To All Concerned:

Yellowstone to Uintas Connection, Alliance for the Wild Rockies, Native Ecosystems Council, Snake River Waterkeeper and Wildlands Defense are submitting these comments for the Husky 1 North Dry Ridge Mine Project Draft Environmental Impact Statement (DEIS).

Yellowstone to Uintas Connection (Y2U) is a 501c3 public interest organization whose staff and members have and will continue to work to protect the integrity of habitat for fish and wildlife as well as recreate in this region. We are concerned about the loss of integrity of the Regionally Significant Wildlife Corridor (Corridor) that connects the Greater Yellowstone Ecosystem and Northern Rockies to the Uinta Wilderness and Southern Rockies. The Yellowstone to Uintas Connection organization was given this name to bring attention to this Corridor and we use this name in reference to both the organization and Corridor as it provides context and public awareness to the location and its importance. Y2U is in Paris, Idaho.

Alliance for the Wild Rockies (AWR) is a 501c3 public interest organization whose mission is to secure the ecological integrity of the Wild Rockies Bioregion through citizen empowerment and the application of conservation biology, sustainable economic models, and environmental law. AWR is in Helena, Montana.

Native Ecosystems Council (NEC) is a 501c3 public interest organization whose staff reviews Forest Service National Environmental Policy Act (NEPA) assessments of logging impacts on wildlife in Montana and Idaho. NEC is in Willow Creek, Montana.
Snake River Waterkeeper (SRW) is a 501c3 public interest organization applying science and law to protect, restore and sustain the waters of the Snake River Basin. SRW is a member of the Waterkeeper Alliance, composed of more than 350 on-the-water advocates who patrol and protect more than 100,000 miles of rivers, lakes, and coastlines on 6 continents. SRW is in Boise, Idaho.

Wildlands Defense (WLD) is a 501c3 public interest organization dedicated to protecting and improving the ecological and aesthetic qualities of the wildlands and wildlife communities of the western United States for present and future generations. WLD does so by fostering the natural enjoyment and appreciation for wildlands habitats and wildlife by means of legal and administrative advocacy, wildland and wildlife monitoring and scientific research, and by supporting and empowering active public engagement. WLD has offices in Boise, Idaho and Hailey, Idaho.

Introduction –

Itafos Conda, LLC (Itafos) submitted a phosphate mine and reclamation plan (MRP) for the Husky 1 North Dry Ridge (H1NDR) project to the Bureau of Land Management (BLM) on April 13, 2020. The BLM reviewed the MRP to determine if it and other application materials complied with requirements in the Code of Federal Regulations (CFR) (43 CFR 3592.1) and were complete, and informed Itafos that additional information was needed. Itafos submitted a revised MRP on June 19, 2020.

The mine would be located about 16 miles (26 road miles) northeast of Soda Springs in Caribou County, Idaho on existing and proposed modifications to federal phosphate leases, mostly on federal lands within the Caribou National Forest. Leases issued under the Mineral Leasing Act of 1920 grant exclusive rights to mine and dispose of the federal phosphate deposit.

Most activities would occur on National Forest System (NFS) lands on federal phosphate leases, some would occur off-lease and require a recommendation from the Forest Service and issuance of several special use authorizations from the U.S. Forest Service (USFS) Caribou-Targhee National Forest. Therefore, the BLM and USFS are joint lead agencies for this EIS. The U.S. Army Corps of Engineers (USACE), the Idaho Department of Environmental Quality (IDEQ), the Idaho Department of Lands (IDL), and the Idaho Office of Energy and Mineral Resources are cooperating agencies.

Preliminary groundwater fate and transport modeling indicated that the backfill cover in the MRP would not meet regulatory requirements for surface water. Itafos developed several alternative covers in response. The Proposed Action analyzed in this Environmental Impact Statement (EIS) is the June 19, 2020, version MRP with the Preferred Alternative Configuration cap and cover.

Location Operations would occur on the Federal Mineral LeasesIDI-8289 (NDR), IDI-05549 (H1), IDI-04 (Maybe Canyon), and IDI-0678 (Dry Valley Pit D). Itafos is also requesting modifications to phosphate lease boundaries for the H1 lease (559 acres). The project is in portions of Township 7 South, Range 44 East, Sections 17, 20, 21, 28, 33, and 34; Township 8 South, Range 44 East, Sections 3, 4, 8, 10, 14, 15, 21, 22, 23, 24, and 25; and Township 8 South, Range 45 East, Sections 30, 31, and 32; Boise Meridian.
**Overall Position –**

Before the BLM and USFS approve the MRP, modify the lease(s), and issue special use authorizations, the BLM and USFS must comply with the National Environmental Policy Act (NEPA) by analyzing the environmental impacts of mining and reclamation operations along with reasonable alternatives as well as the projects compliance with other environmental laws such as the Endangered Species Act (ESA), the Clean Water Act (CWA), the Federal Land Policy and Management Act (FLPMA), the National Forest Management Act (NFMA), the Approved Resource Management Plan (ARMP), and the Caribou National Forest Revised Forest Plan (CNF RFP). As the Husky 1 North Dry Ridge mine is likely to have significant impacts, an EIS is appropriate to document this analysis.

Our review of the DEIS for the Husky 1 North Dry Ridge Phosphate Mine reveals violations of the intent of NEPA, NFMA/FLPMA and the CWA. NEPA considerations include failures to take a **Hard Look**, evaluate **Cumulative Effects** or provide **Reasonable Alternatives**. NFMA/FLPMA failures include inadequate evaluation of population trends/viability for threatened and endangered species, special status species, migratory birds, habitat capability and suitability and preserving the productivity of the land with sustainability. CWA violations include groundwater contamination, sedimentation of streams, destruction of streams, springs, riparian and wetland habitats, and stream dewatering and re-routing. We see no action by the mining companies, IDEQ, CTNF or BLM to address these latter issues while continuing to add additional cumulative impacts from one approved project after the other. Mitigation is unspecified while cumulative impacts analysis consists of generalized statements which appear to fail compliance with NEPA and the APA. **The provisions of the Approved Resources Management Plan (ARMP) that are deficient in the DEIS are outlined in Attachment 1 - Pocatello ARMP Goals, Objectives, Actions. Forest Plan commitments are not addressed as described in detail in Attachment 2.**

It is especially troubling that these mines are being approved in an area deemed a Superfund Site subject to Natural Resource Damages from past and/or ongoing mining pollution. In past comments we have questioned whether the economic benefit outweighs the environmental costs of mining phosphate in this region. According to the recent Smoky Canyon East EIS, this region produces 15% of the phosphate rock in the US while Florida and North Carolina produce 85%. **There is no evaluation of the value of the Public Lands to present and future generations for its inherent benefits of water supply, fish, wildlife, and recreation. The American People are left with a permanent burden of water pollution, degraded water supplies, lost fish and wildlife habitat, reduced productivity and reduced or eliminated species.** These costs are externalized and only a model (HEA) of supposed values (DSAYS) lost from the directly disturbed areas is mentioned. These costs are partially offset by claimed benefits of the reclamation which will not restore what is lost.

For the Dairy Syncline mine, we estimated the annual revenue will be on the order of half a billion dollars, yet mitigation is minuscule and consists of a small payment to a third party with no site-specific mitigation described. **Mitigation of the habitat fragmentation, watershed, and riparian damage in the mining area of SE Idaho should be a permanent, ongoing effort with an annual budget from all of the mining companies in the tens of millions of dollars.** This would be on the order of 0.5% of our estimated revenue base for these mines. Mitigation for these phosphate mines is paltry at best. **Paying minimal dollars under the presumed Habitat Equivalency Assessment (HEA) for unspecified mitigation does not address the site-specific nature of the effects.** Many of which are permanent, such as loss of attributes such as productive topsoil that evolved over thousands of years, native plant communities and forests and altered or lost watersheds, springs and streams. Nor does it evaluate the related losses outside the direct disturbance area from human activity associated with mining. Nor does it address the regional cumulative impacts to habitat and Corridor integrity from the phosphate mining industry and other uses. Later in these comments we outline proposed mitigation actions that can be undertaken to reverse some of these effects.
Groundwater impacts throughout these mine DEISs are minimally described at best. Models used depend on numerous parameters, each of which has a wide range of variability. Cover systems and reclamation are never described, no test plot data for revegetation or lysimeter tests for leachates have been provided, or perhaps they have not been conducted. We conclude that these mining projects are an experiment with undetermined results. Past phosphate mines surely had models and made claims regarding their efficacy, yet even as recent as Smoky Canyon, selenium pollution still occurred in streams due to inadequate environmental protection measures and apparent failures in analysis and design.

The DEISs for all the mines that we have reviewed disclaim impacts to wildlife or Corridor integrity by setting up a straw man then using that as a basis for its conclusions of negligible or minimal impact. This straw man is essentially restated as saying that even though habitat will be destroyed, degraded and wildlife negatively impacted, there is habitat elsewhere and populations will remain unharmed. But these DEISs do nothing to quantify this “other habitat” and its capability and suitability to function as a corridor or to support populations of fish and wildlife, or for that matter, what the population trends might be. In fact, the wildlife analyses are based on data collected a decade ago.

The DEIS does not include the results of a formal consultation with the US Fish and Wildlife Service (USFWS) regarding the impact of the project on lynx, grizzly bears, and wolverines and therefore is not available for public review and commenting prior to the project approval by the FS and BLM.

Due to limited time, our comments are more general in nature than preferred. After all, the Simplot team and its consultants spent years and according to the Smokey Canyon East DEIS front cover, $14.3 million on preparation of the DEIS. We hardly have the staff and resources to match this expenditure of time and money on behalf of these proposed mining projects. We need data to inform our comments such as GIS files, but those must be obtained through a FOIA. There is no time for that process in the commenting time frame when you consider multiple project NEPA processes running concurrently with their 30-day comment periods.

Purpose and Need –

The Purpose and Need is simply stated in the Federal Register, Vol. 85, NO 247 on Wednesday, December 23rd, 2020. "The purpose is for the BLM and USFS to evaluate and respond to the plan (assuming MRP) submitted for the recovery of phosphate ore and to modify leases, in accordance with the Mineral Leasing Act of 1920 as amended (MLA)… “The need for the Husky 1 North Dry Ridge Project is to develop the phosphate resource, using an economically viable method, in accordance with Federal laws and regulations governing Federal mineral leases, and to allow Itafos Conda LLC to exercise its right to develop the leases and ensure economically viable and continuous phosphate operations that are in compliance with established requirements.”

Section 28 of the Mineral Leasing Act of 1920 (41 Stat. 449), as amended (30 U.S.C. 185) (See Attachment 3), is further amended to read as follows:

“(h) (1) Nothing in this section shall be construed to amend, repeal, modify, or change in any way the requirements of section 102 (2) (c) of any other provision of the National Environmental Policy Act of 1969 (Public Law 91-190, 83 Stat, 852).

