife management of the migratory species. The government must reject slaughter as a bygone policy relic from the 1870s. Hunters do not want to be a management tool in the toolbox of another government slaughter plan. Subsistence hunting for hunters and their families must also mean subsistence for the wild species taken by managing habitat to sustain a wild buffalo population over the long-term.

The alternative proposes continuing the Designated Surveillance Area management of cattle in place of an Interagency Bison Management Plan.

Despite several incidents of Montana cattle testing positive for *Brucella abortus*, the Designated Surveillance Area has protected producers statewide. Several taxpayer-supported programs are in place to assist producers in managing cattle. Producers in the Designated Surveillance Area are compensated for testing, vaccination, and handling of cattle. In the vast Yellowstone ecosystem, managing cattle remains the most effective disease risk management approach. Ranchers statewide have saved $5.5 to $11.5 million annually since the Designated Surveillance Area went into effect in 2010. These benefits will continue to accrue for livestock producers under the alternative to *Manage Wild Buffalo like Wild Elk in Montana*.

The *Manage Wild Buffalo Like Wild Elk in Montana* alternative will also save millions of taxpayer dollars because it limits unnecessary government action by ending government capture of buffalo for slaughter, quarantine, hazing deadlines, population control experiments, and vaccination.

Montana and American taxpayers expect transparency and a public accounting for how our money is spent by the government. It should not require a report by the U.S. Government Accountability Office to arrive at an estimate of how much taxpayer money is being spent on the Interagency Bison Management Plan. Cost to taxpayers and cost effectiveness are issues that need to be disclosed in your evaluation. Buffalo Field Campaign requests the government publicly disclose management costs annually so the public has an opportunity to gauge the cost effectiveness of management actions.

As you know, Montanans strongly support restoring wild buffalo in the state, a purpose and need embodied in our alternative. More than three in four Montanans support restoring wild buffalo on public lands. More than seven in ten want to see wild buffalo managed like wildlife not livestock. Just as many Montanans want management decisions to be made by biologists and scientists rather than

politicians. The pro-wild buffalo sentiments of Montanans are also found locally in the very communities that make their livelihoods here.

The transition to a sustainable and respectful wildlife management plan aligns with the economic and social values of Yellowstone's gateway communities. Americans and people worldwide are entitled to see and experience the wild buffalo the state of Montana touts in its Office of Tourism advertisements. However, unless Montana changes its policy, the opportunity to experience seeing buffalo in their original habitat will remain restricted to Yellowstone National Park in the state of Wyoming.

The people of Montana and America deserve an honest and public evaluation of our alternative. Please evaluate managing wild buffalo like wild elk on public lands in Montana as an alternative in the Bison Management Plan.

Sincerely,

Michael S. Mease, President
Buffalo Field Campaign

Daniel Brister, MS, Executive Director
Buffalo Field Campaign

BUFFALO FIELD CAMPAIGN

About Buffalo Field Campaign

Buffalo Field Campaign was founded in 1997 to protect the natural habitat of wild migratory buffalo and native wildlife, to stop the slaughter and harassment of America's last wild buffalo as well as to advocate for their lasting protection, and to work with people of all Nations to honor the sacredness of wild buffalo.

Buffalo Field Campaign is located in West Yellowstone, Gallatin County, Montana, and is supported by volunteers and citizens in Montana, Idaho and Wyoming, and by people from around the world who value America's native wildlife and the ecosystems upon which they depend, and enjoy the natural wonders of our irreplaceable public lands.

As an organization and on behalf of our members, Buffalo Field Campaign is deeply concerned and actively involved in protecting the last remaining descendants of indigenous buffalo in North America to occupy their original range.

Buffalo Field Campaign publicizes the plight of the buffalo, works to end their slaughter by government agencies, and advocates for the long-term protection of viable populations of wild buffalo and year-round habitat.

Buffalo Field Campaign actively engages the American public to honor and protect our cultural heritage by allowing wild buffalo to exist as an indigenous wildlife species fulfilling their ecological role on their native landscape.

Buffalo Field Campaign volunteers patrol habitat where buffalo migrate within the Yellowstone and Madison River valleys. These direct experiences with buffalo on their native habitats inform our actions and strengthen our commitment to gaining permanent protections for America's last wild buffalo.

An Alternative to Manage Wild Buffalo like Wild Elk in Montana

Buffalo Field Campaign proposes evaluating an alternative to manage wild buffalo like wild elk in Montana using the best available science taking all changed circumstances into consideration. An outline of the alternative is presented below.

Common to All Action Alternatives
• Use the best available science.
• Wild buffalo have a right to inhabit public lands.
• Eliminate "zone-management," "bison-tolerant zones," "tolerance thresholds," and "defined management areas."
• Designate public lands as "free to roam" for wild buffalo.
• Manage habitats and wild buffalo for long term viability and diversity.

The purpose and need for the *Manage Wild Buffalo like Wild Elk in Montana* alternative is to evaluate and manage for:
• natural recovery of free and wild buffalo in their original habitat;
• integrity of the wild species;
• migratory behavior;
• natural adaptations including to non-native diseases; and
• ecological benefits wild buffalo provide the ecosystem.

The elements (or issues) of the *Manage Wild Buffalo like Wild Elk in Montana* alternative include:
• continuing the Designated Surveillance Area management of cattle in place of an Interagency Bison Management Plan;
• no capturing for slaughter;
• no capturing for quarantine;
• no capturing for culling or terminal pastures;
• no population control experiments, e.g. sterilization, birth-control, etc.;
• no privatization or domestication;
• no vaccination;
• no hazing deadlines;
• no helicopter hazing;
• no government hazing of wild buffalo unless there is an imminent threat to cattle present on private land;
• no government trespassing on private land where buffalo are welcome;
• cooperating with MDOT and NPS in creating wildlife safe passages in wildlife corridors;
• cooperating with landowners in reducing fencing; and
• cooperating with landowners wanting to retire cattle and sheep grazing allotments.

The objectives of the *Manage Wild Buffalo like Wild Elk in Montana* alternative include developing a management plan that is:
• based on recognizing wild buffalo as a native wildlife species;
• good for wildlife and habitat;
• environmentally preferred;
• culturally acceptable to the majority of American Indian tribes and Montanans;
• most beneficial for American Indian tribes with treaty rights;

• most acceptable to people visiting and living in gateway communities in the Yellowstone region; and
• least costly to taxpayers.

The evaluation goals of the *Manage Wild Buffalo like Wild Elk in Montana* alternative include:
• Managing cattle as the effective disease risk management plan in Montana.
• Managing wild buffalo like wild elk on public lands.

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An Alternative to Manage Wild Buffalo like Wild Elk in Montana

Buffalo Field Campaign proposes evaluating an alternative to manage wild buffalo like wild elk in Montana using the best available science taking all changed circumstances into consideration. The details and supporting evidence in favor of evaluating the alternative are presented here.

I. Common to All Action Alternatives.
• Use the best available science.
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• Eliminate "zone-management," "bison-tolerant zones," "tolerance thresholds," and "defined management areas."
• Designate public lands as "free to roam" for wild buffalo.
• Manage habitats and wild buffalo for long term viability and diversity.

A. Common to all action alternatives the government must use the best available science.

Review, evaluate and disclose how Yellowstone National Park and the state of Montana will gather and use the best available science to protect the buffalo and the ecosystem upon which the migratory species depends.

National Park Service Management Policies (2006 4.4.2.1 at 44) require Yellowstone National Park to "use scientifically valid resource information obtained through consultation with technical experts, literature review, inventory, monitoring, or research to evaluate the identified need for population management . . ."

Time and again the government agencies involved in the Interagency Bison Management Plan have ignored briefings by scientists and biologists and failed to incorporate vital and important information necessary for informed decision-making. For example, why does the state of Montana and Yellowstone National Park continue to impose haze-back deadlines and repeatedly harass buffalo on spring calving grounds when no cattle are present and environmental conditions eliminate any risk by mid-June:

> "Evidence from these studies indicates that after May 15 (bison haze-back date in the IBMP), natural environmental conditions and scavenging conspire to rapidly kill or remove brucella from the environment" (Aune 2010 at 25).
>
> "Brucellosis transmission risk from bison to cattle is extremely low after June 1 and negligible by June 15 because (1) parturition is essentially completed for the year, (2) parturition events rarely occur in areas that will later be occupied by cattle, (3) cattle are generally not released on summer ranges until after mid-June, (4) females meticulously consume birthing tissues, (5) ultraviolet light and heat degrade *Brucella* on tissues, vegetation, and soil, (6) scavengers remove fetuses and remaining birth tissues, and (7) management maintains separation between bison and cattle" (Yellowstone National Park IBMP Briefing Statement 2009).

> "Allowing bison to remain on essential winter ranges outside Yellowstone National Park until late-May or early June, when they typically begin migrating back into the park to high-elevation summer ranges, is unlikely to significantly increase the risk of brucellosis transmission from bison to cattle" (Yellowstone National Park IBMP Briefing Statement 2009).
>
> "Allowing bison to occupy public lands outside the Park through their calving season will help conserve bison migratory behavior and reduce stress on pregnant females and their newborn calves, while still minimizing the risk of brucellosis transmission to cattle" (Jones 2010 at 333).

Whatever quantifiable risk exists is localized, "predominantly low," "zero under all scenarios," and can be addressed by managing livestock at a significantly reduced cost to the American people while conserving wild buffalo (Kilpatrick 2009 at 1, 8).

A risk assessment of brucellosis transmission among buffalo, elk, and cattle in the northern range of the greater Yellowstone ecosystem found the exposure risk from buffalo to cattle was miniscule 0.0-0.3% compared to elk to cattle 99.7-100% of the total risk (Yellowstone Center for Resources 2012 at 40). Yet, government hazing or harassment of buffalo continues to be repeated for weeks through the calving season. If the government is concerned about disease why does it continue to repeatedly induce stress and deprive buffalo of nutrition for weeks on end?

We are outraged by the willful ignorance of the government's hazing regime and the unconscionable harm inflicted upon the buffalo year after year.

Why does the government refuse to consider and accommodate the biological impetus of buffalo's natural migration from spring to summer ranges?

The best available science indicates the buffalo have a strong fidelity to rutting territories (Olexa and Gogan 2007 at 1536; Gardipee 2008 at 31-32). Scientists have noted the buffalo's migration to summer ranges follows the green up of grasses and sedges (Frank 1998 at 40). At present, all buffalo rutting territories are found in the park's interior. Yet not once has the government permitted buffalo to migrate from spring to summer ranges on their own. Instead the state of Montana and Yellowstone National Park plunder ahead year after year with a bull-whip and a yahoo! and to hell with the harm it inflicts on the buffalo and other wildlife species in the ecosystem.

It is unconscionable for the government to disregard the best available science year after year after year.

How can the state of Montana and Yellowstone National ensure the public that the best available science provided to officials who make the management decisions actually use it?

Please demonstrate how your public process, analysis, and future decision-making on the buffalo will be informed by and based on the best available science.

Brucellosis was introduced to Yellowstone's migratory buffalo by cattle (Meagher and Meyer 1994 at 645). Bison calves captured from the wild were "mothered with domestic bovine cows" and pastured with cattle that were brought into Yellowstone to feed park workers and tourists (Meagher and Meyer 1994 at 649).

The best available science indicates that for nearly a century wild buffalo have not transmitted *Brucella abortus* back to cattle in the Yellowstone ecosystem. This fact has held true with or without an interagency bison management plan and its' prior reincarnations. Under various park plans and policies spanning decades buffalo never transmitted the disease back to cattle.

B. Common to all action alternatives the government must recognize wild buffalo have a right to inhabit public lands.

The American buffalo embodies the freedom to roam and are beloved by people world wide, nationally and locally. America's public parks, forests, and grasslands are a birthright for the American buffalo. The state of Montana and Yellowstone National Park need to recognize in its' management plan that buffalo should have the freedom to roam America's public lands.

C. Common to all action alternatives eliminate "zone-management," "bison-tolerant zones," "tolerance thresholds," and "defined management areas."

If buffalo are to inhabit public lands the government must eliminate "zone-management," "bison-tolerant zones," "tolerance thresholds," and "defined management areas." These arbitrary, harmful and costly "management actions" are a consequence of the state of Montana and Yellowstone National Park intervening to deny buffalo access to habitats in America's public parks, forests and refuges.

Of all wildlife species in Montana and Yellowstone National Park, only migratory buffalo are managed in restrictive man-made boundaries and subject to tolerance thresholds. These unscientific management decisions deny habitats migratory buffalo need for the population to remain viable and wild.

Management zones and tolerance areas for buffalo are not justified by science.

Elk, who also harbor *Brucella abortus*, freely roam Montana and, based on the best available science, have been implicated in infecting cattle in Montana, Idaho and Wyoming (Beja-Pereira 2009; Montana Dept. of Livestock 2008; USDA APHIS Brucella Genotyping Test Reports). Yet neither the state of Montana or Yellowstone National Park propose a harmful and costly government management plan that imposes "zone-management," "elk-tolerant zones," "tolerance thresholds," and "defined management areas" that severely limit elk migration and their population.

It is rare for the government to speak candidly about the pointless management actions it has prescribed. The following memo typifies why these schemes need to be abandoned.

> "P.J. White indicated that the NPS did not endorse or support the trigger points proposed by the MDoL because they would unnecessarily limit bison

> access to public lands in Zone 2 where there was no risk of brucellosis transmission from bison to cattle. The trigger points proposed by MDoL could allow essentially all bison west of the park boundary to be culled or hazed back into the park after February 15. For example, at least one of the proposed trigger points was reached during late February in 2008.
>
> The MDoL analysis provided no insights regarding why bison move from Horse Butte to south of the Madison Arm or the form of this relationship (e.g., linear, threshold). Also, the analysis did not consider the effects of hazing bison on Horse Butte or other factors on bison moving south of the Madison Arm.
>
> The trigger points proposed by MDoL essentially treat Zone 2 as a buffer for Zone 3 rather than a tolerance area for bison. MDoL is proposing to eliminate tolerance for bison from much of the existing Zone 2, without providing any alternative use areas." (White to Lewis, Summary of Technical Committee Conference Call, December 21, 2009 at 2).