“(2) The Secretary or agency head, prior to granting a right-of-way or permit pursuant to this section for a new project which may have a significant impact on the environment, shall require the applicant to submit a plan of construction, operation, and rehabilitation for such right-of-way or permit which shall comply with this section. The Secretary or agency head shall issue regulations or impose stipulations which shall include, but shall not be limited to: (A) requirements for restoration, revegetation, and curtailment of erosion of the surface of the land; (B) requirements to insure that activities in connection with the right-of-way or permit will not violate applicable air and water quality standards nor related facility siting standards established by or pursuant to law; (C) requirements designed to control or prevent (i) damage to the environment (including damage to fish and wildlife habitat), (ii)
damage to public or private property, and (iii) hazards to public health and safety; and (D) requirements to protect the interests of individuals living in the general area of the right-of-way or permit who rely on the fish, wildlife, and biotic resources of the area for subsistence purposes. Such regulations shall be applicable to every right-of-way or permit granted pursuant to this section and may be made applicable by the Secretary or agency head to existing rights-of-way or permits, or rights-of-way or permits to be renewed pursuant to this section.

The Pocatello ARMP (Attachment 1) provides goals of providing for an ecologically healthy environment (GE-2); provide for proper nutrient and hydrological cycling and energy flow (GE-3); provide for soil quality, productivity and hydrological function (SW-1); protect and maintain watersheds to capture, retain and release water of a quality that meets state and national standards (SW-2); provide for proper functioning condition of riparian areas (VE-1); provide for old growth characteristics where forest treatments are implemented (VE-3); manage wildlife habitats so vegetation composition and structure assures the continued presence of fish and wildlife as part of an ecologically healthy system (FW-1); manage special status species and their habitats to provide for their continued presence and conservation as part of an ecologically healthy system (SS-1); assure land classifications and withdrawals of public lands are appropriate to protect important resource values (LR-4); Balance development of public land, such as ROW, utility corridors and alternative energy development (e.g., wind, solar, biomass) with the protection of natural resources and public enjoyment and recreation, consistent with natural resource values and uses (LR-6); develop mineral resources (oil and gas, geothermal, solid minerals) consistent with other resources and uses as part of an ecologically healthy ecosystem (ME-2).

FLPMA further incorporates language from the Multiple Use and Sustained Yield Act stating in part, "use of some land for less than all of the resources; a combination of balanced and diverse resource uses that takes into account the long-term needs of future generations for renewable and non-renewable resources, including, but not limited to, recreation, range, timber, minerals, watershed, wildlife and fish, and natural scenic, scientific and historical values; and harmonious and coordinated management of the various resources without permanent impairment of the productivity of the land and the quality of the environment with consideration being given to the relative values of the resources and not necessarily to the combination of uses that will give the greatest economic return or the greatest unit output." 43 USC 1702(c).

The project information included in the DEIS does not explain how this project is part of "an ecologically healthy ecosystem" or provide the other attributes listed above from the ARMP. Nor does it meet the intent of the provisions of FLPMA regarding sustainability or consideration of other values and balancing of resource uses. In view of the ongoing destruction of wildlife habitat and natural resource damages occurring in the mining area in SE Idaho, it would seem appropriate to have qualified this Purpose and Need to ensure no further selenium pollution to surface waters, ground waters, soils and vegetation and to rectify past damages such as the loss and habitat modification of streams and springs, fragmentation of sage grouse habitat and the Corridor.

In addition, the superimposition of mining, haul roads, transmission lines, roads, and ATV/ OHV traffic with associated dust and noise, snowmobiles and livestock grazing with its water diversions, stream and water quality degradation, and overall habitat degradation is opposed to the intent of this definition. Each succeeding project is proposed, analyzed, and approved as if all the other activities are not connected and degrading the productivity of the land, which in the case of phosphate mining is permanent impairment, counter to those principles and goals outlined above.

Y2U, AWR, NEC, SRW and WLD would argue that the Forest Service has failed to effectively analyze the magnitude of the impact of climate change, phosphate mining, logging and "vegetation management", and domestic livestock grazing on forest structure, aspen regeneration, and overall forest health in the project area.
Proposed Action –

Y2U, AWR, NEC, SRW and WLD do not support the proposed action.

Alternatives –

While there is an No Action alternative presented in the Federal Register, there was no alternative mentioned that will restore fish and wildlife habitat, Corridor integrity or prevent mining below the Wells aquifer water table and liners in any areas subject to percolation and contamination of groundwater, particularly the Wells Aquifer. It appears these resources are to be sacrificed over the long term when alternatives such as road closures, stream and watershed restoration are available to reduce fragmentation, improve fish and wildlife habitat and increase wildlife security.

There must be an alternative that specifically addresses climate change, phosphate mining, logging and “vegetation management” and livestock grazing impacts on forest stands, understory conditions and aspen recruitment, and the impact that climate change and livestock grazing have on overall forest resiliency.

There must be an alternative that addresses the Regionally Significant Wildlife Corridor, ESA, special status species such as Grizzly bear, goshawk, Canada lynx or wolverine, or for that matter the native plant community and the impact that this project will have on these species. It should include mapping and identification of all roads, trails, open or closed, user created or not and a plan to close the illegal roads and trails, while also reducing the OMRD to within limits recognized in the Caribou National Forest Revised Forest Plan (CNF RFP).

1. Regionally Significant Wildlife Corridor

Circa 2000, the Wasatch Cache National Forest produced the map shown in Figure 1 representing the Corridor. The Forest Service should provide a map and analysis of the Corridor addressing habitat fragmentation and the presence of core, corridor, Lynx Analysis Units (including the LAUs proposed, but omitted from the RFP for the 2003 RFP and an analysis of their condition then and current conditions), Roadless Areas, Wilderness Areas, NRAs, areas closed to livestock grazing, security areas, and Goshawk home ranges. Then provide an alternative that proposes road closures to attain a scientifically defensible density per square mile, grazing allotment closures, fence removals, and setting noise limits on vehicles. Winter use should be closed or severely limited in the CEA and Corridor so that lynx, wolverine, and other far-ranging species (elk, deer) have an opportunity to migrate and have security cover during all seasons. The Forest Service can use its Prohibition Authority (36 CFR 261) to regulate noise and other activities detrimental to wildlife such as hunting, trapping, or harassing wildlife.

More details on the needed analysis and mitigation are provided at the end of these comments.

The FEIS for the 2003 Caribou National Forest Revised Forest Plan (CNF RFP) provides a section on corridors in Volume IV. In that section (pages D-4 to D-8), a process for assessing connectivity is suggested. This includes:

- Assess historic patterns in vegetation and relative connectivity.
- Assess current patterns in vegetation and relative connectivity, including the impacts of human disturbance or physical barriers.
- Compare historic and current patterns of relative connectivity to determine if animal movement opportunities have been significantly interrupted.
- Consider ecologically based measures to restore historic animal movement, referring to Table 1 provided therein.
The CNF RFP FEIS also summarizes past efforts at corridor identification, including factors to consider when identifying linkages. The map in that FEIS Figure 1 (D-5) is referenced in that discussion. Specifically mentioned is the Caribou, Webster, and Preuss Subsections, pointing out fragmentation by mining, roads and past timber harvest. Migration corridors for deer and elk are discussed and Map 1 shows Canada Lynx Potential Linkages. The NEPA analysis for the Husky 1 North Dry Ridge mine must take a hard look at the mapped area for lynx linkage and conduct the analysis suggested. The mining industry is responsible for significant fragmentation in these areas as is the CNF with its high road density (OMRD plus all the illegal, closed or temporary roads and trails). That Map 1 also shows two areas where the linkages cross highways 30 and 34. The recent Crow Creek Pipeline DEIS also described US 89 in Wyoming as a significant barrier. Mitigation is needed for these places.

The DEIS (pS-17 and others) notes that noise and disturbance do occur but would be temporary. Consideration of an alternative that analyzed noise impacts on wildlife was dismissed as not meeting the purpose and need (p43). The Affected Environment section (p59) notes that "Some resources were considered and evaluated but are not discussed in detail. These are discussed in Section 3.16 and include air quality, noise, scenery, cultural resources, threatened and endangered plants, sensitive plants and state ranked plants, threatened, and endangered fish, threatened and endangered wildlife, sensitive wildlife (some species), paleontological resources, environmental justice, bioaccumulation in vegetation, and geologic hazards. So, right up front the DEIS states that the agencies and Itafos will not do the requisite "hard look" required by NEPA.

The Smokey Canyon East DEIS (p3-23) notes the affected environment for noise impacts is limited to 2640 feet from the source for wildlife and 1000 feet for residences. It uses the dBA scale to protect against human health effects which emphasizes mid- and high-frequency sounds, while noting that natural levels are 35 dBA in rural areas. Table 3.4-1 cites noise levels (dBA) from different sources but does not address ATVs/OHVs and dirt bikes common in the Forest, its access roads or snowmobiles, nor does it categorize blasting, mining and haul truck noise levels. The baseline study was conducted on one day at five sites for 15 minutes during the day and at night finding minimum and maximum levels of 25.9 and 66.6 dBA. This is inadequate and certainly is not a hard look.

We note that the Winschell Dugway DEIS (p68) provides an analysis of sound decay with distance, assuming the source sound level of one or two ATVs/OHVs at 96 – 99 dBA would decay to 69 – 72 dBA at 3200 feet from the source. This is still above the EPA recommended outdoor limit of 55 dBA. (DEIS 3-24). The implication of this is that the affected environment for noise impacts limited to 2640 feet for wildlife and 1000 feet for residences is inadequate and does not provide an adequate buffer, either around the mine footprint or roads in the CEA or Corridor.
We also note that use of the dBA scale likely underestimates the noise effects wildlife might suffer as it truncates the lower and higher frequency sounds. True dB levels using the dBC scale are more representative of mechanical sounds as well as providing a full range of sound levels that might affect wildlife.1 The closed and open roads and trails, plus illegally created and used trails must be mapped and sound contours plotted showing the distance and aerial effects on wildlife security areas and “quiet” users. How much of the CEA are protected from these sound levels? We note also that the Winschell Dugway DEIS (p 65) notes, “During the dry season, dust from vehicles on the trail is visible for miles.” This also impinges on the Visibility analysis here. What are the human health effects of this dust plus that from the mining aside from the visible deterioration of the naturalness of the Forest, RWA, IRA, CEA, Corridor? More is discussed on noise in a later section.

2. Canada Lynx

The DEIS must include the results of a formal consultation with the US Fish and Wildlife Service (USFWS) regarding the impact of the project on lynx. Please include a formal consultation in the FEIS.

The DEIS (p139) notes that the Caribou National Forest is considered linkage habitat, citing the 2003 RFP direction for maintaining that linkage habitat. This direction includes "vegetation, wildlife, and lands goals, objectives and standards." In our January 19th, 2021, scoping comments we provided Attachments (1 and 2) which summarized provisions of both the Pocatello ARMP and the Caribou RFP that are applicable to this project. These summaries are again attached to this document (Attachments 1 & 2). The DEIS does not address these provisions and merely deals in general statements with no in-depth analysis. An example of this is the description of aspen (DEIS p138) which states for aspen communities, "The diverse understory of shrubs and herbaceous plants provides high-quality forage for big game and other wildlife." This is a generic description and bears no relationship to the actual on-ground condition of aspen communities in the analysis area or the Caribou NF itself. The Forest Service's own PFC assessments for aspen have shown that these communities are heavily degraded and therefore, cannot provide the ecosystem services needed by wildlife. (Caribou RFP FEIS Vol IV pD-47). This is but a single example illustrating how this DEIS fails to take a hard look at impacts, both direct and indirect of this project along with past and foreseeable actions and cumulative effects. The discussion of all forest types and habitats in the DEIS is flawed for the same reason. There is no real analysis, and it does not reflect even the level of information provided by the Caribou NF which is includes in its own FEIS analysis for the 2003 RFP.