Evaluate and disclose the environmental benefits and cost savings of eliminating "zone-management," "bison-tolerant zones," "tolerance thresholds," and "defined management areas."

Review the environmental harms and costs of imposing "zone-management," "bison-tolerant zones," "tolerance thresholds," and "defined management areas" upon the buffalo population.

D. Common to all action alternatives designate public lands as "free to roam" for wild buffalo.

Evaluate designating America's public lands as "free to roam" for wild buffalo.

Public lands should first and foremost be managed to serve the needs of indigenous species that inhabited the ecosystem long before the state of Montana became a state or Yellowstone National Park became a park.

Common to all alternatives buffalo should have the freedom to roam our public lands. America's public parks, forests, and refuges are a birthright for the American buffalo. Yellowstone National Park must reconsider and reevaluate its' harassment and slaughter of buffalo within the Park. The state of Montana must follow suit and permit buffalo to roam public lands.

National Park Service Management Policies (2006 4.4.1.1 at 43) recognize that in order to ensure persistence of a species in the park it may "require maintaining a number of local populations often both within and outside the park." Designating public lands as "free to roam" for wild buffalo furthers this management goal.

E. Common to all action alternatives the government must manage habitats and wild buffalo for long-term viability and diversity.

The question of buffalo viability, adaptability and diversity warrants a hard look and review by independent scientists in your analysis.

Studying buffalo population viability was identified as a high priority in the Interagency Bison Management Plan (State of Montana and Yellowstone National Park 2000 FEIS Vol. 1 at 731). Yet, after 15 years this high priority study that provides a scientific baseline to ensure the population survives intact remains unmet.

A viability study is long past due given the government's continuing actions that have disparately impacted the population including capturing buffalo for slaughter without regard for origin, permitting the take of buffalo for birth control experiments, taking calve cohorts to quarantine while slaughtering the extended family groups, and removing matrilineal and family groups of buffalo from the population and habitat in Yellowstone National Park and the state of Montana.

Traill (2010) and colleagues found that populations of endangered species are unlikely to persist in the face of global climate change and habitat loss unless they number around 5,000 mature individuals or more.

"Conservation biologists routinely underestimate or ignore the number of animals or plants required to prevent extinction," says lead author Dr. Lochran Traill, from the University of Adelaide's Environment Institute. "Often, they aim to maintain tens or hundreds of individuals, when thousands are actually needed. Our review found that populations smaller than about 5000 had unacceptably high extinction rates. This suggests that many targets for conservation recovery are simply too small to do much good in the long run" (Red Orbit 2009).

The question of buffalo population viability remains an unknown and disregards findings that suggests much larger populations of reproductive adults are necessary to prevent species extinction:

> "To ensure both long-term persistence and evolutionary potential, the required number of individuals in a population often greatly exceeds the targets proposed by conservation management."
>
> "The bottom line is that both the evolutionary and demographic constraints on populations require sizes to be at least 5000 adult individuals. These seem to be large requirements, but a number of studies across taxonomic groups have made similar findings: the median MVP derived from PVA of 102 vertebrate species was 5816 individuals (Reed et al., 2003), and 4169 individuals from a meta-analysis of 212 species (Traill et al., 2007). The census-based MVP of 5500 reported by Thomas (1990) is also remarkably congruent; all similar to the recommended census N of 5000 individuals (Frankham, 1995). We note though that similarities are not strictly equivalent, and are a result of evaluation of some non-overlapping factors, meaning minimum viable population size in many circumstances will be larger still" (Traill 2010 at 28, 29).

Recent genetic analyses by Halbert (2012 at 7, 8) support the finding of genetically distinct buffalo subpopulations in the Yellowstone herd that "could lead to divergence of adaptively important genetic attributes given that their environments are significantly different (Christianson et al. 2005; Olexa and Gogan 2007)."

Furthermore, "the level of divergence is expected to continue to increase, and there is a potential for adaptive differentiation in the different environments inhabited by the Yellowstone subpopulations."

Halbert (2012) also raised concern about the disproportionate killing of subpopulations under the Interagency Bison Management Plan, the unknown impacts of management practices on buffalo genetic integrity, and called for a population viability analysis to determine long-term sustainability.

We incorporate Halbert's (2012 at 9) findings and note the evidence that disputes the government's basic understanding of the population that continues to guide management decisions:

> "... the identification of genetic subpopulations in this study raises serious concerns for the management and long-term conservation of Yellowstone bison."
>
> "It is not clear at this point how the subpopulations may be changing over time or how the current bison management plan (US Department of Interior and US Department of Agriculture 2000) might influence the genetic integrity of the subpopulations."
>
> "Yellowstone bison have long been treated as a single metapopulation whereby the total number of bison is assumed to be the most important factor in determining appropriate winter cull levels (US Department of Interior and US Department of Agriculture 2000; Plumb et al. 2009). However, the unequal census sizes of the 2 subpopulations call this strategy into question: The Northern subpopulation ranges from 16% to 31% of the total population (US Department of Interior and US Department of Agriculture 2000; Gates et al. 2005). It is highly likely, therefore, that the 2 subpopulations have been disproportionately culled in some years. For example, approximately 735 bison were culled near Gardiner at the park's northern boundary during the 1996–1997 winter. Applying our estimate that around 68% of the bison culled near Gardiner that year originated from the Northern subpopulation (Figure 3A), we calculate that approximately 500 of the bison culled during the 1996–1997 winter were from the Northern subpopulation. Given the prewinter estimate for the Northern subpopulation of 877 bison (US Department of Interior and US Department of Agriculture 2000; Gates et al. 2005), the 500 culled bison represent approximately 57% of the entire subpopulation."
>
> "In conclusion, we have presented strong evidence for the existence of 2 genetically distinct subpopulations of bison within Yellowstone National Park.

> Our study has also revealed longitudinal differences in migration patterns among Yellowstone bison, as it appears that bison moving to the park boundary in the vicinity of West Yellowstone are consistently from the Central subpopulation, whereas those moving to the park boundary in the vicinity of Gardiner may originate from either the Central or Northern subpopulation. These observations warrant serious reconsideration of current management practices. The continued practice of culling bison without regard to possible subpopulation structure has the potentially negative long term consequences of reducing genetic diversity and permanently changing the genetic constitution within subpopulations and across the Yellowstone metapopulation. Population subdivision is a critically important force for maintaining genetic diversity and yet has been assessed in only a handful of species to date. The identification of cryptic population subdivision of the magnitude identified in this study exemplifies the importance of genetic studies in the management of wildlife species . . ."

While the Park has funded an initial genetic modeling study (Pérez-Figueroa 2012 at 159-166) buffalo genetic diversity is one of many attributes that needs to be protected for future generations.

National Park Service Management Policies (2006 4.4.1.2 at 43) mandate that Yellowstone National Park "strive to protect the full range of genetic types (genotypes) of native plant and animal populations . . . by perpetuating natural evolutionary processes and minimizing human interference with evolving genetic diversity."

Review Pérez-Figueroa (2012) based on the limitations and qualifications identified by the authors including the lack of actual empirical data to determine retention of genetic diversity and thus ensure buffalo population viability:

- Base population of 2000 bison.
- Yellowstone bison is one deme (an interbreeding group within a larger population).
- "Little is known about male reproductive success in bison."
- DNA-based paternity analysis was not used.
- "Selection and mutation were not included in the model."
- " . . . actual levels of AD could be even higher than those obtained in our simulations . . ." (Mutation was not considered; selection could enhance genetic diversity in isolated ungulate populations).
- "Culling was random among all age classes or random within the age groups culled . . ."
- "Culling was conducted whenever population size exceeded a threshold value (4500 or 3500 depending on the scenario)."
- "Individuals were culled until the target population size (2500 or 3000) was reached."

- "We did not consider high variance in female reproductive success or heritability of fitness, both of which could increase the rate of loss of variation (heterozygosity) by perhaps 10-20% (Ryman et al., 1981)."

A model is a model subject to its assumptions and limitations. Actual empirical data needs to be gathered to inform management decisions and protect buffalo diversity and viability.

Evaluate and disclose how Yellowstone National Park and the state of Montana will gather, report and use the best available science to protect buffalo genetic diversity and ensure population viability.

Gardipee (2007) field-tested buffalo DNA fecal analysis, a non-intrusive technique for gathering genetic data. Using DNA fecal analysis, Gardipee (2008 at 9–11) also found evidence of Yellowstone buffalo subpopulation structure.

Consider gathering and analyzing buffalo genetic data using only non-intrusive methods that require no capturing, drugging or other disrespectful livestock management techniques on an indigenous wildlife species.

Evaluate and disclose how Yellowstone National Park and the state of Montana will gather, report and use the best available science to protect buffalo genetic diversity and ensure population viability based on genetically distinct buffalo subpopulations, an isolated population, and populations that intermingle.

Evidence of genetically distinct subpopulations begs an evaluation of natural restoration options for the only intact migratory population of wild buffalo in the United States.

Review the best available science on the buffalo population including different tooth wear patterns (Christianson 2005 at 674), parturition timing and synchrony (Gogan 2005 at 1716), longitudinal differences in migration patterns (Halbert 2012 at 9), differential migration at the herd scale (Geremia 2011 at 6), spatial separation (Olexa and Gogan 2007 at 1536) differences in diet and environment (Fuller 2007 at 1925), and fidelity to rutting and calving grounds (Gardipee 2008 at 31-32).

Buffalo Field Campaign is also concerned about the integrity and adaptability of migratory buffalo in the face of the inability of the government agencies involved in the Interagency Bison Management Plan to adapt the best available science, and other long-term impacts like climate change.

Complicating management for viability and diversity is the intransigence of the state of Montana in permitting migratory buffalo to access public lands adjacent to Yellowstone National Park. Much of Montana's intransigence is an artifact of MCA 81-2-120, a law subject to change by legislative or popular amendment or repeal at the ballot box. Nonetheless, the long-term viability and diversity of buffalo is dependent upon Montana permitting the migratory species to inhabit public lands in the state.

II. The purpose and need for the *Manage Wild Buffalo like Wild Elk in Montana* alternative is to evaluate and manage for:
• natural recovery of free and wild buffalo in their original habitat;
• integrity of the wild species;
• migratory behavior;
• natural adaptations including to non-native diseases; and
• ecological benefits wild buffalo provide the ecosystem.

A. Evaluate managing for the natural recovery of free and wild buffalo in their original habitat.

"NPS managers must always seek ways to avoid or minimize adverse impacts on park resources and values to the greatest degree practicable (NPS 2006)" (Yellowstone National Park 2010 DEIS at 79).

Evaluate discontinuing Yellowstone National Park's on-going operations to capture buffalo for slaughter at Stephens Creek inside the park.

Evaluate discontinuing the Montana Dept. of Livestock buffalo capture operations at Duck Creek and Horse Butte.

Evaluate shutting down and removing the U.S. Dept. of Agriculture's quarantine and population control pens at Slip N Slide and Corwin Springs.

Where natural resources have been depleted and degraded for livestock production (Fleischner 1994 at 635, 637) at a great cost to taxpayers (Moscowitz and Romaniello 2002 at 1, 3-4) evaluating and selecting an alternative that naturally restores migratory buffalo could remedy the loss of public trust resources caused by their extirpation.

Evaluate and disclose the ecological contributions of greater migratory buffalo abundance and distribution in their original habitats in Montana.

Evaluate and disclose the ecological contributions of greater migratory buffalo abundance and distribution in recovering rare, sensitive, threatened and endangered species.

Evaluate remedying the loss of public trust resources caused by buffalo's extirpation from Montana by permitting the beneficial roles migratory buffalo provide for our environmental life support system.

Review and evaluate how buffalo provide for our environmental life support system by:

> • Shaping and influencing the health of grassland ecosystems and watersheds through shared behaviors in large migratory herds (Butler 2006 at 451-452);
> • Reversing the loss of native grassland species and the disruption of grassland ecosystem structure and function caused by their extirpation (Collins 1998 at 745);
> • Enriching the abundance and diversity of species through their keystone ecological roles (Askins 2007 at 1; Fallon 2009 at 1-4; Gerlanc and Kaufman

2005 at 254-255, 258-260; Hobbs 1996 at 695; Knapp 1999 at 39-50; Polley and Wallace 1986 at 493);
• Providing sustenance for predators, scavengers and endangered species (Green 1997 at 1051-1053; Mattson and Merrill 2002 at 1123); and
• Fulfilling the wild species adaptive potential through natural selection.

Additionally, the conservation status of buffalo (American bison) should mandate "special considerations" be made by the state of Montana and Yellowstone National Park in developing, analyzing and selecting an alternative that naturally recovers the wild species.

Scientists estimate buffalo as a wildlife species occupy less than 1% of their original range (Sanderson 2008 at 252-253).

The International Union for Conservation of Nature (2008) has Red Listed the American bison as near threatened.

Buffalo as a wildlife species have already experienced severe bottlenecks and near extinction and the species' genetic integrity has been permanently compromised by hybridization with cattle promoted by ranchers in the late 1800s and early 1900s (Hedrick 2009 at 411).

The Wildlife Society (2000) warns that current management of buffalo is leading towards domestication "that threatens their wild character and limits important natural selection processes."

The buffalo's status in Montana is in "greatest conservation need" and "at risk because of very limited and/or potentially declining population numbers, range and/or habitat, making it vulnerable to global extinction or extirpation in the state" (Adams and Dood 2011 at 32).

Buffalo Field Campaign and Western Watersheds Project (2014) have also petitioned to list Yellowstone bison under the Endangered Species Act based in part on the lack of regulatory mechanisms to provide for the natural recovery of a wild buffalo population in Montana (incorporated by reference as if restated here in its entirety).

Consider and evaluate natural restoration of wild buffalo in their original habitats as noted by Schullery and Whittlesey (2006 at 136) ". . . bison appear to have been living everywhere in Greater Yellowstone where habitats were suitable," and Plumb (2009 at 2377) "Yellowstone bison historically occupied approximately 20,000 km^2 in the headwaters of the Yellowstone and Madison rivers in what is now referred to as the northern Greater Yellowstone Area."