As mentioned above in Section 1. of this document, the Caribou RFP described a process for assessing connectivity (CNF FEIS Vol IV pD4 - D8). It is repeated here:

- Assess historic patterns in vegetation and relative connectivity.
- Assess current patterns in vegetation and relative connectivity, including the impacts of human disturbance or physical barriers.
- Compare historic and current patterns of relative connectivity to determine if animal movement opportunities have been significantly interrupted.
- Consider ecologically based measures to restore historic animal movement, referring to Table 1 provided therein.

The current state of this linkage area must be analyzed and reflect all human disturbances to habitat integrity and quality. This would include mines, roads, ATVs/OHVs and snowmobile activity, rail lines, pipelines, timber harvests, forest and vegetation treatments, livestock grazing and their effects on habitat continuity or fragmentation, understory plant communities and their condition as compared to potential. These all affect the ability of lynx and other species to inhabit the area or migrate through. It is insufficient to claim they will just move around the mine footprint by using other habitat without specificity of the habitat features needed by each species as compared to that available. The quality of the habitat in that periphery is never analyzed relative to the habitat needs for lynx or the habitat fragmentation that may be precluding lynx from otherwise suitable habitat.

1 http://www.sengpielaudio.com/calculator-dba-spl.htm
There have been no reports of lynx presence in SE Idaho for over a decade. We do not see any analysis as to why this is so since the CTNF borders lynx Critical Habitat and lynx historically occurred here. Table 40 of the DEIS describes the various habitat or cover types in its 65,418-acre analysis area. The current status of each of these cover types for the species of interest must be quantified and used as a basis for analyzing impacts.

The DEIS (p139) also describes the wildlife analysis area as unoccupied by Canada lynx based on the 1999 - 2003 National Lynx Survey and baseline snow-track surveys conducted by Tetra Tech (2014). This is a convenient deflection around historical lynx occurrence by citing data collected after much of the habitat fragmentation and degradation in the area had already occurred. We addressed this issue in a letter dated August 13th, 2021, to Mel Bolling, Supervisor of the CTNF (Attachment 4). The following discussion includes points from that letter. This is highly relevant to Husky North Dry Ridge and its analysis of effects to Canada lynx and other wildlife species.

In our letter, we requested that the Caribou Targhee NF conduct an objective analysis of the habitat and historical occurrence of Canada lynx in Idaho and respond with a plan as to how it will proceed with the analysis. The analysis should document the Forest types and elevations where lynx have historically been observed or tracked in Colorado, Idaho, Montana, Wyoming, and Utah as these states have many similar forest and habitat types where lynx have historically occurred or now live and migrate after reintroduction, such as the Colorado reintroductions (See Figures 2 – 6). The analysis should also document migration corridors and habitat connections. A broad look such as this would likely capture the full range of habitats and connections historically used by lynx and allow an evaluation of their current capability and suitability for Canada lynx in the CTNF.

Once determined, these habitat types within the CTNF should be mapped and delineated as lynx habitat. That habitat should then be further analyzed to document the nature and extent of human alteration or fragmentation by roads, mines, pipelines, transmission lines, ATVs/OHVs and snowmobile activity, timber projects, fires (both natural and prescribed burns), livestock grazing, and other alterations. This analysis should be supplemented using recent published information on lynx habitat use.

Over the years we have commented on numerous projects in the CTNF. Most recently we have been addressing phosphate mines, timber-related projects, and the Crow Creek Pipeline. We are also aware of the change in Lynx Analysis Units (LAU) in the Targhee NF from 2001 to 2014, resulting in a decline in the number and area of LAUs and by implication, lynx habitat. We have seen no designation of LAUs in the Caribou NF and no analysis of historical or current lynx habitat in either Forest. The Caribou NF RFP FEIS Appendix D Map 1 depicts lynx linkage and provides for a process to assess connectivity (pD-4). To date, we have seen no such analysis to provide for Canada lynx. This DEIS barely acknowledges the existence of the linkage in the Caribou NF and does no analysis of its condition.

The closest thing to an analysis we have seen is the 2018 Targhee National Forest Lynx Analysis Units FEIS (LAU FEIS). The LAU FEIS describes the changes to LAUs between 2001, 2005, and 2014 and the rationale for the changes. Citing the Canada Lynx Conservation Assessment and Strategy (LCAS) as its basis, the Forest Service and Fish and Wildlife Service delineated LAUs totaling 1,134,779 acres of lynx habitat (2001 map). These consisted of 645,049 acres of primary suitable habitat, 126,795 acres of secondary suitable habitat, 98,554 acres of primary unsuitable habitat and 8,565 acres of secondary unsuitable habitat (citing USDA FS 1999). (LAU FEIS p3). The overall acreage declined significantly in further modeling efforts that produced the 2005 and 2014 maps of LAUs.

We find that the LAU FEIS is flawed in its analysis. For example, the model painted black and white lines such as 70% subalpine fir as the demarcation between primary and secondary habitat. Also, the modeling seemed to be saying lynx habitat here in the Caribou Targhee NF had to be the same as in Alaska and Canada where much of the research used in the LCAS occurred. It's as if a lynx, which is moving through the forest, encounters a change in subalpine fir cover from 70% to 69% and then turns around. Or, a lynx, walking over the snow, encounters lodgepole pine or rhyolitic soils in Island Park, and turns around.

The LCAS acknowledges that lynx use many different habitat types across its range and as one moves from north to south in latitude, the forested types and food resources transition. Canada lynx eat rabbits, not just snowshoe hares, they eat grousie, red squirrels, beaver, mice, voles, and other available prey. What the models appear to miss is the concept of habitat functionality vs habitat structure and the concept of ecotones, or transitions. For example, the omission of winter range in the 2001 map was an arbitrary construct as if it doesn't snow on winter range, or there are no prey items there, or lynx would avoid winter range if moving across the landscape. Or by omitting habitat by considering lodgepole pine, or less than 50% subalpine fir, as dry habitat unusable by lynx in places like Island Park with the substantial snow and variety of prey that occur there.

Then there is the assumption that lower snowshoe hare densities on rhyolitic soils would not support lynx, while forgetting that lynx use a variety of prey items. These dry habitat types were then excluded due not only to the snowshoe hare, but also low subalpine fir occurrence. Using watershed boundaries as artificial limits on LAUs, combined with the minimum 10 sq. mi. lower threshold of an LAU also has the probability of breaking up larger areas that could qualify as lynx habitat into smaller areas that would then be disqualified.

Overriding much of this is the lack of observational data that could have documented a wider range of lynx in SE Idaho (See Figures 2 & 6). Recent survey efforts are occurring in areas heavily altered by roads, mines, timber harvest, snowmobiles and ATVs/OHVs (note that snowmobile have access to 97% of the Caribou NF). Then there is the grazing of domestic cattle and sheep with the resulting depletion of herbaceous forage, loss of aspen habitats and riparian shrubs and grasses that snowshoe hares and other rabbits and lynx prey depend upon. All these combined factors are not addressed in the habitat evaluations, project NEPA analyses, or surveys we have reviewed. The result is a universal finding that no lynx are present and therefore there is no impact or effect. Yet these very activities may be the reason there are no lynx present.

In its Rule designating critical habitat for Canada lynx in 2014, the USFWS noted: "This rule also rescinds the existing State boundary-based definition of the lynx DPS and replaces it with a definition that extends the Act’s protections to lynx “where found” in the contiguous United States. This change ensures that lynx, which are known for their long-distance dispersal capability and tendency to occur in places well outside of typical habitats, receive the Act’s protections wherever they occur in the contiguous United States." Lynx have been "found" in SE Idaho in recent years. In the recent Smoky Canyon DEIS Figure 3.8-1 a Canada lynx observation was recorded in the Stewart Canyon area. A Canada lynx female with two young was observed 15 miles northwest of the Smoky Canyon mine study area. (Smoky Canyon DEIS p3-120). We also note that lynx critical habitat ends at the Wyoming-Idaho border at its southern extent. Do Canada lynx observe state borders and turn around?

Further, the USFWS in its Rule listing the lynx as Threatened said, "Because a substantial amount of lynx habitat in the contiguous United States occurs on federally managed lands, particularly in the West, we conclude that the factor threatening lynx in the contiguous United States is the lack of guidance in existing Federal land

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management plans for conservation of lynx and lynx habitat." However, as was noted in October of 2017 by the FWS in their Species Status Assessment of lynx in the contiguous U.S., there has to date been no actual verification that the Northern Rockies Lynx Management Direction is conserving lynx. This needs to be corrected by amending the CTNF Forest Plan to include historical and potential lynx habitat and migration routes in SE Idaho.

Having lived and observed snowshoe hares and red squirrels over the years at Kiesha's Preserve in Paris Canyon, Idaho, we have seen how they prosper in the absence of livestock, as do beaver and other wildlife. Snowshoe hares occur in Douglas fir and mixed conifer stands with low to high canopy cover of conifers. They use the adjacent aspen as a foraging area and corridor to the riparian area where they forage at night finding plentiful twigs, buds, and other foods. They also will move through the sagebrush between conifer stands and the riparian area. Trail cameras repeatedly find them on ridges, in mountain mahogany and other non-fir habitats.

The Forest Service provides a map of historic lynx distribution showing that the Caribou NF has historically been used by Canada lynx. There are core and peripheral or linkage areas. The Biological Assessment for Canada lynx documents the importance of peripheral areas as:

Peripheral populations may contain valuable genetic, physiological or behavioral adaptations that are unique to their ecological success. Because suitable habitats in areas where populations act as metapopulations are spatially separated, the persistence of a metapopulation is dependent on the efficiency and success of dispersing animals in reaching isolated patches of suitable habitat. When patches are fragmented and connections between patches do not exist, recolonization becomes problematic and the metapopulation may be unable to persist, even though patches of suitable habitat remain (Meffe and Carroll 1997). Additional fragmentation and isolation of suitable habitat occurring as a result of land management activities can not only affect small, isolated habitat patches supporting smaller populations but also large contiguous patches supporting higher population levels.

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10 USDA Forest Service. 2007. Final Environmental Impact Statement Northern Rockies Lynx Management Direction National Forests in Montana, and parts of Idaho, Wyoming and Utah. Figure 1-1.
Ruggiero et al (1999) also discuss the effects of fragmentation on competition with lynx by other carnivores and the loss of connectivity. The Forest Service map of historic lynx distribution for 1842 - 1998 is shown in the referenced link and in Figure 2. This reveals the historical areas used and the pattern of connectivity, which clearly connects Colorado populations to the Greater Yellowstone Ecosystem and northern Rockies.