Compare and evaluate habitat available to free and wild buffalo under all alternatives to the 12,800,000 acres buffalo historically occupied in the Greater Yellowstone ecosystem.

B. Evaluate managing buffalo for the integrity of the wild species.

"Today, the plains bison is for all practical purposes ecologically extinct within its original range" (Freese (2007 at 175).

Boyd (2003 at iii) found that greater than 95% of the 500,000 buffalo in North America today reside in private ownership as domestic livestock.

In the late 1800's and early 1900's, forced cattle-buffalo breeding experiments by ranchers to commercially exploit fitness traits of wild bufalo led to widespread introgression of cattle genes in private, public and tribal herds (Polziehn 1995; Ward 1999; Halbert 2003; Halbert and Derr 2007; Hedrick 2009, 2010, 2011; Schnabel 2011).

A study by Douglas (2011 at 172) suggests that cattle genes in buffalo will adversely affect mitochondrial health and function, and the overall fitness of buffalo. Buffalo genetics researcher James Derr (2009) has made similar warnings.

The extensive prevalence of cattle genes in buffalo populations (Polziehn 1995; Ward 1999; Halbert 2003; Halbert and Derr 2007; Hedrick 2009, 2010, 2011), habitat fragmentation, loss of natural habitats and isolated populations, limited range and population sizes (Boyd 2003; Boyd and Gates 2006), artificial selection, intensive management, unnatural confinement to fenced ranges, absence of predators, introduction of non-native disease (Freese 2007) are some of the risk factors of ecological extinction that threaten the identity and survival of American bison as a wildlife species.

Genetic testing of buffalo (Polziehn 1995; Ward 1999; Halbert 2003; Halbert and Derr 2007; Schnabel 2011) suggests that only buffalo descended from Yellowstone have no cattle ancestry.

The Henry Mountains buffalo was founded with buffalo solely descended from Yellowstone (Boyd 2003 at 149).

Cattles genes have been found in American bison previously thought to have no cattle ancestry based on prior genetic testing: Wind Cave National Park, Grand Teton National Park, and Sullys Hill National Game Preserve (Dratch 2011).

A report by scientists Dratch and Gogan (2010) suggests that only Yellowstone buffalo retain their wildlife identity. (The report did not survey buffalo in the Henry Mountains).

"The Bison of Yellowstone National Park are unique among bison herds in the United States, being descendants, in part, of the only continuously wild herd in this country" (Meagher 1973 at 1).

"Yellowstone National Park is the only area in the lower 48 States where bison have existed in a wild state since prehistoric times" (Gates 2005 at vi).

"No other plains bison population is as important to survival of the species as the Yellowstone bison. Yellowstone bison are the only surviving natural occurrence of wild bison that was never completely extirpated from its historic and ecological range. The Yellowstone bison are the only major conservation herd in the United States that shows no evidence of cattle-gene introgression. The Yellowstone bison are the only remnant population that has remained in a wild state since prehistoric times and, therefore, is important to the management of bison

genetic diversity. The extirpation of the Yellowstone bison would represent the complete loss of genetically-intact, wild bison from the last stronghold of their historic and ecological range, loss of unique ecological adaptations to the local environment, and the loss of other valuable and unique genetic qualities" (Buffalo Field Campaign and Western Watersheds Project 2014).

The nature, duration, magnitude and scope of potential impacts on the integrity of migratory buffalo and the ecosystem they inhabit warrant an investigation and determination of impairment in the government's analysis.

Fully consider alternatives, such as acquiring habitat to meet the nutritional needs of the species' ability to naturally resist disease infection, and eliminating hazing, capture operations and other actions that disrupt buffalo from occupying habitat, and induce stress, or lead to injuries and other harms.

Take a hard look at how cumulative management actions are altering, interfering, and artificially selecting for buffalo traits in the population, and for each distinct breeding group or subpopulation.

Evaluate and disclose how management actions interfere or alter natural selection, natural disease resistance and immunity, evolutionary adaptation and genetic diversity of wild buffalo.

Take a hard look at how buffalo's natural immunity prevents disease infection.

Evaluate the negative impacts from repeated government-led slaughters that have "differentially affected breeding herds," altered sex and age structures, and disproportionately removed female and calf cohorts" (White 2011 at 1322). All of these negative consequences were evidenced in a report to the IBMP agencies:

> "Due to risk management and other concerns, more than 3,600 bison were removed from the population during 2001 to 2010, with more than 1,000 bison and 1,700 bison being removed from the population during winters 2006 and 2008, respectively. These culls unintentionally removed more calf and female bison from the central breeding herd which, if continued over time, could result in alterations of the sex and age structure of the population and consequent changes in demographic processes that could persist for decades (White et al. 2011). Also, productivity in the northern breeding herd increased, resulting in record abundance in 2011, with higher proportions of females and calves in the herd" (Geremia Sept. 2011 at 2).

Disclose the evidence readily available to the government that suggests the management framework of the Interagency Bison Management Plan is compromising the integrity of the population.

The government cannot continue ignoring the best available science that is reported to it by its own scientists.

Review and assess the best available scientific evidence to identify management actions that protect the integrity, and avoid compromising the integrity, of wild buffalo.

C. Evaluate managing buffalo for migratory behavior.

The American bison is a land-intensive, nomadic species that once roamed over great distances (Boyd and Gates 2006 at 16).

Migration is an indispensable survival behavior for wild buffalo in the Yellowstone ecosystem.

Evaluate and disclose the adverse impacts of management actions eliminating migratory buffalo in the ecosystem.

Take a hard look at how management actions are impacting natural migrations of buffalo to original habitats. Review and analyze impacts on the buffalo population, subpopulations, maternal, and family groups.

Consider and evaluate the evidence supporting the conservation and preservation of migratory buffalo.

Review and disclose the best available science on conserving the valuable behavior of migration in the buffalo population, subpopulations, maternal, and family groups.

Analyze and disclose impacts on the unique and distinct ecological adaptations of migration in the buffalo population submitted by Michael J. O'Connor, Ph.D. Buffalo Field Campaign and Western Watersheds Project petition to list the Yellowstone bison under the Endangered Species Act (2014 at 16-19, 24, 26):

> "The Yellowstone bison are the only free-roaming, wild population known to have continuously ranged across high altitudinal gradients, which represents the conservation of a unique ecological adaptation for American bison."
>
> "Yellowstone National Park and contiguous lands to the north is the only area within the Greater Yellowstone Ecosystem where natural patterns of population structure and gene flow in plains bison can be observed (Sanderson et al., 2008)."
>
> "The central range bison utilize a significant proportion of geothermal area within their winter ranges (from 5% in Pelican Valley to 14% in Mary Mountain), and movement corridors (5.2% to 9.2%) (Gates et al., 2005). The inclusion of geothermal areas as a significant portion of habitat use represents an unusual ecological adaptation unique to Yellowstone bison."
>
> "The Yellowstone bison uniquely includes two genetically distinct subpopulations that show longitudinal differences in migration patterns (Halbert et al., 2012 p. 9)."

"Bison typically follow the path of least resistance to access seasonal home ranges. Five primary winter range movement corridors for Yellowstone bison have been identified. The Gardiner Basin to Lamar Valley is located along the Yellowstone River and the road to Cooke City within the northern range. The Mirror Plateau corridor occurs over a network of historic bison travel routes that extend from the southeastern Lamar Valley to northeastern Pelican Valley. Bison from the central range access the northern range via the corridor that extends from the Firehole to Mammoth. Two interior central ranges are connected by the Pelican Valley to Hayden Valley corridor. Historic evidence suggests that bison accessed winter ranges west of Yellowstone National Park along the Madison River (Meagher, 1973 p. 23). Central range bison also access the winter ranges located west of park boundaries via the corridor that extends from the Firehole to the town of West Yellowstone and Hebgen Lake. Interestingly, the central range bison utilize a significant proportion of geothermal area within their winter ranges (from 5% in Pelican Valley to 14% in Mary Mountain), and movement corridors (5.2% to 9.2%) (Gates et al., 2005). The inclusion of geothermal areas as a significant portion of habitat use represents an unusual ecological adaptation unique to Yellowstone bison.

Approximately, one-third (3,175 km^2) of the Yellowstone National Park interior currently serves as primary bison habitat (Plumb et al., 2009). A significant portion of crucial winter range for the Yellowstone bison is located west and north outside park boundaries (Gates et al., 2005; Plumb et al., 2009). Yellowstone bison frequently migrate to these ranges when snowpack within the park's interior increases the energetic costs of foraging, often before either breeding herd has exceeded its food-limited carrying capacity (Plumb et al., 2009). Archeological evidence and historic accounts identify areas immediately adjacent to Yellowstone National Park as essential winter ranges for the Yellowstone bison population (Schullery et al., 1998; Schullery and Whittlesey, 2006; Cannon, 2008; Plumb et al., 2009). Dispersal of Yellowstone bison to seasonal ranges outside the park represents an attempt to naturally re-colonize former ranges (Schullery et al., 1998; Schullery and Whittlesey, 2006; Cannon, 2008; Plumb et al., 2009). However, access to these ranges is now precluded by brucellosis risk management operations which involve hazing, shooting, capture, and slaughter of Yellowstone bison, which results in a loss of critical range and creates a dispersal sink (Plumb et al., 2009). These ranges are threatened by habitat destruction, disturbance and degradation.

Meagher (1989) considered the unusually severe winter of 1975-1976 to have provided the initial impetus that led to the westward movements or stress dispersal of bison on the northern winter range and subsequent regular movement of larger numbers of bison out of the Park in the mid 1970's. This brought the Yellowstone bison back to an important portion of their natural, historic range. However, it also initiated an unprecedented period of excessive management that continues to today. As Lancaster (2005 p. 451) states, "This is the classic example of the boundaries of an ecosystem not matching artificially

human created borders. The bison's ecosystem overlaps and crosses the artificially created jurisdictional boundaries between government entities."

Yellowstone bison have been observed to assemble in matrilineal groups or family units that may include several generations of related individuals. Halbert (2003 p. 150) found several cases of dams with multiple offspring of different ages, including a multigenerational matriarchal group which spanned 4 generations ranging from a 7 year-old female to a male calf.

Yellowstone bison have historically used winter ranges outside park boundaries even when population estimates were much lower than those currently observed. In the winter of 1893-94, poachers slaughtered about 116 bison that had shifted across the west boundary of Yellowstone National Park (McHugh, 1975 p. 385). In 1943, the Yellowstone bison population had been reduced to around 747 individuals following the removal of several hundred animals within the previous year (USDI/USDA, 2000; Gates et al., 2005). Harsh winter conditions resulted in at least 160 migrating to winter ranges north of the park boundary (Gates et al., 2005 pp. 84-85; Franke, 2005 p. 83). Several bison travelled as far as 50-80 km from the park that winter (Franke, 2005 p. 84). Despite two years of drastic culls to reduce bison numbers on the northern range, 68 of the 313 bison in the Lamar herd moved north of the park boundary in 1948 (Franke, 2005 p. 84). In 1953, when the Yellowstone bison population had rebounded to about 1,477 animals, a group of bison wandered across the north boundary (Franke, 2005 p. 90). Over 130 bison were removed from the population that year (USDI/USDA, 2000; Franke, 2005 pp. 90-91). These frequent and sometimes long-range emigrations north of park boundaries were seen as evidence that the Yellowstone bison's range probably extended at least to Livingston (Franke, 2005 p. 84). Results of modeling of bison migration to low elevation areas out of Yellowstone National Park using a hierarchal Bayesian framework found that migration differed at the herd scale (Geremia et al., 2011). Migration beyond the northern park boundary was affected by herd size, accumulated snow, and aboveground dried biomass. Migration beyond the western park boundary was less influenced by these predictors. Their simulation results suggest that future large-scale, recurrent migrations and numbers exiting the park boundaries will be much greater than the predictions underlying the Interagency Bison Management Plan (Geremia et al., 2011 page 7).

Bison movements and spatial distribution of travel corridors are influenced by topographic and habitat characteristics such as slope, landscape roughness, access to forage, distance to streams, and forest cover (Clow, 1995; Bruggeman et al., 2007). Streams and river bottoms are the most influential features affecting bison winter travel routes, particularly in response to variable climactic conditions (Clow, 1995; Bruggeman et al., 2007). In fact, many plains tribes who subsisted on bison intimately understood the influence of streams and river bottoms on bison travel routes, and used this insight for efficiently hunting them (Clow, 1995; Barsh and Marlor, 2003). For example, the

Blackfeet tribe practiced selective harvest of beaver to maintain adequate water supply along traditional bison travel corridors and insure availability of bison for subsistence hunting (Barsh and Marlor, 2003). A significant proportion of travel corridors used by Yellowstone bison to access winter ranges west and north of park boundaries follow river bottoms and streambeds (Gates et al., 2005; Plumb et al., 2009). These observations provide evidence that innate ecological behavior is the primary motivation which drives the Yellowstone bison to emigrate to winter range outside park boundaries and attempt to re-colonize historic ranges.

In addition to regular use of winter range in Montana north and west of Yellowstone National Park, substantial herds (50-100 bison) frequently move into the Silver Gate - Cooke City area of Montana northeast of the Park boundary.[4] Yellowstone bison also move into historic range near Henry's Lake in Idaho where they are usually shot by the Idaho Department of Agriculture Division of Animal Industries which is responsible for managing bison in the state.[5] According to Division of Animal Industries records some 10 bison bulls were killed between 2004 and 2012. Yellowstone bison also move out east and southeast of the Park boundaries into the Absaroka Bison Management Area (Hunt Area 1) of Wyoming (WGFD, 2008). The WGFD estimates some 5-20 bison used the area each year for the years 1988-2007 (WGFD, 2008 p. 12)."

"On rare occasions, bison from Yellowstone National Park have been known to move south and join the Jackson bison herd in the Grand Teton National Park (Gates et al. 2005, p. 93). In a footnote, they report, "In winter 1995/96, 3 bulls from the Hayden Valley and wintered in the vicinity of Polecat Creek; they were captured and radio collared. For several years after that they returned each year to Hayden Valley during the rut then back to the Jackson Lake area to spend the winter. During the harsh winter of 1996-97 a mixed group of 3 cows and 3 juveniles followed the road from YNP through the south gate and spent winter in the same area as the 3 bulls. Then they moved south and joined the Jackson herd; this mixed group did not return to YNP. Source: Interview with Steven Cain, 11 August 2004." There have been other reports of isolated bulls moving south from Yellowstone.[6]"

D. Evaluate managing buffalo for natural adaptations including to non-native diseases.

"While *B. abortus* vaccine SRB51 is licensed for cattle, it has never gained label approval for bison" (Yellowstone National Park 2000 DEIS at 33, 189).

Evaluate and disclose why SRB51 is not approved for wild buffalo.

Evaluate discontinuing all methods of vaccination based on the potential adverse and adverse impacts to the buffalo population.

Discuss in detail what if any monitoring is conducted on vaccinated buffalo.

What legal basis exists to continue using an experimental vaccine on wildlife?

What scientific basis exists to vaccinate buffalo when SRB51, a livestock vaccine, has not been approved for wild buffalo?

Evaluate and disclose how SRB51 vaccination interferes or alters natural selection, natural disease resistance and immunity, evolutionary adaptation and genetic diversity of wild buffalo.

According to wildlife biologist James A. Bailey, vaccination of wild buffalo violates the National Park Service mandate to leave resources unimpaired for future generations. He also identified multiple, adverse consequences that the state of Montana and Yellowstone National Park must scientifically assess if it chooses to continue vaccination however it is administered:

1. "Disease has been a natural process throughout the evolution of bison. Natural selection has been the process to develop resistance and accommodation between host bison and their diseases. (Accommodation includes evolution of the pathogen whereby the disease organism persists with little or no impact to the host.) There is already evidence of Yellowstone bison having resistance to Brucella infection (p. 155 and Seabury et al. 2005). Moreover, there is considerable variation among mammals, including bison, in their reactions to Brucella exposure (p. 155). This variation allows natural selection to operate in developing resistance and accommodation.
2. There are many unknowns in pathogen-host relationships that may influence results of a vaccination program in unexpected ways. Bison are expected to carry populations of many competing and synergistic strains of viruses and bacteria, interacting with several humoral and cell-mediated aspects of host resistance. This micro-system is extremely complex and interrelated, such that interventions in one part of the system may cause unexpected effects elsewhere in the system. Furthermore, there is the possibility of linked genetic effects. Bison responding "positively" to RB51 could be unique in other genetically-controlled ways, some of which could be harmful. Still further, the proposed vaccination program may lead to adaptive changes in Brucella toward variants able to avoid immunological responses to the vaccine. This could lead to greater persistence of Brucella within bison and increased pathogenicity (p. 73). Our wildlife in national parks are not appropriate populations for experimenting with vaccinations.
3. Vaccination will interfere with natural selection for resistance and accommodation between bison and Brucella. Vaccinated animals may not experience symptoms of disease and therefore not experience reduced rates of survival and reproduction, that is, natural selection. Bison already exhibiting resistance to Brucella will be less favored by selection and overall resistance to Brucella in the bison herd could decline.
4. Since Brucella will not be eliminated from YNP, the vaccination program will be a permanent commitment to use of vaccines, and related interventions, to replace natural selection and to control brucellosis in Yellowstone bison. Lurking in the background is Montana's request that immuno-contraceptives

> be added to the bison biobullets." (Attached and incorporated by reference, Bailey 2010 at 2).

There is no scientific rationale to justify vaccinating buffalo however it is administered especially when hand vaccination at Stephens Creek has been employed three times to date (2004: 111 yearling and calf buffalo; 2008: 24 yearling and calf females; 2011: 149 yearlings and calf buffalo, 2 adults) (Yellowstone National Park 2014 FEIS at iii).

The risk to the buffalo population does not justify continued vaccination by the government however it is administered.

E. Evaluate managing for the ecological benefits wild buffalo provide the ecosystem.

While Yellowstone National Park has focused much of its taxpayer-financed actions on "disease risk management" it has neglected studying and educating visitors about the keystone ecological roles migratory buffalo provide the ecosystem.

The government's one-sided and singular focus on disease has neglected important ecological work on how buffalo beneficially influence biodiversity and the ecosystem.

A brief review of scientific research identified in the Interagency Bison Management Plan analysis (State of Montana and Yellowstone National Park 2000 FEIS Vol. 1 Appendix D) finds over fifty disease-related study needs and not one study on the keystone contributions of buffalo in sustaining the ecosystem.

In addition, Yellowstone National Park's monocular focus on "disease" has also misled the public and aided news reporting that too often defines buffalo solely as a livestock disease threat. It's time for the park to make up for its' bias by placing as much scientific emphasis and public education on the ecology of buffalo and the life diversity the migratory species provides the ecosystem.

Review and disclose the buffalo's keystone ecological contributions to biodiversity and the healthy functioning and maintenance of Yellowstone's ecosystem.

Evaluate and report on the scientific studies that have found substantial evidence of buffalo's positive contribution to biodiversity and ecosystem health:

> "Heavy grazing by prairie-dogs or bison created a low 'grazing lawn' that is the preferred habitat for many grassland bird species that are restricted to the shortgrass prairie and desert grasslands" (Askins 2007 at 1).

> ". . . grazers influence the distribution of soil N properties at every spatial scale from individual plants to landscapes" (Augustine and Frank 2001 at 3149).

> "The influence that over 100 million bison wallows in the tallgrass prairie, and perhaps an equal combined number in the mid- and shortgrass prairies, had on surface hydrology and runoff can only be considered to have been regionally

substantial and locally enormous" (Butler 2006 at 452).

". . . loss of species diversity due to frequent burning was reversed by bison, a keystone herbivore in North American grasslands" (Collins 1998 at 745).

". . . bison, in conjunction with other factors such as fire and drought, significantly limited the historical distribution of woody vegetation in the Great Plains" (Coppedge and Shaw 1997 at 195).

"Bison social groups had different grazing patterns" (Coppedge and Shaw 1998 at 263).

". . . bison urine deposition leads to patches of vegetation having much higher total aboveground plant biomass, root mass and N concentrations" (Day and Detling 1990 at 171).

"Bison have a unique ecology that has profound effects on mixed-prairie ecosystems. Their grazing style provides spatial and temporal heterogeneity which benefits plant and animal species diversity. Bison also increase overall plant productivity by enhancing nutrient cycling and nitrogen availability. Their distinctive behavioral trait of wallowing further creates spatial patchiness of resource availability and boosts plant species composition. Finally, predators and scavengers benefit from consuming bison while the remains confer rich nutrients to prairie soils and plant communities" (Fallon 2009 at 1-4).

". . . grazers probably increased NO^3 availability to plants… ungulates additionally may promote N availability to plants… Both would have positive effects on the primary productivity of this ecosystem" (Frank and Evans 1997 at 2245-2246).

"The decline in grazers probably had indirect cascading effects on trophic processes that should be expected to reverberate in this grazing-dominated ecosystem until herbivore populations recover" (Frank and McNaughton 1992 at 2056).

"Grazers were a particularly important component of the N budget of this grassland. Estimated rates of N flow from ungulates to the soil ranged … approximately 4.5 times the amount of N in senescent plants" (Frank 1994 at 163).

"Ungulates increase aboveground production of grasslands in Yellowstone by stimulating grazed plants to allocate resources aboveground and by facilitating the rate of net nitrogen (N) mineralization and the availability of N to plants. Moreover, the migration of ungulates from winter to summer range in Yellowstone is associated with animals following the spatio-temporal pattern of nutrient-rich forage across the ecosystem. This is likely critical in the positive feedback of herbivores on their forage by providing grazed plants extended

periods to recover while soil conditions are suitable for plant growth" (Frank 1998 at 410).

". . . a second hypothesis proposes that bison can de-stabilize the vegetated edges of dunes precipitating a geomorphological cascade impacting biodiversity" (Gates 2011 at 11).

"Western Chorus Frogs, Pseudacris triseriata, in tallgrass prairie breed in ephemeral aquatic habitats including intermittent streams and bison wallows" (Gerlanc and Kaufmann 2005 at 254).

". . . ungulates are important agents of change in ecosystems, acting to create spatial heterogeneity, modulate successional processes, and control the switching of ecosystems between alternative states" (Hobbs 1996 at 695).

". . . I found ~45% more grasshopper species and significantly increased values of Shannon H' diversity at sites with bison grazing" (Joern 2005 at 861).

". . . unique spatial and temporal complexities of bison grazing activities … are critical to the successful maintenance of biotic diversity in this grassland" (Knapp 1999 at 48).

"The isolation of several viable AMF [arbuscular mycorrhizal fungi] taxa from bison feces indicates that wide-ranging bison could be a vector for at least some RFLP types among grasslands within YNP" (Lekberg 2011 at 1292).

"The heterogeneous species assemblages of wallows enhance grassland species diversity primarily because wallows increase habitat diversity" (Polley and Wallace 1986 at 493).

". . . bison are potentially important dispersers of forbs as well as graminoids. A high abundance and wide diversity of seeds were found in both bison hair and dung. The great majority of seeds found undamaged in bison dung were small seeds, which agrees with the 'foliage is the fruit' hypothesis. Dispersal by both epizoochory and endozoochory may play an important role in life history of many species in tallgrass prairie landscapes" (Rosas 2008 at 769).

"In combination, urine patches plus grazing produced unique large-scale patch structure compared to urine patches in ungrazed prairie. The most important impact of urine patches on community structure resulted from preferential grazing of urine patches by bison, which increases both the size and severity of the grazed area" (Steinauer and Collins 2001 at 1319).

III. The elements (or issues) to review and evaluate in the *Manage Wild Buffalo like Wild Elk in Montana* alternative include:
• continuing the Designated Surveillance Area management of cattle in place of an Interagency Bison Management Plan;
• no capturing for slaughter;
• no capturing for quarantine;
• no capturing for culling or terminal pastures;
• no population control experiments, e.g. sterilization, birth-control, etc.;
• no privatization or domestication;
• no vaccination;
• no hazing deadlines;
• no helicopter hazing;
• no government hazing of wild buffalo unless there is an imminent threat to cattle present on private land;
• no government trespassing on private land where buffalo are welcome;
• cooperating with MDOT and NPS in creating wildlife safe passages in wildlife corridors;
• cooperating with landowners in reducing fencing; and
• cooperating with landowners wanting to retire cattle and sheep grazing allotments.

A. Evaluate continuing the Designated Surveillance Area management of cattle in place of an Interagency Bison Management Plan.

In Montana cattle are being managed under a U.S. Dept. of Agriculture Animal and Plant Health Inspection Service approved and taxpayer supported plan that is providing cattle ranchers a net benefit of $9.50 to $14 per head, and an annual net benefit to cattle ranchers statewide of $5.5 to $11.5 million (Montana Dept. of Livestock 2011; Montana Dept. of Livestock 2011 Testing/Vaccinating Invoice and Reimbursement Form).

Montana's Designated Surveillance Area rules are in place and remove the threat of whole herd cattle slaughter, loss of the state's brucellosis free status, and threat of state sanctions against Montana cattle that contract brucellosis (Montana Dept. of Livestock 2010; U.S. Dept. of Agriculture Animal and Plant Health Inspection Service Dec. 2010). Indeed, the new rules have resulted in millions of dollars in savings annually for ranchers in Montana without any modification to the Interagency Bison Management Plan that takes these new rules and conditions into account.

Ostensibly the government is taking these new rules and circumstances into account in the new management plan under development. But this new information is not reflected at all in the draft alternatives, management tools and evaluation goals.

Review and disclose how Montana's Designated Surveillance Area is protecting the cattle industry.

Evaluate how managing cattle in Montana's Designated Surveillance Area is effectively accomplishing the purpose and need of protecting the cattle industry.

Evaluate and disclose why another multi-million dollar Interagency Bison Management Plan is not necessary to protect the cattle industry.

Whatever risk of disease transmission from buffalo to cattle exists, a hard look at the science indicates *Brucella abortus* behaves differently in the buffalo population from other species like elk while the biological behavior of buffalo, scavengers and environmental conditions conspire to reduce and prevent disease transmission to cattle in the wild.

Does the actual incidence of brucellosis-induced abortion in the wild present sufficient cause for another Interagency Bison Management Plan? The evidence suggests any risk is local, temporal and is eliminated by mid-June:

> "Sixty-three samples (i.e., 14 fetuses, 21 tissues, and 28 swabs) from 47 different parturition events and one motor vehicle accident yielded only three positive cultures for *B. abortus*. Birthing females meticulously cleaned birth sites and typically left the site within two hours. The birth synchrony and cleaning behavior of bison females, combined with Brucella environmental persistence data from previous studies, indicates that the risk of brucellosis transmission from bison to cattle is minuscule after May."
>
> "The infrequency of observed abortions (n = 24), and the even rarer identification of Brucella from these abortions, supports claims that Brucella-induced abortions are rare events for Yellowstone bison (Meyer and Meagher, 1995; Dobson and Meagher, 1996). There have been seven documented, seropositive abortions in Yellowstone, including two from captive bison in 1917 (Mohler 1917), one in 1992 (Rhyan et al., 1994), and four during 1995-1999 (Rhyan et al., 2001). Only 2 of 25 samples collected from 15 termination events were culture positive for *B. abortus*. Ten stillborn calves have been submitted for culture testing and only one has been positive for *B. abortus*. Terminated pregnancies can occur for a multitude of reasons in bison (Williams et al., 1997), and *B. abortus* appears to play less of a role in inducing abortions than previously thought. Parturition events indicating a loss of pregnancy were typically observed prior to the onset of the bison calving season."
>
> "Based on field observations presented in this report, the potential for brucellosis transmission from bison to cattle is minimal by June 1 and essentially non-existent by June 15. Thus, the current haze back date of May 15 (i.e., the date after which bison are not tolerated outside the park) may be unnecessary from a disease transmission risk perspective" (Yellowstone Center for Resources 2009 at 3, 6, 7).