The Ashley, Wasatch-Cache and Uinta NFs also published a map showing lynx analysis units, primary and secondary habitat, and connections. (Figure 3). The Caribou-Targhee NF should also publish such a map.

Figure 3. Lynx LAUs, Primary and Secondary Habitat and Connections.

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14 http://www.fs.usda.gov/detail/r1/landmanagement/resourcemanagement/?cid=stelprdb5160688

In a sophisticated modeling of lynx habitat, it was determined that the Uintas are core lynx habitat.\textsuperscript{16} (Figure 4).

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure4.png}
\caption{Modeled corridor from Bates and Jones. Orange is depicting a core area for lynx, while yellow are linkages. Mine leases in Idaho shown in various colors blue, red, orange depending on status.}
\end{figure}

\textsuperscript{16} Bates, W. and A. Jones. 2010. Least-Cost Corridor Analysis for Evaluation of Lynx Habitat Connectivity in the Middle Rockies. Wild Utah Project, Salt Lake City, UT. https://app.box.com/s/0g8b1ryqg1iz6r1fd61rdkc8fso97oh5
In Figure 5 below, Lynx Least Cost Corridors and Core Habitat Areas are shown.

Figure 5. Lynx Least Cost Corridors and Core Habitat Areas - Reproduced from Bates and Jones, 2007
More recently, the Colorado Division of Wildlife tracked radio-collared lynx released in Colorado. The tracked lynx show a similar pattern of use in the map. (Figure 6).\textsuperscript{17} These maps show the migration path, and that lynx have been historically using NE Utah and SE Idaho and have many occurred in the Uinta Mountains. Given that there are resident lynx populations in Colorado and Wyoming today and given that the Uinta Mountains are recognized as a regionally significant wildlife corridor and potential core area, it is no surprise that lynx still use the Caribou-Targhee NF. Indeed, telemetry records confirm that there is a “hot spot” of lynx occurrences at the western end of the Uinta Mountains, where collared lynx from Colorado remain for a time before moving on, presumably unable to find mates. As of 2009, at least 22 individuals had made at least 27 visits to the state of Utah, recorded by air telemetry and satellite.\textsuperscript{18} The highest concentration of lynx locations in Utah, as identified by telemetry, is in the Uinta Mountains. “The use-density surface for lynx use in Utah indicates the primary area of use being located in the Uinta Mountains.”\textsuperscript{19}

![Figure 6. Colorado Division of Wildlife tracked radio-collared lynx.](image)


\textsuperscript{18} Colorado Department of Wildlife (CDOW) Report, 2006-7, Tables 4 and 6, pages 23 and 24.

\textsuperscript{19} Ibid. page 10; see also Figure 2, page 29.
A recent paper found that lynx exhibited decreasing use of stand initiation structures up to a maximum availability of 25%.[20] Another found that 50% of lynx habitat must be mature-undisturbed forest for it to be optimal lynx habitat and no more than 15% can be young clear-cuts, i.e., trees <4” dbh.[21] The study also found that lynx do not use clear-cuts in winter when they are at most risk of starvation.

If the current best science is used to measure existing and proposed levels of lynx habitat within an LAU, this approach would ensure that such an assessment would provide a reliable measure of project impacts on lynx, which the Lynx Amendment is incapable of achieving. See Attachment 5 outlining the issues with lynx habitat assessment and the 2007 Lynx Amendment.

In a 2019 paper, "Management of forests and forest carnivores: Relating landscape mosaics to habitat quality at their range periphery" the authors show that the Northern Rockies Lynx Management Direction is not based on the best available science.[22]

In Section 1. of this document, we described the Regionally Significant Wildlife Corridor connecting the Greater Yellowstone Ecosystem to the Uinta Mountains and Southern Rockies and how the higher elevation component occurs in SE Idaho and NE Utah. Figures 1-6 show this Regional Corridor, LAUs in the Forests in NE Utah, observational data and maps generated from an analysis of lynx habitat requirements and habitat fragmentation.[23] The figures show areas of focus for Forest Service analysis to develop criteria to restore and maintain functionality and connectivity for lynx and other species such as Grizzly bear and wolverine. This analysis needs to happen, those criteria to be set in place and used, instead it is never done as each successive project is approved.

As Lewis and Wenger report, "Questions about the most basic habits of Canada lynx in Idaho, such as their prey base, remain unanswered. The lack of Canada lynx studies —none have been done in Idaho and very few in the adjacent states —only adds to the puzzling nature of the species."[24] They also note that comparing Idaho to data from Canada and extrapolating data is "not a perfect fit". The reports of lynx observations and food habits from the numerous interviews in their report should be incorporated into any analysis about lynx in Idaho and Utah. They indicate lynx move in many different habitats. For example, lynx were found in places like Ashton and Island Park, Idaho, near Soda Springs and Montpelier, Idaho, and in sagebrush habitats where jackrabbits were plentiful. These places were likely excluded as habitat based on modeling in the Targhee LAU FEIS and apparently have never been analyzed in the Caribou NF.

Lewis and Wenger further describe the records of Canada lynx in Idaho between 1874 and 1998 as including 215 records at the Idaho Conservation Data Center which has since been phased out and replaced by integration into the Idaho Fish and Game website. The records are not accessible without paying a large fee and it is uncertain if the original records have been retained. Many records of lynx in SE Idaho were described by Lewis and Wenger and they noted that human activities such as timber harvest, snowmobile and ATVs/OHVs use have negative impacts on lynx populations and those activities were increasing in these areas. They also describe the lynx population that

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existed in the Uinta Mountains in the 1950's as reported by Harold Wadley, who worked for the Forest Service there. Today, the Forest Service denies any populations ever existed there.25

*Marble Mountain Audubon v. Rice*26 interprets NEPA to require the Forest Service to consider biological corridors and to ensure their functionality. The standard for such a review is the same “hard look” NEPA requires of other environmental effects. This means those corridors within the analysis area and linkages with areas adjacent to the analysis area need to be examined, plus the value of the entire analysis area, as part of a larger corridor within or between ecosystems. *Friends of the Bitterroot, Inc. v. USFS*27, and *Oregon Natural Resources Council v. John Lowe*28 also highlight the importance of including corridors as an element of consideration for an agency decision. Therefore, the Forest Service is required to address how the grazing and other management activities in SE Idaho compromise lynx habitat and connectivity to areas further north and south. This is needed to promote genetic diversity and population stability of lynxes among far-flung populations in the Rocky Mountains. While the following paragraphs discuss habitat fragmentation by timber projects as related to lynx use, the principles should apply to mines and the fragmentation they produce, in effect, eliminating forested habitats - essentially mines are clear-cuts that will never regenerate.

The Northern Rockies Lynx Management Direction Record of Decision (NRLMD ROD) and its standards and guidelines provided no standard for levels of mature forest habitat within LAUs and provided nothing for habitat not designated in LAUs. While it states that habitat connectivity will be maintained, there is no definition of what constitutes connected habitat, even though this can be defined by current science. The NRLMD ROD does not clearly define what qualifies as unsuitable lynx habitat, which is limited to no more than 30% of an LAU (VEG S1) with no more than 15% unsuitable habitat created in 10 years (VEG S2). The ROD glossary at 14 defines stand initiation habitat as generally developed after a stand-replacing disturbance by fire or regeneration timber harvest; a new single-story layer of shrubs, tree seedlings and saplings establish and develop, reoccupying the site; trees that need full sun are likely to dominate these even-aged stands. The glossary at 12 also defines lynx habitat in an unsuitable condition as the stand initiation structural stage but notes that unsuitable habitat can also be created by shelterwood cuts and commercial thinning depending on the resulting stand composition and structure. The ROD at 9 defines lynx habitat in an unsuitable condition as those forests in a stand initiation structural stage that are too short to provide winter snowshoe hare habitat; these conditions are created by stand-replacing wildfires, prescribed burns that remove all vegetation, or regeneration timber harvest. And, of course, in the case of mines which completely remove forested habitat. The ROD at 10 states that the definition of VEG S2 was changed to clarify that it only applies to timber management practices that regenerate a forest, as clear-cut, seed tree, shelterwood, and group selection. The VEG S2 standard applies to all timber management projects that regenerate forests, including clear-cuts, seed tree, shelterwood and groups selective cuts. The NRLMD does not ensure persistence of lynx, since there are no restrictions on the amount of an LAU that can be converted to habitats that are avoided by lynx, and to habitats that reduce habitat connectivity via mature forests. Where is the analysis for these timber-related factors in the Husky 1 North Dry Ridge DEIS for its analysis and cumulative effects, or wildlife analysis areas?

The 30% clear-cut standard for lynx habitat in the NRLMD is based on habitat recommendations published in 1989, while other key recommendations were ignored. Although these recommendations noted that monitoring was required to determine if they would be effective, no such monitoring was ever done before they were partially included in the LCAS and subsequently the NRLMD. Currently, the best available science demonstrates that the 33% opening level allowed by these recommendations are invalid, while the unused recommendations of maintaining a high level of forest cover of 69% has been validated. The 1989 Brittell recommendations for lynx habitat defined a level of habitat connectivity for lynx, which included denning, travel, and stalking habitat as 66% of each square mile of lynx habitat, not an entire LAU of many square miles with no guidance as to where within

28 109 F.3d 521, 526 (9th Cir. 1997)
that LAU habitat should be maintained. The lack of analysis or designation of LAUs in the Caribou NF has failed to take a hard look at historical lynx presence or the wide range of habitats and prey items used by lynx and the characteristics of those habitats needed as well as their current condition.

While clear-cuts and sparse forests may receive some lynx use, their suitability for lynx is significantly reduced for a significant amount of time. It has been shown not only that those clear-cuts and sparse forest are strongly avoided by lynx but that restoration of lynx habitat use in these logging areas to 50% of previous use takes 20 years in forest thinnings, and 34-40 years for selection cuts and clear-cuts. Also, all logging treatments are avoided by lynx for at least 10 years. Predictors for lynx reproductive success within occupied female home ranges were the connectivity of mature forest, intermediate (10 - 15%) amounts of young regenerating forest, young regenerating forest patches with low perimeter - area ratios, and the adjacency of mature forest to young regenerating types. Female lynx home ranges with greater than 50% mature forest and 10 - 15% young regenerating forest appear to be the optimum.

More recent work has characterized habitat quality of Canada lynx at their "range periphery".

Our results indicated that the probability of a female producing kittens was most associated with the connectivity of mature, multistoried forests (composed of mostly spruce-fir). However, the variation among female lynx accounted for ≈62% of the total variation explained in litter production, suggesting substantial individual-level variation. Thus, managers can contribute to increased reproductive success of female Canada lynx by facilitating the development of mature forests but measuring that success will be difficult given the individual variation. In core areas of high-quality females (i.e., produced kittens frequently), mature forest was 17% more abundant (i.e., ≈60% of the total core area), more connected, less clumpy, and exhibited 2.25-times larger patch sizes than the core areas of low-quality females. At the home-range extent, patterns were less pronounced while the abundance of mature forests remained high (≈50%) for high quality females. Additionally, we demonstrated that the relative density of snowshoe hares was ≥2.8 times higher in advanced regenerating forests compared to all other structural classes, including mature forest. Advanced regenerating forests accounted for ≈18–19% of the core area and home range of high-quality female lynx. Combined, our results suggest that a high-quality mosaic for female Canada lynx contains ≈50–60% mature forest and ≈18–19% advanced regenerating forest. Furthermore, we used Forest Inventory and Analysis data to characterize the approximate age distribution of advanced regeneration and mature forest, which was relevant for rotation schedules of forest silviculture. Results indicated that advanced regeneration was ≈20 to 80 years old while mature forest was ≈50 to ≥200 years old.

In addition, lynx spend a significant amount of time at the interface between mature and advanced regeneration forest. This is likely because advanced regeneration forest provides the most hares, but mature forest habitat makes these hares more accessible. This indicates that advanced regeneration forest subsidizes the occurrence of

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hares in adjacent mature forest where they are more accessible to lynx.\textsuperscript{33} One must ask, what are forest conditions of old growth and mature forest in the Caribou NF? How about in the Analysis and Cumulative Effects, or Wildlife Analysis areas for the Husky 1 North Dry Ridge mine proposal?

Some other characteristics of habitat were laid out in the LCAS. Most lynx observations in the Western US were in conifer forest within the 4,920-to-6,560-foot elevation zone and in the southern Rockies the 8,000-to-11,500-foot zone. Elevations increased as one moves south. Snowshoe hares comprised 35 - 97% of the diet with red squirrels of increased importance during hare declines. Hares feed on accessible twigs and stems in winter and forbs, grasses, and small shrubs in summer. Livestock compete directly with hares for forage due to high similarity in diets. Red squirrel populations are highest in dense closed canopy conifer forest with large amounts of woody debris. Populations are higher in young un-thinned lodgepole pine stands than in thinned stands. Den sites need large woody debris, can be in older regenerating stands, or mature conifer or mixed conifer. Primary vegetation types are lodgepole, subalpine fir, and Engelmann spruce with Douglas fir, aspen and dense riparian willow stands among other types used. Home ranges vary between males and females and hare density and can range from between 4 - 47 square miles in the U.S. Home ranges in Canada are larger.

Mr. Bolling provided a response to our letter (September 13, 2021) that described the studies determining the current status of lynx in the CTNF, essentially relying on the LCAS revision from 2013, the Northern Rockies Lynx Management Direction (2007), and the National Lynx Survey that basically restated the status of lynx in the Caribou NF as unoccupied and not subject to the NRLMD. Therefore, no LAU's or lynx habitat were mapped on the Caribou NF. The letter noted that, "Since no non-transient Canada lynx have been detected on the Caribou, mapping of habitat is not required. If Canada lynx are detected in the future, lynx habitat would be mapped consistent with the procedures in the 2013 LCAS and the best available science concerning lynx would be considered in proposed projects." Now, lynx using the linkage are considered "transient" thus not qualifying for habitat analysis or establishment of LAUs.

A summary of Canada lynx status attached to Mr. Bolling's letter pointed out that new information on lynx habitat has been generated since listing of Canada lynx 20 years ago. The Caribou RFP is almost 20 years old as well. It is time to revisit mapping and characterization of lynx habitat in the Caribou NF using the research we have summarized above. While the summary provided by Mr. Bolling attempts to further define downward the amount of lynx habitat by using too narrow criteria, even in this context, the primary source recommended is a 2021 paper which is a new species distribution model for lynx.\textsuperscript{34}

This model was based on GPS data from lynx in Washington (2007 - 2013), Montana (2004 - 2015) and Wyoming (1996 - 2021). The Wyoming data included observations in Idaho as well. Sixteen climate, topographic, anthropogenic, and vegetative environmental predictors expected to be related to lynx distribution were correlated with the observations. A map (Figure 7) of probability of lynx occurrence generated by the model clearly shows SE Idaho as predicted lynx habitat. It must be remembered that model included these recent observations of lynx in SE Idaho. It must also be considered that these observations were recorded in recent years after much habitat alteration has occurred and that areas otherwise suitable for lynx may be disqualified due to habitat fragmentation by roads, mines, timber projects and so forth. Thus, with active restoration such as road closure, protecting old growth, allowing forest regrowth, use of this model could show a much larger potential habitat for lynx in SE Idaho.

\textsuperscript{33} Holbrook, J.D., Squires, J.S., Olson, L.E., Lawrence, R.L., Savage, S., 2017. Multi-scale habitat relationships of snowshoe hares (Lepus americanus) in the mixed conifer landscape of the Northern Rockies, USA: cross-scale effects of horizontal cover with implications for forest management. Ecol. Evol. 7, 125–144.

The map in **Figure 7** projects high and moderate probability of lynx habitat occurring in the areas we have delineated in our scoping comments and above in **Figures 1** as the Regionally Significant Wildlife Corridor that includes the Caribou NF and Bear River Range to the south into Utah. We also note that road density in most of this area is excessive and is documented in the FEIS for the Caribou RFP. **The CTNF now needs to do the required analysis to identify lynx habitat and its condition in these Forests and do a detailed analysis of each project with the parameters we have identified herein.**

![Figure 7. Map of Modeled Canada lynx Habitat from Olson et al (2021)](image)

What is needed is an analysis that includes all of this information, including a broader definition of what constitutes lynx habitat and the effects of habitat fragmentation and livestock grazing on lynx habitat, prey, connectivity, and populations. **The Forest Service should have a consistent approach that would evaluate this across the Region.** For example, how do the criteria used in determining LAUs in the Utah National Forests compare to that in the Caribou Targhee NF. What habitats were used by lynx historically observed in Idaho, Utah, and other Rocky Mountain states?
A “hard look” must be conducted of habitat fragmentation, corridor functionality, vegetation treatments, road density, ATV/OHV and snowmobile activity, trapping and other human activity as well as livestock grazing and the associated impact on Canada lynx. That look must also include all ESA and Forest Plan requirements and intent as well as embody the best available science applicable to Canada lynx.

3. Wolverine

The DEIS must include the results of a formal consultation with the US Fish and Wildlife Service (USFWS) regarding the impact of the project on wolverine. Please include a formal consultation in the FEIS.

The Smokey Canyon East DEIS (4-83) notes the primary impact of the mine to wolverine would be disruption of movement through the general area (undefined) and could influence them to travel around the periphery of the Study Area. The Husky 1 North Dry Ridge DEIS once again does not analyze movement corridor(s) or their potential habitat, barriers, fragmentation. The FEIS for the CNF RFP provides Map 13 (D-140) showing sighting locations, elevations > 8,000 feet, and security areas. Security areas were buffered from roads and trails by 0.5 miles, showing that these affect the security habitat. In the recent Smoky Canyon DEIS Figure 3.8-1 showed a wolverine observation in Timber Canyon area. A hard look would require the areas shown in the Corridor and that Map 13 have a detailed GIS analysis as described above with appropriate noise and human activity buffers, showing all past, present and foreseeable activities, roads, trails, ATVs/OHVs and snowmobile activity, powerlines, pipelines, timber harvest areas. This DEIS fails to take a hard look at impacts, both direct and indirect of this project along with past and foreseeable actions and cumulative effects. There is no real analysis, and it does not reflect even the level of information provided by the Caribou NF which is includes in its own FEIS analysis for the 2003 RFP. Table 40 of the DEIS describes the various habitat or cover types in its 65,418-acre analysis area. The current status of each of these for the species of interest must be quantified and used as a basis for analyzing impacts.

Recently, a US District Court ruling remanded the USFWS Withdrawal of its Proposed Rule to list the distinct population segment of the North American wolverine occurring in the contiguous United States as a threatened species under the Endangered Species Act for further consideration. The ruling reviewed the science relating to the selection of denning sites in combination with snow presence during the natal period and recent analyses of potential climate change effects to snow pack that indicate a severe reduction in snow cover during this century with negative implications to wolverine populations. (This factor alone should place greater emphasis on habitat integrity and restoration for this project.)

The ruling also emphasized that populations in the US, which exist as meta-populations “require some level of regular or intermittent migration and gene flow among subpopulations, in which individual subpopulations support one-another by providing genetic and demographic enrichment through mutual exchange of individuals.” If connectivity is lost, “an entire meta-population may be jeopardized due to subpopulations becoming unable to persist in the face of inbreeding or demographic and environmental stochasticity.”

The study by Copeland, 2010\textsuperscript{37}, cited in the ruling, analyzed spring snow cover to determine overlap with known den sites, finding 97.9% overlap. They concluded that if reductions in snow cover continue to occur, “habitat conditions for the wolverine along the southern extent of its circumboreal range will likely be diminished through reductions in the size of habitat patches and an associated loss of connectivity, leading to a reduction of occupied habitat in a significant portion of the species range.” A second analysis by McKelvey, 2011\textsuperscript{38} used Global Climate Models to predict the change in distribution of persistent spring snow cover so that “for conservation planning, predicting the future extent and distribution of persistent spring snow cover can help identify likely areas of range loss and persistence, and resulting patterns of connectivity.”

McKelvey concluded that they expect, “the geographic extent and connective(ity) of suitable wolverine habitat in western North America to decline with continued global warming” and that “conservation efforts should focus on maintaining wolverine populations in the largest remaining areas of contiguous habitat and, to the extent possible, facilitating connectivity among habitat patches.”

In its Proposed Rule, the USFWS accepted these studies as the best available science with climate change as the driving factor. Other threats were considered of lower priority in comparison, “however, cumulatively they could become significant when working in concert with climate change if they further suppress an already stressed population.” The USFWS noted harvest, demographic stochasticity, and loss of genetic diversity as these secondary factors but avoided mention of habitat integrity and fragmentation by roads, infrastructure and human activity or loss of prey base due to depletion of herbaceous plant communities and cover by livestock grazing.

Robert Inman, PhD, a biologist, and Director of the Greater Yellowstone Wolverine Program at the Hornocker Institute/Wildlife Society noted that the USFWS singled out a particular activity, fur trapping, that can cause mortality, while ignoring the full range of human activities such as roadkill, before records were kept. So delineating habitat based on these records can understate actual range for wolverines. He also provides evidence that wolverines can den in areas lacking the presumed snow cover and that conditions suitable for competing for food are also a limiting factor. He further argues that road density was found to be a factor in an earlier telemetry-based habitat analysis, particularly at higher elevations. Wolverines were observed to avoid or alter their travel when encountering housing developments and traffic, infrastructure, transportation that can affect mortality.\textsuperscript{39} He also pointed out the extensive trapping that occurred in the US prior to records of wolverine and that they may well have been eliminated from suitable places before records were kept.

So, while the USFWS emphasizes the role of connectivity and genetic exchange in maintaining meta-populations and genetic diversity, it avoids the identification of the connections vital to the maintenance and recovery of a species. See Figure 8 which is a map of the USFWS modeled wolverine habitat.\textsuperscript{40} This map shows wolverine habitat areas in Montana, Idaho, Utah, and Wyoming but provides no indication of travel corridors that wolverine might use to connect these. This map shows the areas in Northern Utah and Idaho with sufficient snow cover. Connecting these “dots” would likely lead to a connectivity pattern like that of Canada lynx, discussed previously. Clearly, the CTNF and UWCNF (Uinta Wasatch Cache NF) provide these high elevation snow habitats. They constitute the most likely migration pathway for wolverine and lynx.