The National Academy of Sciences (Cheville 1998 at 51) concludes the "predation and scavenging by carnivores likely biologically decontaminates the environment of infectious *B. abortus* with an efficiency unachievable in any other way." Yet the state of Montana and the U.S. Dept. of Agriculture continue to target predators for removal without regard for the role

these native species fulfill in preventing disease transmission (Montana Fish, Wildlife & Parks 2015; U.S. Dept. of Agriculture 2014).

In one year alone the U.S. Dept. of Agriculture Wildlife Services killed nearly 7,000 coyotes in Montana. Many of the coyotes were "shot from helicopters or airplanes, but most of the others were trapped in leg or neck snares or poisoned using so-called M-44 cyanide capsules" (Castle The Helena Vigilante 2014).

This unscientific approach to disease risk management is further undermined by the unwillingness of the U.S. Dept. of Agriculture to share scientific data on the effectiveness of its agency's predator policy.

> "Reps. Peter A. DeFazio (D-Ore.) and John Campbell (R-Irvine) requested the review, calling for a complete audit of the culture within Wildlife Services. The agency has been accused of abuses, including animal cruelty and occasional accidental killing of endangered species, family pets and other animals that weren't targeted."
>
> "Wildlife biologists also criticize the agency's work, which they say ignores science. Bradley J. Bergstrom, a conservation biologist at Valdosta State University in Georgia, and other biologists at the American Society of Mammalogists say they have been frustrated by the agency's unwillingness to share scientific data tracking the effectiveness of its approach."
>
> Wildlife Services was created in 1931 as part of the U.S. Department of Agriculture's Animal and Plant Health Inspection Service (Cart 2014).

Evaluate the natural role predators fulfill in disease risk management.

Evaluate the biological role of predators in decontaminating the environment of infectious *B. abortus*.

Evaluate the state of Montana and the U.S. Dept. of Agriculture changing its policies to accommodate predators natural role in reducing and preventing disease transmission to cattle.

For two decades Montana has severely restricted habitat and harmed the migration of buffalo, claiming the old brucellosis rules required such actions to prevent brucellosis transmission to cattle. Whatever risk is present can be effectively addressed by managing cattle. Doing so would provide assurance to cattle producers while permitting migratory buffalo to roam and adapt as a wild species in the state.

B. Evaluate and disclose the environmental and economic benefits of no capturing for slaughter.

Evaluate and disclose the impacts and benefits of no capturing buffalo for slaughter.

Review the evidence (White 2011 at 1326-1328) that the assumptions of the Interagency Bison Management Plan are flawed and management actions are skewing sex ratios, age structure, disproportionately impacting subpopulation or breeding groups, altering population genetics and contributing to other impacts as yet undiscovered.

Under Department of Livestock policies set down by MCA 81-2-120, the federal and Montana state governments have taken over 4,000 wild buffalo in capture for slaughter operations (White 2011 at 1326-1327; White 2015 at 3-4; Yellowstone National Park 2015). The government's capture, test and slaughter policy is removing mainly recovered buffalo from the population (Yellowstone National Park 2014 at 236-237).

"Recovered animals could provide protection to the overall population through the effect of population immunity (resistance), thereby reducing the spread of disease. Identifying recovered bison is difficult because serologic tests (i.e., blood tests) detect the presence of antibodies, indicating exposure, but cannot distinguish active from inactive infection" (Yellowstone National Park 2014 at 236-237).

Evaluate and disclose the impacts of removing recovered buffalo from the population and subpopulations in capture for slaughter operations.

Evaluate and disclose the impacts of removing recovered buffalo from the population on natural immunity and resistance to disease in the population and subpopulations.

C. Evaluate and disclose the environmental and economic benefits of no capturing for quarantine.

Government-led quarantine has resulted in the domestication and privatization of wild buffalo once belonging to future generations. Government management of wild buffalo as a public trust has been betrayed.

Review the public controversy and environmental effects on the integrity of migratory buffalo and the ecosystem they inhabit by taking buffalo from the population for quarantine.

Buffalo Field Campaign contests the assumption of quarantine that a "surplus" of migratory buffalo exists.

The buffalo are more than a total population number or size: the wild species is a herd animal with a complex family structure based on maternal lines, group and herd affinity, and extended social ties. The buffalo of Yellowstone National Park are distinguished as the only population that has continuously inhabited the ecosystem for thousands of years. As an indigenous migratory species, the buffalo carries the spirit of freedom in America. The proposal to quarantine buffalo is in conflict with these broadly held public values.

Yellowstone National Park has also been misusing Congressional authority to get rid of "surplus buffalo." The United States Congress never intended that "wild" buffalo be declared surplus:

> "The "tame" herd of buffalo in Yellowstone National Park was established under authority contained in the act of July 1, 1902 (32 Stat. 574), with an appropriation of $15,000 for the purpose. Twenty-one animals were purchased in the fall of that year, and these have multiplied until now the herd contains 578. It is estimated that the "wild" herd, a remnant of the vast hordes that once roamed this region, numbers from 125 to 150, but it has no place in the present discussion" (U.S. Congress 1923 at 46).

Yellowstone National Park needs to stop abusing the purpose of what Congress intended and acknowledge that "surplus buffalo" is an artifact of captive, introduced buffalo on the Lamar Buffalo Ranch, which by design could only hold so many captive or "tame" buffalo.

Evaluate and disclose the intent and purpose of the United States Congress in enacting 16 U.S.C. § 36 Disposition of surplus elk, buffalo, bear, beaver, and predatory animals.

Evaluate the context provided by the United States Congress (1923 at 46) in distinguishing "wild" from "tame" buffalo and how the government intends to treat this Congressional distinction in evaluating quarantine.

Evaluate and compare the costs of quarantining buffalo with other management actions that provide habitat for migratory buffalo:

- Dismantling the Stephens Creek buffalo trap and associated facilities.
- Dismantling the Corwin Springs buffalo trap and facilities.
- Dismantling the Slip N Slide buffalo trap and associated facilities.
- Eliminating government hazing or harassment operations that dislocate buffalo from habitat.
- Eliminating the government zone management scheme.

Buffalo Field Campaign requests a hard look and disclosure in your analysis of potential harms to quarantined buffalo from diseases that could spread through the population as a result of confinement.

Evaluate and disclose the susceptibility of buffalo to diseases that could spread from buffalo confined to quarantine, to other buffalo in quarantine, and to the buffalo population roaming their natural habitat.

Review the literature and recorded incidents of outbreaks of disease that have impacted the buffalo in Yellowstone National Park. Was confinement of buffalo a factor, a vector, or a potential threat of disease to buffalo in the ecosystem?

Meagher (1973 at 70) noted "outbreaks of hemorrhagic septicemia in 1912, 1919, and 1922 caused considerable mortality in the introduced herd in Lamar Valley."

Tessaro (1989 at 418) also found hemorrhagic septicemia killed 22 of 171 bison in 1911 and subsequently impacted the herd again in 1922.

Evaluate and disclose potential adverse consequences of quarantining buffalo including disease transmission that could lead to mortalities or harm to buffalo and the population.

Describe what if any mitigation measures the government proposes to implement in the event of disease outbreaks stemming from quarantine that could harm buffalo, whether confined or naturally roaming their habitat.

Review potential adverse consequences of quarantining buffalo including being more susceptible to biting insects and not being able to seek relief by dispersing.

The Fort Peck Assiniboine and Sioux Tribes reported a fire swept through its electrified fence pastures and killed ten quarantined buffalo (McNeel, Indian Country Today Media Network 2012).

Evaluate and disclose the contingency plans for evacuating buffalo from quarantine in the event of fires.

Review and disclose the adverse behavioral changes buffalo learn in confinement.

If quarantine is to be pursued then the quarantine already undertaken needs to be thoroughly evaluated for adverse consequences and its failure to live up to the promise of conserving wild buffalo as a wildlife species.

Yellowstone National Park's prior actions to permit the take of migratory buffalo for a quarantine feasibility study was premised on the goal of establishing "new public and Native American bison herds or to augment existing populations in North America" (Montana Fish, Wildlife & Parks and USDA APHIS 2004 at 7; Yellowstone National Park 2006). However, an objective review finds that the buffalo removed from the park have not conserved the species as wildlife. Instead, Yellowstone National Park, Montana Fish, Wildlife & Parks, and the U.S. Dept. of Agriculture have facilitated the exploitation of wild buffalo for commercial benefit not public benefit, and subjected the wild species to domestication and failed to conserve the buffalo as wildlife.

Here is a brief summary of what we know about the Yellowstone National Park's and the state of Montana's role in quarantining wild buffalo and the outcomes achieved for the buffalo that were not slaughtered or died in confinement.

In 2014 the majority of quarantined buffalo offspring on Ted Turner's Green Ranch became the private property of Turner Enterprises Inc. (Montana Fish, Wildlife & Parks, Montana Dept. of Livestock, and Turner Enterprises Inc. 2010; Montana Fish, Wildlife & Parks 2014). The buffalo no longer belong in the public trust. As property, the buffalo will no longer be public or tribal wildlife for future generations but private, domestic livestock in perpetuity. The buffalo on the Green Ranch are ear-tagged, rotated through fenced pastures and subject to annual round-ups for testing.

The buffalo transferred to the Fort Peck Reservation and Fort Belknap Reservation remain in a domesticated state per the quarantine and political requirements imposed upon the tribes

(Montana Fish, Wildlife & Parks and the Assiniboine and Sioux Tribes of the Fort Peck Reservation 2012). The cohort has limited range (currently 2,322 acres and 10,788 acres total), is ear-tagged, and subject to confinement behind electrified fences. A wildfire led to the fatality of ten of the quarantined buffalo (McNeel, Indian Country Today Media Network 2012).

Confinement is not a natural state for a migratory species like the buffalo. Destroying the families as Yellowstone National Park did and sending only calves to quarantine had adverse consequences for the surviving members:

> "Tribes have observed uncharacteristic behaviors among the first QFS bison . . . and were again required to break up the family structure when bison were moved to Fort Belknap . . . Bison have a tendency to follow the biggest bull in the herd, despite the fact that they would typically follow one of the lead females" (Fort Peck Assiniboine and Sioux Tribes 2014 at 9).

Evaluate and disclose all adverse consequences to buffalo and the ecosystem by reducing the public's wildlife to private livestock, confinement and management as livestock.

Evaluate and disclose all adverse consequences to buffalo and the ecosystem by subjecting the public's wildlife to domestication.

Include in the government's analysis disclosure of acreages available, management techniques, whether quarantined buffalo are tagged, micro-chipped, vaccinated, culled or removed or taken and how.

Include current and future plans for the buffalo and whether the quarantined cohorts will remain subject to domestication and confined behind fences.

Describe the legal classification of the buffalo consigned to quarantine received by Turner Enterprises Inc. and the Fort Peck and Fort Belknap reservations.

Disclose adverse consequences observed from sending all-calf buffalo cohorts to quarantine.

According to public statements made by a Yellowstone National Park official (Zuckerman, Reuters 2014), the buffalo confined to quarantine will remain "controlled" herds.

Please disclose the intent and management requirements for "controlling" the herds.

Analyze and disclose to the public how "controlled" buffalo herds serve the conservation purpose that the government claims.

Quarantine is domestication; we know of no migratory buffalo that have been freed from this unnatural state of captivity.

For the foregoing reasons, taking wild buffalo from Yellowstone National Park for quarantine should be eliminated as a management option.

D. Evaluate and disclose the environmental and economic benefits of no capturing for culling or terminal pastures.

Whether the government wishes to call it culling, terminal pasture or transfer to slaughterhouses, there is a creeping commercial nature to removing migratory buffalo for these purposes. Char-Koosta News (Fehrs 2014) reports plans by the Confederated Salish-Kootenai Tribes that are clearly commercial in nature:

> " . . . construct a terminal facility for bison from Yellowstone National Park" to hold and slaughter up to 200 bison annually. The CSKT is also evaluating combining the slaughter facility with quarantine where " . . . brucellosis free bison would be sold." Another option would " . . . start an on-reservation genetically pure strain herd program of 150 bison cows . . . and acquire the brucellosis free bison from YNP, or Ted Turner's ranch." The latter option projects net profits of $434,700 after 15 years. CSKT's evaluation identified competition from domestic bison operations as a weakness.

Capturing buffalo for culling or terminal pastures are variations of government slaughter and need to be rejected. All of these approaches are commercial in nature and are in conflict with broadly held public values that respects management of wild buffalo as wildlife not livestock.

E. Evaluate and disclose the environmental and economic benefits of no population control experiments, e.g. sterilization, birth-control, etc.

Buffalo Field Campaign requests Yellowstone National Park no longer permit wild buffalo be taken from the population for population control experiments conducted by the U.S. Dept. of Agriculture Animal and Plant Health Inspection Service or any other entity.

Evaluate and disclose how population control programs are in conflict with the stated purpose of the Interagency Bison Management Plan "to conserve a wild and migratory population of Yellowstone-area bison."

Buffalo Field Campaign disputes the assumption that population control is necessary or desirable to reduce or control the reproductive capacity of the buffalo population.

Human selection and the use of population control agents like GonaCon, a chemical sterilant/hormone disruptor (U.S. EPA 2009), interferes with natural selection and is an unacceptable impact on the natural adaptive potential for the buffalo population.

Human selection and the use of population control agents is an unacceptable impact on the wild buffalo and in conflict with stated National Park Service Management Policies to allow natural selection and evolutionary processes. "The Service recognizes that natural processes and species are evolving, and the Service will allow this evolution to continue – minimally influenced by human actions" (National Park Service 2006 Introduction at 36).

Far less intrusive cattle management practices are available to the U.S. Dept. of Agriculture

Animal and Plant Health Inspection Service to manage specific and identifiable risks in the Designated Surveillance Area.