\textsuperscript{38} McKelvey et al. 2011. Climate change predicted to shift wolverine distributions, connectivity, and dispersal corridors. Ecological Applications, 21(8), 2011, pp. 2882-2897.

\textsuperscript{39} Review of the United States Fish and Wildlife Service’s Proposed Rule to List Wolverines as a Threatened Species in the Contiguous United States, May 2013

\textsuperscript{40} https://www.fws.gov/mountain-prairie/es/species/mammals/wolverine/02012013ModeledWolverineHabitatMap%20.jpg.pdf
In recent years a wolverine was documented in the Uinta Mountains in northern Utah, and one was killed on a highway in Rich County, Utah near Bear Lake, July. On May 4th, 2021, visitors to Antelope Island shot video and photos of a wolverine running across the dry bed of the Great Salt Lake. This is not typical habitat for wolverine but rather a connection or corridor obviously used by wolverine on occasion. Another wolverine was spotted on an elk hunter’s trail camera on the North Slope of the Uinta Mountains. The October 3rd sighting marks the seventh confirmed observation of wolverine in the state of Utah since the 1970’s according to Adam Brewerton, a wildlife conservation biologist with UDWR, though only three were publicized. “It’s sort of evidence that the population as a whole – like, across the whole continent – is likely increasing and expanding,” Brewerton said. [https://www.sltrib.com/news/2021/10/20/wolverine-spotted-utah/](https://www.sltrib.com/news/2021/10/20/wolverine-spotted-utah/)

**Figure 8.** Fish and Wildlife Service Modeled Wolverine Habitat.
The Uintas are considered wolverine habitat. The Idaho Management Plan for the Conservation of Wolverines identified the movement corridors shown in Figure 9. These overlay with the Regionally Significant Wildlife Corridor and the Lynx Least Cost Path shown above, principally emphasizing the corridor from SW Wyoming through SE Idaho and the Bear River Range south to the Uinta Mountains. We call this the Yellowstone to Uintas Connection.

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Figure 9. Wolverine predicted movement corridors in the Northern Rockies

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41 Idaho Department of Fish and Game. 2014. Management plan for the conservation of wolverines in Idaho. Idaho Department of Fish and Game, Boise, USA. https://idfg.idaho.gov/old-web/docs/wildlife/planWolverine.pdf
The CTNF must provide a more detailed mapping, capability and suitability analysis for wolverine habitat integrating the above information on the Corridor and current conditions (security cover, snow cover, elevation, mines, roads, timber projects and other fragmenting or habitat degrading activities as well as the current rate of occurrence) for wolverine.

A “hard look” must be conducted of habitat fragmentation, corridor functionality, vegetation treatments, road density, ATV/OHV and snowmobile activity, trapping and other human activity as well as livestock grazing and the associated impact on wolverine. That look must also include all ESA and Forest Plan requirements and intent as well as embody the best available science applicable to wolverine.

4. Grizzly Bear

The DEIS must include the results of a formal consultation with the US Fish and Wildlife Service (USFWS) regarding the impact of the project on grizzly bear. Please include a formal consultation in the FEIS.

There was not a complete analysis included in the DEIS for the Husky 1 North Dry Ridge mine of the Regionally Significant Wildlife Corridor, ESA, or special status species Grizzly bear. The data shown for the current state of grizzly bear occupancy in or near the project area nor of the impact the project will have on this species is incorrect. Grizzly bears have been documented by the Wyoming Game and Fish the past two years in the southern Wyoming range near Kemmerer, Wyoming. [https://www.sweetwaternow.com/grizzly-bear-spotted-near-viva-naughton-reservoir/](https://www.sweetwaternow.com/grizzly-bear-spotted-near-viva-naughton-reservoir/), [https://kemmerergazette.com/article/game-and-fish-verifies-grizzly-bear-sighting-in-kemmerer-area](https://kemmerergazette.com/article/game-and-fish-verifies-grizzly-bear-sighting-in-kemmerer-area). Figure 10 is a map of grizzly management zones in the Greater Yellowstone Ecosystem. The CTNF should now analyze the suitability of grizzly habitat in both Forests due to the planned prescribed burns and timber projects occurring here as well as the other activities and projects the Forest currently allows. These activities would include excessive road densities, ATV/OHV and snowmobile activity, timber projects, mines and other activities fragmenting or disturbing potential grizzly habitat.

No direct, indirect, and cumulative effects on Grizzly bears in the project area were identified. Y2U, AWR, NEC, SRW and WLD have identified the following potential issues:

- Habitat fragmentation and other cumulative effects on the Regionally Significant Wildlife Corridor are not being properly addressed.
- The project must adhere to the principles in the Forest Plan Amendment for the Grizzly Bear Habitat Conservation for the Greater Yellowstone Area National Forests FEIS and Record of Decision at a minimum.

A “hard look” must be conducted of habitat fragmentation, corridor functionality, vegetation treatments, road density, ATV/OHV and snowmobile activity, trapping and other human activity as well as livestock grazing and the associated impact on grizzly bear. That look must also include all ESA and Forest Plan requirements and intent as well as embody the best available science applicable to grizzly bear.
Figure 10. Grizzly Bear Management Zones in the Greater Yellowstone Ecosystem
5. Big Game

The Husky 1 North Dry Ridge DEIS (p148-149) states that 892 acres of suitable Mule deer and elk summer range and 209 acres of suitable elk winter range will be permanently removed. The DEIS also states that the loss of habitat will result in a loss of forage and cover needed for security and thermoregulation, and important areas such as fawning and calving habitat.

The DEIS (p149) also states that such a loss of habitat would reduce habitat diversity will result in a reduction in the carrying capacity for deer and elk in the analysis area and that the permanent loss of coniferous and aspen forest because the reclaimed areas would be grassland over the short term and grass-shrub over the longer term because trees will not be permitted to grow in the cap and cover areas. The reclamation seed mix will include native and non-native grass. Why does non-native grasses sewn to provide forage for domestic cattle grazing qualify as restoration?

Figure 11. Elk and Deer Winter Range
The State of Idaho statutes include relevant provisions (Attachment 3). These are Title 47 Mines and Mining Chapter 15 Mined Land Reclamation and Title 39 Health and Safety Chapter 36 Water Quality. There are numerous provisions in these Statutes that must be addressed. Some of these are:

- 47-1509 (4). Manage water as necessary to meet the requirements authorized under chapter 1, title 39, Idaho Code. (This includes meeting water quality criteria, antidegradation and beneficial use intent.)

- 47-1510. VEGETATION PLANTING. (a) Except as otherwise provided in this act, an operator shall plant on affected lands, vegetation species that can be expected to result in vegetation comparable to the vegetation that was growing on the area occupied by the affected lands prior to the exploration and mining operations.

Note that the proposed reclamation does not meet the intent of 47-1510 as the species to be planted are not comparable to the removal of a native forest and its associated species. Reclamation should be designed to accommodate this, by burying overburden with toxic metals sufficiently deep to preclude release through vegetation, animal burrowing or other mechanisms allowing for native revegetation to include shrubs and trees.

The DEIS (p150) simply states that there are no major elk migration corridors in the analysis area but there is no analysis of the migration routes between summer and winter range for elk and deer for the Corridor, CEA or the Caribou/Webster/Preuss Subsections and Diamond Mountain Block. Figure 11 above shows winter range from the Forest Service GIS data obtained via FOIA, indicating the importance of connectivity for big game between summer and winter. Idaho Fish and Game does flyovers to document populations in winter that should help identify movement patterns. None of this information was presented. As referenced above, security areas were mapped in the FEIS for the CNF RFP (Map 13 pD-140). That FEIS (D-141) also noted that summer security areas were limited on most of the Forest and provided Table 94 depicting security areas by Mountain Range Block. Most are low, including the Diamond Block at 16%, well below the 30% criterion stated. (D-167). Winter security was even more limited due to only 3% of the CNF closed to winter motorized use. The Smoky Canyon/Diamond Creek north were identified as areas of concern for summer and winter habitat for elk. (D-163). We note that cow elk objectives in the Diamond Big Game Analysis Unit are not currently met. 42

The DEIS (p149) states that while mining would be progressive and concurrent reclamation would occur, the cumulative habitat loss/alteration and disturbances are likely to alter migration patterns of deer moving west across Dry Ridge to winter habitat near Soda Springs and that the delay increases the risk of deer being caught in sudden snowstorms that result in rapid, deep snow accumulations that are difficult for deer to negotiate.

A hard look would require the areas shown in the Corridor (Figure 1) and Map 13 (CNF RFP p140) have a detailed GIS analysis as described above with appropriate noise and human activity buffers, showing all past, present and foreseeable mining activities, roads, trails, ATV/OHV and snowmobile activity, powerlines, pipelines, timber harvest areas and security areas. Security areas should be compared to the recommended 30%. We further note that habitats important to deer and elk such as aspen, spruce/fir and riparian areas were described as being at high departure from PFC while most others were at moderate departure. (CNF RFP FEIS D-47).

42 Idaho Fish and Game. 2016. 2015 Elk Population Status by Elk Zone. Showing Diamond Creek units not meeting objective.
5. Sage Grouse

The FEIS supporting the CNF RFP has noted that habitats important to sage grouse such as riparian and sagebrush are in degraded condition as measured by PFC assessment. (D-37 Table 35). The Husky 1 North Dry Ridge DEIS (p146) states that there would be no effect to priority, general, or important habitat management areas, or other suitable habitat for sage grouse. Then it states that noise and other mining disturbance would have no effect on the one occupied lek in the analysis area because it is more than 2 miles from the project area. Based on this rationale the DEIS (p146) concludes the Husky 1 North Dry Ridge mine may impact individuals and habitat but would not likely contribute to a trend towards federal listing or cause a loss of viability in the population or species.

In the recent Smokey Canyon East DEIS Figure 3.8-1 shows three sage grouse lek locations within a five-mile radius of the Proposed Action. These were taken from Idaho Fish and Game (IDFG) Fish and Wildlife Information System Data. They were last monitored in 2001 (one lek) and 2017 (two leks). One of the leks monitored in 2017 is shown to occur within the footprint of Tailings Pond 2. At odds with this map is Figure 3.8-3 which shows the closest GHMA and a single lek apparently monitored in 2015. The other leks shown in Figure 3.8-1 do not appear. Figure 5.7-1 shows the CEA for the Proposed Action but does not show sage grouse leks or HMAs occurring in the region affected. Table 5.7-1 summarizes vegetation types in the CEA for vegetation (Figure 5.2-1). These include 138,528 acres of sagebrush, 55,649 acres of riparian and wetland and 14,998 acres of grassland. As we continue to note in our comments for one mine EIS after the other, **even though the Forest Service claims that only marginal habitat existed in the mining areas, inspection of habitat showed all the necessary components needed are present**. The problem appeared to be the mining activity, haul roads, infrastructure and heavy livestock grazing everywhere except in the IDFG Blackfoot River HMA. Inspection of a map of sage grouse leks derived from IDFG location data (Figure 12) shows that leks are abandoned in the most active portion of the mining area, most leks are not monitored and some have been removed from mapping.

This is **a problem that allows leks and populations to blink out as they are no longer monitored, making it appear impacts are less than actual. Maybe this benefits the mining industry, but it does not benefit the sage grouse or migrant birds using the same habitats. This NEPA process has failed to take the requisite “hard look”**. That would include mapping all the known leks and presenting the population data and trends. Because a large number of leks appear to be abandoned near mining projects, the proximity of these leks to the mines (all leks) and the declining trends in population compared to the dates of active mining initiation nearest each of the leks should be determined. Road densities and proximity to leks, grazing and the other factors known to degrade sage grouse habitats should be analyzed for the entire mining district and a determination made based on science as to why, when there are hundreds of thousands of acres of sage grouse habitat in the region, leks are being abandoned. Another element of the analysis is connectivity between populations, for example the Bear Lake Plateau population to the south or Wyoming populations to the east.
Figure 12. Lek locations in SE Idaho from IDFG database. Red is abandoned, green is active and yellow is undetermined. There are other leks that have been “removed”.

A report issued by the US Fish and Wildlife Service in 2013 defined and mapped historic range of sage grouse that included Idaho (Figure 13). It also mapped management zones and priority areas for sage grouse conservation (Figure 14). Through a land use planning process both BLM and the Forest Service amended their land use plans to then define and map Priority, Important and General management areas for sage grouse. These, in turn, relied on mapping analysis by Doherty et al (2010). This, in turn, relied upon a memo from the Director of the BLM and Chief of the Forest Service providing recommendations for refining land use allocations for sage grouse. That memo mapped these “Identified Areas of GrSG Landscape Significance within BLM/USFS PHMA: Rangewide.” Many leks and large areas of sage grouse habitat were omitted because of definitions used to describe lek attendance. It is important to note that Doherty based their analysis on maximum lek attendance data collected during the years 2000 - 2009. In some land use plan amendments, occupied leks were defined as only being occupied in years immediately prior to these land use plan amendments. This is of concern because many of the impacts to sage grouse had occurred prior to the period and populations had declined below thresholds for consideration, leks were abandoned, or leks were not consistently monitored. The point of this is that many areas of occupied and suitable habitat for sage grouse are not included in these defined management areas or core habitat. These areas are important for connectivity and factors such as human activity and road density need to be evaluated. Important references defining the factors such as distance from leks at which impact can occur include the National Technical Team Report (NTT) which notes that impacts to leks can occur up to 11 miles from the lek. The NTT provide recommendations for monitoring and restoration. These factors should be analyzed for this project, including an analysis of road density in the affected area.

Eastern Idaho greater sage-grouse are notoriously understudied. In 2012, the U.S. Fish and Wildlife Service convened a “Conservation Objectives Team” of Service and state representatives with expertise in greater sage-grouse science and conservation. In 2013, that body issued a Conservation Objectives Team Report (COT Report) evaluating the threats to the species and recommending conservation measures. The COT Report described the East-Central Idaho sage grouse population as “isolated/small size” and “high risk” with a “low probability of persistence” (COT Report, 22, 76-77).

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46 Idaho and Southwestern Montana Subregional Greater Sage-grouse RMP Amendments Final EIS
Figure 13. Sage Grouse Current and Historic Distribution from COT Report

Figure 14. Sage Grouse Management Zones and Priority Areas for Conservation from COT Report
Such a greater sage-grouse population is nevertheless valuable because it helps ensure the species continues to exist by contributing to its redundancy, representation, and resilience. (COT Report, 12). Preserving peripheral populations are essential to arresting the decline of greater sage-grouse toward extinction and Endangered Species Act listing. (COT Report, 12-13).

The COT Report further stated:

[L]ittle information is available on [East Central Idaho] sage-grouse populations other than some limited location and attendance data on a few leks. No lek routes have been established within this area that would allow consistent monitoring of sage-grouse populations. This lack of data is largely due to very difficult access in most years during winter and spring. COT Report at 76.

This paucity of information about the East-Central Idaho/East Idaho Uplands population of sage-grouse is well known to resource managers. In the recent Crow Creek pipeline DEIS, it was clear that the pipeline may also affect greater sage grouse populations in Wyoming and Utah that cross into Idaho, and the pipeline’s impacts on Wyoming and Utah sage-grouse were not analyzed in that DEIS. For example, the COT Report states that Wyoming’s Star Valley/State Line subpopulation includes two Idaho leks (COT Report, 67). The DEIS for Husky 1 North Dry Ridge does not analyze connectivity between these SE Idaho, Wyoming and Bear Lake Plateau populations or their status.

Again, the National Technical Team Report (NTT) provides analysis and recommendations that should be included in the analysis for this project. Some of these include delineating the types and areas disturbed for leks and nesting areas from industrial development. For example, a 4-mile radius from the disturbance is recommended, while citing a Wyoming study showing impacts up to 11 miles. If one placed these buffers around the leks in SE Idaho (Figure 12), it would increase the area of analysis. Some additional points made in the NTT Report include the causes of decline and their mechanisms, the need for habitat restoration and monitoring.

To date, we have not seen any population trend data for leks in the SE Idaho area in development proposals from the Caribou Targhee National Forest. Listed below are NTT recommended steps:

- Prioritize restoration in seasonal habitats limiting sage grouse distribution and abundance
- Include habitat parameters (cover and height of sagebrush, grasses and forbs) recommended by Connelly et al. (2000) and compare to ecological potential using NRCS Ecological Site Descriptions
- Use native seeds and restore to ecological potential as the highest priority for restoration efforts
- Design management of livestock grazing and travel management to achieve or maintain conditions to benefit sage grouse
- Conduct population monitoring (lek counts) led by State wildlife agencies even though these have been challenged as inconsistently conducted and biased. However, lek counts appear the best available information on populations over time. Use standardized methodology.
- At landscape level, track percent of sagebrush cover and maturity of stands
- Collect quantitative habitat data (nesting, brood rearing, winter)
- Coordinate with State and Federal monitoring protocols.

It is time the CTNF, BLM and project proponents began applying these principles and provided the public with a comprehensive analysis and mitigation that at minimum includes the principles laid out above.

6. Climate Change

The Husky 1 North Dry Ridge DEIS (p189) characterizes annual Greenhouse Gas (GHG) emissions as 17,668 metric tons CO2 from stationary sources. This does not include emissions from processing plants. **What is not included is the amount of carbon storage lost as the project area is logged and all vegetation destroyed. Nor are the decreases in soil carbon or additional releases to the atmosphere of carbon in soil accounted for.** The recent Smokey Canyon East DEIS (4-10) points out the negative effects of current trends in climate change as being temperature increase, precipitation decrease, increased winter streamflow, decreased summer streamflow, stress on fish, among others. Residence time of GHG emitted from that mine would be 100 years due to the long residence time in the atmosphere. The Husky 1 North Dry Ridge DEIS (p189) also notes that the projected slightly warmer winter temperatures could shift the average timing of snowmelt and surface water runoff to earlier in the year, which may result in runoff and infiltration increasing during the winter and early spring and be lower during the late spring and summer. Climate change would increase the average volume of runoff and infiltration generated by storms. The impact of climate change may have certain effects on infiltration and leaching of mine materials as well as changing groundwater flows. The DEIS states that these trends would begin several decades in the future and therefore not affect the active Husky 1 North Dry Ridge mine.

The Smokey Canyon East DEIS (5-11) also states that, "**Impacts from GHGs may be countered locally by CO2 sequestration in the vegetation of the adjacent CTNF...**". This points to mitigation that could include cessation of livestock grazing which would allow carbon to be stored in plants and soil, while rebuilding soils. This would also allow streams and riparian areas to recover, reducing soil loss and stream sedimentation. As to fires, while there is a temporary release of CO2, most of the biomass storing carbon is left in the form of standing trees. This was even evident in photos of the recent fires in California.

It is necessary to recognize these connections for lynx, wolverine, sage grouse and other wildlife and provide analysis, standards, mitigations and other on-ground measures such as road crossings, overpasses, road closures, closure of areas to ATVs/OHVs/snowmobiles, and limiting noise levels to enable these and other animals that rely on migration to be allowed to do so. For example, since climate change is such a central part of the wolverine’s fate as evidenced in the cited court ruling and papers, the Forest Service should address its own Roadmap to address climate change. Recognizing the current and coming changes to climate with longer, drier periods and drought, the Forest Service has implemented a Roadmap to address climate change.50 This roadmap provides guidance to the agency, including, but not limited to:

- **Assess vulnerability of species and ecosystems to climate change.**
- **Restore resilience.**
- **Promote carbon sequestration.**
- **Connect habitats, restore important corridors for fish and wildlife, decrease fragmentation and remove impediments to species migration.**

To date, we have not seen the CTNF cite or adhere to these principles in any project EA or EIS. **A hard look would require such an analysis.**

In addition, the National Fish, Wildlife and Plants Climate Adaptation Strategy proposed by the US Fish and Wildlife Service, NOAA Fisheries and the American Fish and Wildlife Association describes climate change effects and emphasizes conservation of habitats and reduction of non-climate stressors to help fish and wildlife adapt.51

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51 [https://www.wildlifeadaptationstrategy.gov/](https://www.wildlifeadaptationstrategy.gov/)
The Forest Service must address conservation of habitats and reduction of non-climate stressors such as mining, roads, ATV/OHV and snowmobile activity, rail lines, pipelines, timber harvests, forest and vegetation treatments as well as the habitat degradation, from livestock grazing, including soil loss, stream dewatering, plant communities shifting to increasers or weeds to help fish and wildlife adapt in accordance with the National Fish, Wildlife and Plants Climate Adaptation Strategy.

7. Management Indicator, Sensitive and Special Status Species

As small organizations, and given the limited time available for comments, it is impossible for us to address all these issues in any comprehensive manner, so these comments apply to all special status species.

As the Husky 1 North Dry Ridge DEIS discloses throughout the analysis, groundwater and surface water pollution will continue for decades to centuries. Forests, watersheds, water supplies, fish and wildlife populations will be adversely affected permanently. For example, the DEIS (pS-15) Table S-5 indicates loss of 822 acres of forest in the mine footprint and states that these acres will be changed to grassland/shrubland. 2.4 acres of this is old growth in Stand D (DEIS p133).

The removal of these 2.4 acres of old growth Stand D will result in the stand no longer meeting the R4 definition of the minimum area to be identified as old growth (DEIS pS-15). The analysis did not map where the existing old growth occurs, and what percentage of this mixed conifer type across the CTNF meets old growth criterion. Surely, if this is a mixed severity fire regime as nearly all wildfires appear to have areas burned at different levels, then either the criterion is flawed and should allow these stands to be left to become old growth or the old growth definition needs to be refined. In any event, destruction of this forest with its incredibly old trees (how old?) that could be hundreds of years old, represents a permanent loss of this habitat for species of wildlife dependent on old growth. No data was provided from the stand exams in comparison to the Forest Plan Criteria or best available science.