Take a hard look at the Interagency Bison Management Plan analysis rejecting buffalo population control, contraception and neutering:

> "Long-term effects of having a large number of nonreproducing animals in a herd are unknown. Hormonal contraception of females would suppress ovarian function, prevent estrous cycles, and reduce male attraction to females (McCullough et al. 1993). Immunocontraception does not prevent ovarian cycling, and males could be repeatedly attracted to females. The breeding season likely would be extended because of the polyestrous (multiple ovulation) nature of nonpregnant animals and could have physiological effects on males and females. It is also unknown if immunocontraception would affect the immune system of bison and potentially make them more susceptible to disease.
>
> For these reasons, contraception will not be considered as a population control strategy for bison in this environmental impact statement. To date, no free-ranging large mammal population has been effectively controlled using available contraception techniques (B. Garrott, Montana State University, pers. comm.). Aside from uncertainties as to effectiveness, "significant behavioral changes can be expected for all major contraceptive agents currently under investigation" (Garrott 1995). Contraceptive agents could disrupt family and social bonds and extend or alter breeding and birthing seasons (Garrott 1995)" (State of Montana and Yellowstone National Park 2000 FEIS Vol. 1 at 59-60).
>
> "Neutering, by whatever means and for whatever purpose, may alter the social interactions and behavior of bison, such as family bonds or the dominance of bulls during the rut. Sterilization, if done on a large scale, might have genetic influences on the population by eliminating pre-selected animals from the gene pool. And, neutering would not contribute to controlling migrations.
>
> For these reasons, neutering bison and returning them to Yellowstone National Park will not be considered further in the environmental impact statement . . ." (State of Montana and Yellowstone National Park 2000 FEIS Vol. 1 at 60).
>
> "Furthermore, targeting young, reproductive females, which are the animals most likely to be infectious (Roffe et al. 1999), could have serious impacts on population numbers and composition. For these reasons, this method has not been considered further as a means for limiting bison population size or for managing transmission risk" (State of Montana and Yellowstone National Park 2000 FEIS Vol. II at 167).

F. Evaluate and disclose the environmental and economic benefits of no privatization or domestication.

Privatization and domestication of wild buffalo is a consequence and impact of government quarantine.

Please review our comments above on no capturing buffalo for quarantine, the adverse consequences of quarantine on the population, and the failure to conserve wild buffalo as wildlife through quarantine.

G. Evaluate and disclose the environmental and economic benefits of no vaccination.

Eliminating vaccinating buffalo from further consideration as a management action is an important element of our alternative.

Vaccination, including by hand-syringe injection, is unwarranted and not supported by the best available science.

Evaluate and disclose how continuing vaccinating buffalo may produce ". . . vaccine-adapted variants could then spread in the population . . .Result in longer-term evolutionary changes in the host-pathogen . . ." (Yellowstone National Park 2014 at 245).

Evaluate and disclose how continuing vaccinating buffalo may produce adverse consequences for the population ". . . SRB51 vaccination becomes ineffective, leading to an increase in transmission potential, intensity of the disease . . ." (Yellowstone National Park 2014 at 245-246).

If hand-syringe vaccination and vaccination regardless of how it is administered continues the preparation of an environmental impact statement will be warranted.

Buffalo Field Campaign strongly encourages the government to eliminate vaccinating buffalo from further consideration as a management action to avoid the costs and complications that are sure to arise.

Review the substantial body of evidence in support of eliminating this ill-conceived idea of vaccinating buffalo.

Vaccinating buffalo is a harmful, costly, wasteful and failed strategy as indicated by Yellowstone National Park's own evidence to remotely vaccinate buffalo (Yellowstone National Park 2010; Yellowstone National Park 2014).

Loss of wildlife values and adverse impacts to the buffalo population need to be studied in depth to fully consider, evaluate and disclose impacts of vaccinating buffalo if this management action continues to be used.

There is a risk of jeopardizing the nation's last wild population of migratory buffalo by vaccinating buffalo. Take a hard look at the "uncertainty" and "incomplete and unavailable" science (Yellowstone National Park 2010 DEIS, Chapter 4.2 in general).

According to Yellowstone National Park's impact statement:

> ". . . using less effective vaccines or delivering the vaccine to a relatively small proportion of the eligible animals can lead to adaptive changes in the disease pathogen that select for variants able to evade the immunological response induced by the vaccine. These vaccine-adapted variants can then spread in the population, reduce the efficiency of the vaccination program, and result in longer-term evolutionary changes in the host-pathogen association" (Yellowstone National Park 2010 DEIS at 73).

Additionally, Yellowstone National Park admits:

> "These aspects of SRB51 and the life history of *B. abortus* may provide a selective advantage for bacteria whereby SRB51 vaccination becomes ineffective leading to an increase in transmission potential, stronger persistence within the bison host, and greater pathogenicity (i.e., virulence or degree of intensity of the disease produced by a pathogen). This potential adaptation of *B. abortus* to SRB51 could be exacerbated if delivery via remote vaccination is hampered due to logistics or bison behavior and only a relatively small proportion of the eligible females are vaccinated" (Yellowstone National Park 2010 DEIS at 73).

Fully evaluate and disclose how vaccinating buffalo with SRB51 could lead to increased levels of *Brucella abortus* transmission in the Yellowstone ecosystem, more virulent forms and stronger persistence of *Brucella abortus* in wild buffalo.

Based on the risks to the buffalo population and the lack of any measured benefits to the buffalo, the scientific evidence weighs heavily in favor of eliminating vaccinating buffalo however it is administered.

H. Evaluate and disclose the environmental and economic benefits of no hazing deadlines.

The imposition of hazing deadlines and repeated hazing or government harassment of wild buffalo in habitat suited to their well being is completely unjustified.

There is no demonstrable disease risk on habitat where there is no susceptible cattle host (Nicoletti 2008), yet all wild buffalo in Montana are forcibly removed during and after calving season (Buffalo Field Campaign 2015 video).

Please review and evaluate our comments above on using the best available science to eliminate this unnecessary and unjustified management prescription that continues to result in harmful and adverse consequences for the buffalo and the ecosystem they inhabit.

Please also review and evaluate our comments above on using the best available science to eliminate inflicting the harm of hazing on the buffalo population to meet arbitrary and unjustified deadlines.

I. Evaluate and disclose the environmental and economic benefits of no helicopter hazing.

The Montana Dept. of Livestock's deployment of a helicopter to haze or harass buffalo from habitat severely disturbs and stresses the population in critical times of year especially during calving season (Buffalo Field Campaign 2013 video).

"Allowing bison to occupy public lands outside the Park through their calving season will help conserve bison migratory behavior and reduce stress on pregnant females and their newborn calves, while still minimizing the risk of brucellosis transmission to cattle" (Jones 2010 at 333).

Review and assess the nutritional deprivation, stress, injuries and death Dept. of Livestock helicopter hazing inflicts on the buffalo population.

For many years the U.S. Dept. of Agriculture Animal and Plant Health Inspection Service funded the deployment of a helicopter to permit the Dept. of Livestock to harass the buffalo in the ecosystem (Buffalo Field Campaign 2000-2015; Alliance for the Wild Rockies 2012 at ¶ 101-105).

Helicopter hazing is a costly taxpayer funded management action that should not only be discontinued for its ecological harms but also for its costs (Montana Dept. of Livestock 2001-2008).

For spring 2013 the Dept. of Livestock spent thousands of dollars contracting helicopter hazing. "The Department spent $17,941.25 in the spring of 2013 for helicopter hazing. Our contractor was Central Helicopter of Bozeman, Montana" (Geist and Mackay 2013).

Evaluate and disclose the high costs of helicopter hazing.

The Dept. of Livestock has disturbed local residents and intruded into local communities by flying the helicopter low over residential areas. Helicopter hazing upsets and causes conflict with people's right to enjoy their private property.

Evaluate and disclose the upset and conflict helicopter hazing inflicts on local residents.

The Dept. of Livestock's deployment of a helicopter disturbs and stresses wildlife species and causes them to flee habitats.

Evaluate and disclose the biological impacts, harm and disturbance to wildlife species and their habitat caused by helicopters and associated government hazing operations.

In addition to its high taxpayer costs, Dept. of Livestock helicopter hazing has been the cause and subject of two lawsuits to protect listed endangered species, the American bald eagle and the grizzly bear, and the ecosystem the wild species depends upon for survival (Cold Mountain, Cold Rivers v. Montana Dept. of Livestock 2001; Alliance for the Wild Rockies v. U.S. Dept. of Agriculture Animal and Plant Health Inspection Service 2012).

Regardless of the court's answer in each suit, continuing to deploy helicopters as a management tool is costly and results in far too many adverse impacts on endangered and native species to merit further use. The adverse and harmful consequences of dislocating

wildlife during spring green up is not worth any management goal obtained (National Park Service 2012).

Evaluate and disclose the biological impacts, harm and disturbance to listed endangered species and their habitats caused by helicopter hazing.

J. Evaluate and disclose the environmental, biological and cost benefits of no government hazing of wild buffalo unless there is an imminent threat to cattle present on private land.

Buffalo Field Campaign encourages consideration and adoption of our definition of imminent threat as follows:

> The term "imminent threat" means the department is reasonably certain that domestic cattle will come into direct contact with birthing tissues and fluids from an adult, female wild buffalo on private land.

The definition would exclude bull buffalo at all times of the year and cow buffalo after the calving season. The definition would only include the presence of a pregnant adult cow buffalo on private land where cattle are present. The department would have to be reasonably certain that the circumstances would permit cattle to come into direct contact with birthing tissues and fluids. Finally, the definition would allow for physical barriers such as fencing that would prevent direct contact with cattle.

Evaluate adapting the term "imminent threat" to minimize management actions.

Evaluate adapting the term "imminent threat" to reduce and minimize the environmental, social, and taxpayer costs of management actions.

K. Evaluate and disclose the environmental, social and cost benefits of no government trespassing on private land where buffalo are welcome.

No government trespassing on private land where buffalo are welcome is necessary to prevent further government-induced conflicts with people who live in Montana and desire to enjoy the wild buffalo upon their private property.

Despite Montana Governor Steve Bullock's directive (2014), private landowners living in Yellowstone National Park gateway communities who support the presence of wild buffalo continue to be placed in conflict with livestock inspectors who trespass on their properties to remove buffalo, a native, migratory species (Buffalo Field Campaign 2014 video).

There are a substantial number of people who live in the buffalo's habitat and welcome the wild species on their private lands (HOBNOB 2004; Galanis Yellowstone Ranch Preserve 2007; Klyap Dome Mountain Ranch 2008; Earthjustice 2008; Fred Baker 2011; Scott Hoeninghausen 2011).

As it stands, these landowners are subject to intrusive government "hazing" operations led by the state of Montana that are an ongoing source of contention and community strife

(HOBNOB 2004; Buffalo Field Campaign 2007 video).

Landowners who welcome buffalo on their private land and enjoy buffalo being there have asked the state of Montana to stop trespassing upon their property to remove the migratory species (HOBNOB 2004).

Landowners wonder why they have no property rights related to the presence of migratory buffalo, and why their land is trespassed upon by government agents including livestock inspectors to harm the species when no livestock are present, or ever will be (Galanis Yellowstone Ranch Preserve 2007).

The government is well aware of long-standing local support from residents petitioning Montana to adapt to changed circumstances and local sentiment that permits migratory buffalo to be on private lands where they are welcome and no cattle will be grazed (Earthjustice 2008; HOBNOB 2004).

Several large landowners situated in critical wildlife habitat have repeatedly asked the state of Montana to respect the buffalo upon their private property and to not trespass as the landowners have expressly forbidden the government and its' agents from harming the buffalo by forcibly removing the migratory species from their land:

> "Under this new Ownership cattle will no longer be allowed to graze on the ranch and we are declaring our private property a 'Bison Free Zone' and a wildlife preserve. Please be advised any attempt by any government agency, (local, state, or federal) to enter upon our lands without the expressed written consent of the Owner will be construed as TRESPASSING, and be subject to prosecution to the full extent of the law.
>
> The current policy of hazing is inhumane, senseless, a waste of taxpayer dollars, and an embarrassment to the state of Montana. We trust you will respect our private property rights" (Galanis Yellowstone Ranch Preserve 2007).
>
> "I wanted to let you all know that we would love to see the Bison migrate to Dome Mountain Ranch and will NOT permit ANYONE from DOL to enter our property.
>
> Last year, as you may recall, several bulls nearly made it to freedom had it not been for a small parcel of public land owned by the Dewart family and managed by Benny Cunningham who consistently assists with hazing efforts. We would love to see free roaming bison on the ranch. Count me in on your side" (Klyap Dome Mountain Ranch 2008).

Too often the government overlooks local residents (Fred Baker 2011; Scott Hoeninghausen 2011) who not only support wild free roaming buffalo but live and enjoy living in Montana for this reason, including cattle ranchers (Flandro Bozeman Chronicle 2011).

Evaluate and disclose in your analysis the environmental, social and community benefits of discontinuing government trespassing on private land where buffalo are welcome in Montana and elsewhere.

L. Evaluate and disclose the environmental and economic benefits of cooperating with MDOT and NPS in creating wildlife safe passages in wildlife corridors.

Consider designating buffalo migration corridors and developing wildlife safe passages on Highways 89, 191, 287 and 20 within Yellowstone National Park and in Montana.

While Montana DOT's marquee displays and "bison on road" signs on HWY 191, HWY 287, and HWY 89 are appreciated improvements, there is much Montana and Yellowstone National Park can still do for wildlife crossing roads constructed in migration corridors.

Consult and work with the Confederated Salish and Kootenai Tribes and the Western Transportation Institute on the wildlife safe passage infrastructure the tribes developed and implemented along HWY 93 and other such projects in North America.

The state of Montana and Yellowstone National Park should also consider working with the Western Transportation Institute and others who developed HWY 93 safe passages to work with local communities in Gardiner and West Yellowstone on developing and implementing wildlife safe passages.

Review the ample materials and tools that are being designed and developed in Montana to help people and wildlife co-exist (American Wildlands 2009; Clevenger 2007; Hardy 2008).

In the absence of wildlife safe passages, speed limits must be lowered and enforced on the roads heavily used by migratory wildlife. Lowering speed limits at these critical corridors increases response times and prevents vehicle collisions with wildlife.

Yellowstone National Park and the state of Montana need to evaluate options within and outside the park to prevent vehicle collisions with migratory species like the buffalo.

Additional road signage showing the image of a buffalo emphasized by cautionary blinking lights – such as those used in Yellowstone National Park – helps alert motorists to wildlife crossing or on roads.

Please evaluate and consider expanding road signage at critical junctures to reduce vehicle collisions with migratory species like the buffalo.

Montana should work with the Gallatin National Forest and Yellowstone National Park to educate the public, including frequent issuance of public service announcements on the presence of migratory buffalo and wildlife on roads. Canada Parks does an adequate job of education and outreach and could be consulted for more information on the most effective materials.

Consider working with local dispatchers in issuing timely radio announcements to freight

hauling semi-trucks alerting drivers of wildlife crossing roads.

Plowing snow along the roadside can trap buffalo on the road by creating high berms that are difficult to cross. When clearing roads of snow, consider snow-blowing through the berms to allow buffalo escape routes off highways. For Hebgen basin, this would include escape routes on:

- HWY 191 at Fir Ridge, Duck Creek, Cougar Creek, Rainbow Point Road, the Madison River, and Baker's Hole.
- HWY 287 at the Bear Trap subdivision, Grayling Creek, Red Canyon.
- HWY 20 near Forest Roads, rivers and streams along the side of the highway.

If Montana and Yellowstone National Park forego costly management actions, these savings could be re-channeled to carry out measures providing for wildlife safe passages.

Review and evaluate how wildlife safe passages protect wildlife, people and property and improve public safety along the roads and highways in Montana and Yellowstone National Park.

M. Evaluate and disclose the environmental and economic benefits of cooperating with landowners in reducing fencing.

Buffalo Field Campaign collaborated with the Gallatin National Forest Hebgen Lake Ranger District to remove several miles of dilapidated and abandoned barbed-wire fencing along HWY 287.

During winter, fencing is obscured by deep snow. Barbed-wire fencing entangles buffalo and other wildlife as they migrate to adjacent meadows along roads and highways.

Contact the U.S. Forest Service Hebgen Lake Ranger District and Gardiner Ranger District to identify dilapidated and abandoned barbed-wire fencing that could be removed by the agency or by volunteers.

Consider sponsoring a program to remove unused, dilapidated, barbed-wire fencing in wildlife habitat.

N. Evaluate and disclose the environmental and economic benefits of cooperating with landowners wanting to retire cattle and sheep grazing allotments.

Please review the disease risks to buffalo from cattle and sheep identified in our petition to list Yellowstone Bison under the Endangered Species Act submitted by Buffalo Field Campaign and Western Watersheds Project (2014 at 37-40).

Wild buffalo are susceptible to diseases carried by domestic livestock including hemorrhagic septicemia, malignant catarrhal fever and brucellosis.

As practiced, disease risk management practices do not benefit the buffalo population but the

cattle industry. Disease risk management poses a significant threat to the continued persistence, genetic diversity, and the conservation of evolutionary potential of wild buffalo.

Buffalo Field Campaign recommends working with National Forests to permanently close public lands cattle and sheep grazing allotments in buffalo habitat. The U.S. Forest Service has authority to protect and enhance wildlife habitat by closing allotments (Gallatin National Forest 2010). We encourage the government to work with the U.S. Forest Service to identify and evaluate allotments suitable for closure.

If the state of Montana and Yellowstone National Park are going to limit buffalo abundance and distribution on our National Forests through all alternatives under consideration, we encourage conducting suitability analyses to close cattle and sheep grazing allotments and recover habitat resources that provide for viable and increasing populations of migratory buffalo. Doing so is consistent with Gallatin National Forest wildlife goals of providing "habitat for viable populations of all indigenous wildlife species and for increasing populations of big game animals" (Gallatin National Forest 1987 at II-1).

While the U.S. Forest Service has claimed the agency can modify public lands grazing allotments to address any potential conflicts and increase habitat for buffalo (Montana Fish, Wildlife & Parks and Montana Dept. of Livestock 2013 at 63), we are aware of no change in any public grazing allotment since the idea originated in the 1990s.

Instead of protecting wildlife habitat values for viable and increasing populations of buffalo, the U.S. Forest Service continues to re-issue cattle grazing permits on National Forest lands migratory buffalo are excluded from, for example, on the South Fork and Watkins Creek (Montana Fish, Wildlife & Parks and Montana Dept. of Livestock 2013 Appendix A IBMP Operating Procedures 2012; Gallatin National Forest 2012).

Renewing cattle and sheep grazing permits excludes migratory buffalo from the National Forest and cannot resolve the "conflict-free habitat" goal Montana identified to "adjust the conservation zones and increase state and treaty hunting opportunities" (Montana Fish, Wildlife & Parks 2010; Confederated Salish and Kootenai Tribes 2012).

Consider sponsoring a program to voluntarily buy-out cattle and sheep grazing allotments and conserve wildlife habitat in perpetuity for native wildlife species.

Evaluate and disclose the cost benefits of purchasing and retiring grazing allotments in perpetuity as opposed to leasing agreements (Buffalo Field Campaign 2008; Church Universal and Triumphant and Montana Fish, Wildlife & Parks 2008).

IV. The objectives of the *Manage Wild Buffalo like Wild Elk in Montana* alternative include developing a management plan that is:
• based on recognizing wild buffalo as a native wildlife species;
• good for wildlife and habitat;
• environmentally preferred;
• culturally acceptable to the majority of American Indian tribes and Montanans;
• most beneficial for American Indian tribes with treaty rights;
• most acceptable to people visiting and living in gateway communities in the Yellowstone region; and
• least costly to taxpayers.

A. The *Manage Wild Buffalo like Wild Elk in Montana* alternative is based on recognizing wild buffalo as a native wildlife species.

Two Montana state courts have ruled there is no statutory or mandatory duty or legal precedent for Montana to arbitrarily remove all migratory buffalo from the state and thereby prevent the wild species from establishing a year-round population:

> "Thus, Section 81-2-120(1), MCA creates no legal duty mandating DOL to remove wild bison from Zone 2, as requested by Petitioners . . ." (Montana District Court Judge John C. Brown 2010 at 12).

> "Although the Montana Constitution protects an individual's right to pursue life's basic necessities, including the right to possess and protect property, that provision does not grant an unfettered duty of the DOL, FWP, or the State for that matter, to protect an individual's private property from damage by a wild animal. "[W]ild game . . . belong to the State in its sovereign capacity," and the State cannot be sued by an individual for damages without its consent. State v. Rathbone, 110 Mont. 225, 238, 100 P.2d 86, 91 (1940)" (Montana District Court Judge E. Wayne Phillips 2013 at 61).

The Supreme Court of Montana has found that Montana's Constitution and laws mandate special considerations apply to native species vis-a-vis constitutional claims of injury to private property by wildlife:

> "However, the injury to property by wild animals must be of considerable extent to warrant killing out of season or contrary to law; a mere trespass is insufficient" (State of Montana v. Sackman 1968).

> "There is no provision in the Fish and Game Code extending to a person the right to kill an elk in defense of his person or his property. By the terms of the Code, one killing an elk under such circumstances has no redress for past damages for the reason that wild game including elk belong to the State in its sovereign capacity" (State of Montana v. Rathbone 1940 citing Rosenfeld v. Jakways, 67 Mont. 558, 216 P. 776.)

Biologists have found the status of wild buffalo in Montana in "greatest conservation need" and "at risk because of very limited and/or potentially declining population numbers, range and/or habitat, making it vulnerable to global extinction or extirpation in the state" (Adams and Dood 2011 at 32).

There is a substantial body of evidence that Montana entirely lacks regulatory mechanisms to provide for a wild migratory buffalo population in the state (Buffalo Field Campaign and Western Watersheds Project 2014). These legal and regulatory mechanisms provide the necessary assurances that essential habitat needs will be addressed and that long-term habitat and management protections are in place to ensure the survival and natural adaptation of wild buffalo.

By severely limiting year-round habitat for wild migratory buffalo the state of Montana is failing its' duties to fulfill Montana's public trust responsibilities for "each generation as trustee of the environment for succeeding generations" (MCA 75-1-103).

Review the state of Montana's public trust responsibilities for native species.

Evaluate and disclose how Montana is managing its' pubic trust responsibilities to buffalo for "each generation as trustee of the environment for succeeding generations" (MCA 75-1-103).

Exclusion of wild buffalo by policy and plan to less than "0.3% of Montana's 147,200 square miles" (Montana Fish, Wildlife & Parks and Montana Dept. of Livestock 2013 Addendum at 29) is likely to lead to listing the species as an endangered species in Montana (Buffalo Field Campaign and Western Watersheds Project 2014).

If Montana wishes to continue abdicating its' public trust responsibilities to wild buffalo, citizens will uphold the public trust by pursuing every legal avenue available.

B. The *Manage Wild Buffalo like Wild Elk in Montana* alternative is good for wildlife and habitat.

Please review our comments on managing for the ecological benefits wild buffalo provide the ecosystem.

C. The *Manage Wild Buffalo like Wild Elk in Montana* alternative is the environmentally preferred alternative.

The *Manage Wild Buffalo like Wild Elk in Montana* alternative meets Yellowstone National Park's mandate from the U.S. Congress to conserve and leave buffalo "unimpaired for the enjoyment of future generations" (National Park Service Organic Act 1916).

The *Manage Wild Buffalo like Wild Elk in Montana* alternative adheres to National Park Service management policies and directives requiring "natural values, processes, systems, and values" be preserved (National Park Service 2006 Introduction at 36).

The *Manage Wild Buffalo like Wild Elk in Montana* alternative is an ecosystem-based, ecologically sound alternative consistent with National Park Service General Management Concepts

(2006 4.1 at 36) "to maintain all the components and processes of naturally evolving park ecosystems, including the natural abundance, diversity, and genetic and ecological integrity of the plant and animal species native to those ecosystems."

The *Manage Wild Buffalo like Wild Elk in Montana* alternative is consistent with the state of Montana and Yellowstone National Park "adapting" the best available science as reflected in the environmentally preferred alternative of your original decision in 2000:

> "As a summary, the public was overwhelmingly in favor of more natural management of the bison herd, with minimal use of actions they felt more appropriate for livestock such as capture, test, slaughter, vaccinating, shooting, corralling, hazing, etc. They also indicated extremely strong support for the management and/or restriction of cattle rather than bison given a choice between the two. The public also supported the acquisition of additional land for bison winter range and/or the use of all public lands in the analysis area for a wild and free-roaming herd of bison. A large number of commentors also expressed opposition to lethal controls, and in particular the slaughter of bison" (State of Montana and Yellowstone National Park 2000 ROD at 21).

Permitting free roaming buffalo in the ecosystem would allow buffalo to access forage to meet their nutritional needs and maintain healthy populations for future generations.

Evaluate developing an environmentally preferred alternative for the public to comment on.

The *Manage Wild Buffalo like Wild Elk in Montana* alternative should be fully considered on its own and as the environmentally preferred alternative in an environmental impact statement for the public to review and comment on.

D. The *Manage Wild Buffalo like Wild Elk in Montana* alternative strives to be culturally acceptable to the majority of American Indian tribes and Montanans.

Wild buffalo remain culturally and spiritually significant to American Indian tribes in Montana and surrounding states (Montana-Wyoming Tribal Leaders Council 2012, 2013; Shoshone-Bannock Tribes 2013; Intergovernmental-Intertribal Information Exchange Meeting for Yellowstone National Park 2008).

Yellowstone National Park and the state of Montana need to take into account the traditional buffalo cultures who continue to voice their interests in protecting the remaining stronghold where wild buffalo persist:

> "We seek to hold accountable those that are entrusted stewards of the land and the true and rightful inhabitants. Lack of stringent oversight can sometimes distort the necessary standards of accountability. I believe that we must bring about this scrutiny to protect the rights of a sacred species. And so, as tribal people, our challenge is to develop further strategies to preserve the core of our

> culture, that viable populations of wild buffalo are maintained" Rosalie Little Thunder, Sicangu Lakota Oyate (2010 at ¶16).
>
> "For Native America, the bison is the elder brother and teacher. For the Great Plains, he may be the salvation" (LaDuke 2000 at 66).
>
> "Mi-ta-ku-ye (my relatives), Let it be known that Yellowstone territory; the habitat of the last wild Buffalo Nation – is sacred ground, it has been a SACRED SITE for the First Nation's people, and for all humanity who hold deep respect for all Creation. The Buffalo Nation has confirmed this fact; by where they have ended up, continuing to survive in their natural migration, struggling to live in a peaceful manner. Our ancestors also gave us this message by fasting in this area long ago, as they recognized this place of sacredness. This understanding is how we maintain the balance upon Un-ci Ma-ka, to protect these places, especially for the survival of our future generations to come. Can-te Mi-ta-wa l-ta-han (from my heart)" (Chief Arvol Looking Horse 2008).

The Shoshone-Bannock Tribes (2013) also reiterated to Montana's Governor and Legislature their resolve and "desire to protect, preserve and enhance populations" of buffalo "to migrate freely across their historic range and to enhance the remaining Yellowstone herd."

Montana state hunters cannot hunt wild buffalo without Department of Livestock approval (81-2-120 Montana Code Annotated 2014). In the last ten years, of 82,832 applicants, 426 hunters drew wild buffalo tags (Montana Fish, Wildlife & Parks, N. Whitney 2014).

Rosalie Little Thunder, descendent of the Red-thigh band of the Lakota Nation and Buffalo Field Campaign's late co-founder, foresaw that some tribal organizations would seek the migratory buffalo as a commercial commodity through the government's manipulative plans and proposals. She recognized that on-going leadership is necessary to assert and reclaim an indigenous cultural connection to a sacred species, the wild buffalo, in the government's management plans:

> "The boogeyman of brucellosis raised by cattle ranchers to seize management authority over the public's wild buffalo no longer exists. Montana's cattle ranchers are being taken care of, but the public's one remaining population of wild buffalo is being massacred.
>
> The deception that buffalo are a disease risk is not fair to the tribes or the American people. Since cattle infected buffalo in captivity on the Lamar Buffalo Ranch a century ago, there has been no case of wild buffalo transmitting brucellosis back to cattle. Our relative, the buffalo, has been found guilty while the evidence of their innocence has been buried."
>
> "Traditional people must guide our tribal leadership in a manner that reflects the integrity of our historical and cultural relationship with our relative, the buffalo. Montana politics has made a mockery of a keystone species. The

> capitalist culture has commodified the buffalo for shameless profit. The slaughter of the buffalo is not about a disease, really. It is about a commodity and profiting from that commodity. We, as a species, must take into account how our beliefs and actions are affecting the future of all species. We must make every effort to acknowledge the need for a care-taking culture that respects and honors the role of a sacred species" (Little Thunder and Geist 2014).

The Montana-Wyoming Tribal Leaders Council (2013) has stated the state of Montana's assertion of jurisdiction over migratory buffalo (MCA 81-2-120) creates a "reciprocal responsibility to legally consult and cooperate with American Indian Nations to preserve the wild species for future generations in perpetuity."

The Montana-Wyoming Tribal Leaders Council (2013) has also stated that "Montana's assertion of jurisdiction and federal financial agreements to manage migratory buffalo convey a legal obligation upon the state of Montana and the United States to initiate and convene legally binding consultation with American Indian Nations so affected."

Both Yellowstone National Park and the state of Montana need to consult with affected American Indian tribes, and evaluate and disclose how the government intends to address traditional cultural concerns raised by tribes in consultation (Yellowstone National Park 2010 DEIS at 64) including but not limited to:

- Respectful treatment of the bison, including allowing them to roam freely without fencing or disrespectful hazing.
- Vaccine contamination of meat for consumption and ceremonial purposes.
- Preservation of wickiups, stone alignments, and other cultural features associated with bison.

Disclose the efforts by Yellowstone National Park and the state of Montana to consult with affected American Indian tribes on managing migratory buffalo.

Fully review and evaluate the indigenous, cultural, and traditional knowledge of buffalo in the ecosystem. Address how the state of Montana and the U.S. government will protect the buffalo as a sacred species for affected American Indian tribes.

Evaluate and disclose how the government's management plan and actions impacts cultural, spiritual and traditional ties to the buffalo.

Assess the government's trust responsibilities as caretaker of the buffalo for American Indian tribes.

E. The *Manage Wild Buffalo like Wild Elk in Montana* alternative is the most beneficial for American Indian tribes with treaty rights.

As implemented by the Montana Department of Livestock, MCA 81-2-120 severely limits

the abundance and distribution of wild buffalo to less than 0.3% of Montana's habitat, directly limiting tribal treaty rights to hunt buffalo on open and unclaimed lands, and severing a direct cultural link to a revered species, wild buffalo (Montana Fish, Wildlife & Parks and Montana Dept. of Livestock 2014 at 29).

In May 2012, the Montana-Wyoming Tribal Leaders Council urged the state of Montana to protect the buffalo in Yellowstone, to cease harassing the wild species on their calving grounds, and to recognize Treaty Obligations to American Indian Tribes to protect viable populations of migratory buffalo in their native habitat.

Both the state of Montana and the Confederated Salish and Kootenai Tribes have recognized the need to "adjust the conservation zones and increase state and treaty hunting opportunities" (Montana Fish, Wildlife & Parks 2010; Confederated Salish and Kootenai Tribes 2012).

Under Article VI of our United States Constitution, Treaties made "under the Authority of the United States, shall be the supreme Law of the Land." Online: http://www.house.gov/house/Constitution/Constitution.html

The forced removal of American Indian tribes to create Yellowstone National Park should not be forgotten (Nabokov and Loendorf 2000). When the U.S. Congress created Yellowstone National Park numerous federally recognized tribes suffered a severe loss to the lands, waters, minerals, plants and animal life found therein (Greater Yellowstone Science Learning Center 2006 at 1).

It should be remembered that the U.S. Congress ratified treaties recognizing Yellowstone as the aboriginal territory of the Crow, Shoshones and Bannocks (Greater Yellowstone Science Learning Center 2006 at 3).

For thousands of years the Greater Yellowstone ecosystem was traditional territory, ancestral homelands, and shared buffalo hunting grounds for Crow, Eastern Shoshone, Salish and Kootenai, Shoshone-Bannock, Blackfeet, Nez Perce, Northern Arapaho, Northern Cheyenne, Gros Ventre, Flathead, and Upper Pend d'Oreille Tribes (Yellowstone National Park 2010 DEIS 3.7 at 62-63).

Both Yellowstone National Park and the state of Montana need to consult with affected American Indian tribes with treaty rights, and evaluate and disclose how its' proposed alternatives and management tools impact these rights (National Park Service 2006 1.11-1.11.3 at 19).

Evaluate and disclose how the *Manage Wild Buffalo like Wild Elk in Montana* alternative impacts American Indian tribes with treaty rights.

Both Yellowstone National Park and the state of Montana need to consult with affected American Indian tribes, and evaluate and disclose how the government intends to honor ratified treaties.

F. The *Manage Wild Buffalo like Wild Elk in Montana* alternative is the most acceptable to people visiting and living in gateway communities in the Yellowstone region.

The transition to a sustainable and respectful wildlife management plan aligns with the economic and social values of Yellowstone's gateway communities.

We note the Montana Office of Tourism's continuing use of buffalo as an icon to lure people into visiting Montana by placing statues of a bear, a moose and a buffalo in the Chicago metropolitan area (Dudek, Chicago Sun Times 2015). "We want people to be able to see and feel what Montana might be like and encourage them to come out and visit and see these animals for real," Montana Office of Tourism spokeswoman Donnie Sexton said. "People see them and they're like, 'Whoa! Hey, what the heck!'"

Americans are entitled to see and experience the wild buffalo the Montana Office of Tourism touts in its' advertisements. However, unless Montana changes its management policy the opportunity to see buffalo will remain restricted to Yellowstone National Park in the state of Wyoming.

Instead of treating Montana's wild buffalo as property liabilities and public safety hazards, the state of Montana needs to start recognizing the migratory species 'is here to stay' and that people live in and visit Montana because of our heritage of wildlife species.

The facts to be considered and evaluated demonstrate public support and economic value in having wild buffalo in Montana and Yellowstone National Park:

- Seventy percent of Montanan's favor restoration of wild buffalo in Montana (Moore Information 2011);
- Nearly eight in ten Montanan's favor restoring wild buffalo on public lands, over seven in ten want wild buffalo managed as wildlife not livestock, and even more Montanan's think decisions about wild buffalo should be made by biologists and wildlife officials rather than politicians (Tulchin Research 2014);
- Science Daily reported three in four Americans polled in 2008 believe that the wild American bison is an "extremely important living symbol of the American West.";
- Acquiring buffalo habitat outside Yellowstone National Park will "conservatively" net "measurable benefits" of over $4 million dollars (State of Montana and Yellowstone National Park 2000 FEIS Vol. 1 at xxxix-xl);
- A peer-reviewed visitor spending analysis found 3.5 million visitors to Yellowstone National Park in 2014 spent $421 million dollars that supported 6,662 local jobs and injected $543.7 million dollars into local economies (National Park Service 2015);
- Tourism and outdoor recreation accounts for over 64,000 direct jobs and $5.8 billion in consumer spending in Montana (Outdoor Industry Association 2015); and
- Over 755,000 people engaged in Wildlife-Watching in Montana in 2006 generating $375 million dollars in retail sales, creating 9,772 jobs, and bringing in nearly $100 million dollars in revenues (Leonard 2008).

Clearly, the onus is on the state of Montana and Yellowstone National Park to align its wild buffalo management plan with the social values of people visiting and living in park gateway communities in the Yellowstone region.

G. The *Manage Wild Buffalo like Wild Elk in Montana* alternative is the least costly alternative to taxpayers.

Since 2000, the U.S. Dept. of Agriculture Animal and Plant Health Inspection Service has provided over $9,000,000 American taxpayer dollars for the Montana Department of Livestock to carry out MCA 81-2-120 without legislative oversight or fiscal accountability to taxpayers (Buffalo Field Campaign 2000-2015; Montana Dept. of Livestock 2001-2007).

Based on the agency's purchasing binges, the Montana Dept. of Livestock must view all this U.S. taxpayer money as a windfall. The livestock agency seems to have filled all of the equipment needs for its' entire department including purchase of a trap, hydraulic chutes, winches, skid steer loaders, trucks, trailers, ATVs, snowmobiles, snow blowers, radios, computers, shot guns, hand guns, and video cameras (Montana Dept. of Livestock 1996-2009).

We also note the conflict of interest evidenced in the rental agreement struck by the Dept. of Livestock with the Deep Well Ranch, a ranch that trucks cattle in during the summer months and the site of several buffalo shootings permitted by the owner, Pat Povah (Montana Dept. of Livestock 2007-2012).

While the Dept. of Livestock hides behind the privacy of the Koelzer family's private property to run the Duck Creek buffalo trap and use the land as a base of operations against the buffalo, the family trust has been enriched by this handshake rental agreement funded by taxpayers (Montana Dept. of Livestock 2007-2012). Setting up a trap to do harm to buffalo on private land just beyond the border of Yellowstone National Park is an impact that is difficult to assess.

Prepare a cost/benefit analysis of the *Manage Wild Buffalo like Wild Elk in Montana* alternative.

Compare the costs/benefits of the *Manage Wild Buffalo like Wild Elk in Montana* alternative to the alternatives developed in your analysis.

The public should not have to guess where public taxpayer money is being appropriated and how much is being spent on the Interagency Bison Management Plan. Even the U.S. Government Accountability Office (2008 at 22) could only arrive at an estimate.

For 2007, the last fiscal year reporting, estimated annual costs to implement the Interagency Bison Management Plan were $2,927,500. From 2002-2007 estimated costs to implement the Interagency Bison Management Plan were $15,932,288 (GAO 2008 at 22).

Conduct a look back for all agencies to evaluate and disclose the combined funding and spending costs on the Interagency Bison Management Plan since 2000. Review management methods and cost allocations of those management actions.

Going forward, commit to annually disclosing total costs, costs of management actions taken, and what if any outcomes were achieved.

Review wildlife and habitat friendly alternatives to costly management actions that could achieve the same or similar outcomes.

Commit to public accountability and transparency through annual disclosure and public review.

V. The evaluation goals of the *Manage Wild Buffalo like Wild Elk in Montana* alternative include:
• Managing cattle as the effective disease risk management plan in Montana.
• Managing wild buffalo like wild elk on public lands.

A. Evaluate and disclose outcomes of managing cattle as the effective disease risk management plan in Montana.

B. Evaluate and disclose outcomes of managing wild buffalo like wild elk on public lands.

RESPONSES TO QUESTIONS ON THE STATE OF MONTANA'S AND YELLOWSTONE NATIONAL PARK'S DRAFT ALTERNATIVES, MANAGEMENT TOOLS, AND ISSUES

In addition to Buffalo Field Campaign's scoping comments, the campaign has provided responses to the state of Montana's and Yellowstone National Park's questions on your draft alternatives.

1. What other alternatives, alternative elements, or management tools should be considered?

Please evaluate the *Manage Wild Buffalo like Wild Elk in Montana* alternative.
- Managing cattle as the effective disease risk management plan in Montana.
- Managing wild buffalo like wild elk on public lands.

2. What issues should be considered when evaluating future management of Yellowstone-area bison?

The elements (or issues) of the *Manage Wild Buffalo like Wild Elk in Montana* alternative include:
- continuing the Designated Surveillance Area management of cattle in place of an Interagency Bison Management Plan;
- no capturing for slaughter;
- no capturing for quarantine;
- no capturing for culling or terminal pastures;
- no population control experiments, e.g. sterilization, birth-control, etc.;
- no privatization or domestication;
- no vaccination;
- no hazing deadlines;
- no helicopter hazing;
- no government hazing of wild buffalo unless there is an imminent threat to cattle present on private land;
- no government trespassing on private land where buffalo are welcome;
- cooperating with MDOT and NPS in creating wildlife safe passages in wildlife corridors;
- cooperating with landowners in reducing fencing; and
- cooperating with landowners wanting to retire cattle and sheep grazing allotments.

3. What do you like and dislike about the preliminary alternatives?

Please evaluate the *Manage Wild Buffalo like Wild Elk in Montana* alternative.

Nearly all of the government's preliminary alternatives are not worthy of further evaluation and if implemented present valid concerns about impairment to park resources and values (National Park Service 2006 Underlying Principles at 2 and 1.4.2 at 10).

In brief, the government's alternatives are environmentally destructive, costly, have nothing to do with wildlife management, and disregard the best available science. These preliminary alternatives include:
- No Action Alternative – Continue 2000 IBMP Adaptive Management.

- Limit Bison Migration into Montana.
- Suppress Brucellosis Transmission.
- Tolerance in Montana Linked to Overall Bison Abundance.
- Balance Bison Conservation and Brucellosis Transmission Risk.

Many government management tools are not worthy of further evaluation and if utilized present valid concerns about impairment to park resources and values (National Park Service 2006 Underlying Principles at 2 and 1.4.2 at 10).

In brief, the government's management tools are environmentally destructive, costly, have nothing to do with wildlife management, and disregard the best available science:
- Population control.
- Vaccination.
- Capturing.
- Shipping to slaughter.
- Sterilization.
- Terminal pastures.
- Culling.
- Hazing and haze back deadlines of May 1 (north) and May 15 (west).
- Limited hazing.
- Adjust land use for cattle.
- Tolerance thresholds north and west of the Park.

By Act, the U.S. Congress has mandated a duty to Yellowstone National Park to prevent impairment to the buffalo population and the ecosystem the migratory species depends upon for survival:

> "The Secretary has an absolute duty which is not to be compromised, to fulfill the mandate of the 1916 Act to take whatever actions and seek whatever relief as will safeguard the units of the national park system" (National Park Service 2006 1.4.2 at 10).

For too long Yellowstone National Park has compromised its' duty in deference to the unreasonable positions adopted by the state of Montana.

The duty to safeguard the park and the buffalo population can be restored and fulfilled by fully evaluating and adopting the *Manage Wild Buffalo like Wild Elk in Montana* alternative.

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