We do note that for raptors such as Northern goshawk and others that have been observed within proximity to the project site, that there are many abandoned or inactive nests (Smokey Canyon East DEIS Figure 3.8-2). As raptors are sensitive to human disturbances, to use this as a baseline does not seem valid. Are the nests likely abandoned due to the ongoing mining activity? Where are the baseline data prior to the Smokey Canyon and other mines in the project area? Where are the long-term comparisons to this data as mining progresses panel by panel? We do not find this in any of the mine DEISs. Where were all the known goshawk home ranges of 6000 acres within the CTNF in SE Idaho? These should have been mapped and compared to the different mines and their footprints, roads, security areas, vegetation, or forest cover types. Where are the transect or point count data for migrant birds for comparison over the long term? What are the population trends for these species? Many important questions remain unanswered.

Population trends and viability assessments for these species and their habitats must be analyzed in concert with the various activities the Forest Service has implemented over the history of the mining in the CEA.

Like Canada lynx, wolverine, and Northern goshawks also depend on mammals and birds for prey. Reynolds et al (1992) provide specific recommendations that livestock grazing utilization will average no more than 20% in goshawk home range of approximately 6,000 acres, which also includes nesting and post-fledging areas. They also specify forest stand structure needed for goshawk across its home range and the protection of mycorrhizal fungi in the forest floor to aid in nutrient cycling. There must be an analysis of the current state of habitat, forage productivity and livestock utilization of forage in the project area, with reductions in grazing or closures of pastures and allotments. As Carter et al, 2011 found, grazing by livestock reduces ground cover, herbaceous plant

production, carbon and nitrogen stored in herbaceous plants and soils when compared to reference values\textsuperscript{53}. They found that the mycorrhizal fungi layer in conifer forest was destroyed by livestock trampling, essentially destroying the nutrient cycling of forest litter at the litter/soil interface.

Livestock grazing also compacts the soil, reduces infiltration, increases runoff, erosion, and sediment yield.\textsuperscript{54, 55} The effects of these activities on the nutrient cycle and soil conditions must be analyzed in connection with forest health and in goshawk home ranges. Habitats capable and suitable for goshawk and goshawk home ranges should be mapped showing all home ranges in a CEA of sufficient size as described above relative to motorized use and other activities and showing their occupancy status. Northern goshawk, as an MIS, must have a determination of capable and suitable habitat and these home ranges must be analyzed for current condition, and whether capable or suitable, considering past timber and forest health treatments, roads and grazing. Is the absence of observed goshawk nests as reported in the Husky 1 North Dry Ridge DEIS (p139) a result of road intrusions, timber harvest, mining? Snowshoe hares are prey for lynx and goshawk. Their forage base is depleted by historic and current livestock grazing. The population data for snowshoe hare should be analyzed and compared to the level of activities occurring here.

The Forest Plan is 18 years old and the analysis incorporated into that RFP even older. Many projects have occurred in the 41,255-acre (DEIS p139) goshawk habitat in the intervening years in addition to older projects. In addition, roads continue to expand, both permanent, temporary and illegal, which engender additional human activity in areas that were previously interior forest habitat. All of this must be characterized in the NEPA analysis for the Husky 1 North Dry Ridge mine project.

The Forest Service Manual 2323.33c - Predator Control states, \textit{“Predacious mammals and birds play a critical role in maintaining the integrity of natural ecosystems. Consider the benefits of a predator species in the ecosystem before approving control actions.”} The NEPA for the Husky 1 North Dry Ridge analysis must address the role of predators and the killing of these important animals by livestock permittees, trappers, DWR and Wildlife Services, disclosing the losses on an annual basis since the 2003 CNF RFP was implemented. It should also address the economics of this, and the risk to non-target animals, domestic pets and the ecosystem.

\textbf{Figure 15} below shows the Western Wildway, the Continental Corridor connecting Mexico to Alaska and the regions of that corridor being addressed by scientists and advocates of connectivity for wildlife. In that map the Yellowstone to Uintas Connection is identified and is the focus for Y2U. This represents a conservation biology approach to landscape conservation which emphasizes corridors and connectivity for Canada lynx and other species. As we read EAs and EIS for project after project in the CTNF, it appears that conservation biology principles are abandoned, even those promulgated in the FEIS for its own RFP. After reviewing these mine DEISs and other recent issuances in the CTNF it seems that the agency and project proponents have the position that it does not matter if all special status species are wiped out in the project area because it will not lead to extinction of the species. Is it the Forest Service and other project proponents’ belief that if lynx exist in Canada, then fine, they are not extinct, and there is no obligation either legal or moral to restore connectivity or address habitat fragmentation and habitat capability to provide for species such as lynx, wolverine, migrant birds, raptors, grouse?


We ask this due to the ongoing approval of project after project in SE Idaho while the cumulative damage from previously approved actions such as roads, livestock grazing, ATV/OHV use, stream diversions continue as if there is no limit to the ability of the system to absorb them.

8. Reliance on Best Management Practices

Will this project rely on Best Management Practices (BMPs)? The BMPs are assumed to be effective and relied upon. However, a fundamental aspect of NEPA is to take a “Hard Look” at current management, conditions, assumptions, and implementation. NEPA requires the Forest Service to account for the current degraded conditions it claims, such as conifer encroachment into aspen stands. But what is the mechanism of this conifer encroachment and lack of recruitment in aspen stands. Is it past fire suppression? Livestock grazing? Past vegetation management implemented by the Forest Service?

What is the history of this project area? What Forest actions or permitted activities play a role in the current state of aspen, wildlife habitat, watershed health and other ecosystem attributes? There is no analysis of:

- Validity of assumptions from previous NEPA processes
- Accuracy of predictions from previous NEPA processes
- Adequacy of Forest Service implementation of previous decisions
- Effectiveness of actions taken in previous decisions

Figure 15. Western Wildway.
The above items are critical for effective decisions and outcomes and for the public to be informed. Without this analysis the validity of the current assumptions cannot be determined. Without analyzing the accuracy and validity of the assumptions used in previous NEPA processes one has no way to judge the accuracy and effectiveness of the current analysis and proposals. The predictions made in previous NEPA processes also need to be disclosed and analyzed because if these were not accurate, and the agency is making similar decisions, then the process will lead to failure. For instance, if in previous processes the agency or permittee said they were going to perform a certain monitoring plan or implement a certain type of management, meet certain goals and objectives, and these were never effectively implemented, it is important for the reader and the decision maker to know. If there have been problems with implementation in the past, it is not logical to assume that implementation will now be appropriate. If prior projects have not been monitored to document and compare post project initiation conditions to baseline data, then there is no proof that models or BMPs are accurate, effective, or can be relied upon. What commitments have been made in the Forest Plan and subsequent project plans? Have these been realized?

The reliance on BMPs is a flawed approach that assumes they work. Ziemer and Lisle (1993)\(^{56}\) indicated that there are no reliable data showing that BMPs are cumulatively effective in protecting aquatic resources. Espinosa et al. (1997)\(^{57}\) provided evidence from case histories in Idaho that BMPs thoroughly failed to cumulatively protect salmonid habitats and streams from severe damage from roads and logging. In analyses of case histories of resource degradation by stereotypical land management (logging, grazing, mining, roads) several researchers have concluded that BMP’s increased watershed and stream damage because they encourage heavy levels of resource extraction under the false premise that resources can be protected by BMP’s (Stanford and Ward, 1993\(^{58}\), Rhodes et al., 1994\(^{59}\) Espinosa et al., 1997). Stanford and Ward (1992) termed this phenomenon the "illusion of technique."

9. Air Quality

The Husky 1 North Dry Ridge DEIS (p22) states that Itafos has committed to implementing environmental protection measures (EPMs) and Best Management Practices (BMPs) to ensure responsible mining operations and reduce adverse environmental impacts. **Without analysis the effectiveness of the current EPMs and BMPs cannot be determined. Without analyzing the accuracy and validity of the assumptions used in previous NEPA processes one has no way to judge the accuracy and effectiveness of the EPMs or BMPs.**

According to the Smokey Canyon East DEIS (4-6) impacts to air quality from the mining operation would be from “drilling, blasting, excavation, materials handling, vehicle operations, haul road use, and ore/overburden transportation. Additional emission sources associated with the Proposed Action that would cause air quality impacts include wind erosion; construction of haul roads, topsoil stockpiles, material borrow areas.” BMPs are proposed for controlling fugitive dust emissions. Practices such as watering haul roads are included, for example. Estimated PM10 emissions for that Proposed Action are 3,376 tons and PM2.5 of 506 tons over the project lifetime.

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for an unidentified time period. Modeling at a 5-mile radius indicates particulate matter effects at 6% of the NAAQS. What about nearby? What about localized effects? Diurnal effects? Peak effects? Figure 16 shows dust blowing from the haul road at the Lanes Creek Mine. BMPs apparently do not control this release. Wasn’t it here along Lanes Creek that six horses died from selenium poisoning? Was it in the soil, water, transmitted in windblown dust, uncontained runoff, sediment pond releases?

The Smokey Canyon East DEIS (3-13) characterizes the nearest air quality monitoring stations in Soda Springs and Pocatello, Idaho and Boulder, Wyoming. The nearest station monitoring PM10 is the one in Pocatello, 70 miles away. PM2.5 is monitored at the Ballard Road monitor near Fort Hall, Idaho. Both sites are noted to find levels of PM lower than the NAAQS, PM2.5 at 18.8 ug/m3 vs the standard of 35 and PM10 at about 50% of the standard. Note that these are averages over three years and include 24 hr/day, so do not show peaks in exposures.
Also, the averaging over time for NAAQS compliance using remote stations does not tell us what is occurring locally or daily or what the human or for that matter wildlife health effects might be. The Idaho Air Now website\textsuperscript{60} provides maps showing the Air Quality Index and one can look up daily values. \textbf{Figure 17} provides a map for August 15th, 2021, with the AQI at 101 - 150 (combined ozone and PM). The level is considered unhealthy for all sensitive groups. This level can be unhealthy for older adults, children, those with heart or lung disease. Idaho DEQ also has the AQI calculator which can be used to determine the AQI for a particular pollutant and concentration.\textsuperscript{61} \textbf{This information needs to be incorporated into the analysis.}

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{fig17.png}
\caption{AQI for Northwest August 15,}
\end{figure}

\textsuperscript{60} https://www.airnow.gov/index.cfm?action=airnow.local_state&stateid=13
\textsuperscript{61} https://airnow.gov/index.cfm?action=airnow.calculator
10. Geology

The Husky 1 North Dry Ridge DEIS (p68) states that the phosphate to be mined from the H1 and NDR pits is found in the Phosphoria Formation, which includes the Rex Chert Member and Meade Peak phosphatic shale. The phosphate mineralization is sedimentary, occurring in alternating phosphatic and weakly- to non-phosphatic shale, mudstone, carbonate, and chert beds. The thickness and geometry of the beds have been affected by variability during deposition and subsequently by faulting and folding.

The DEIS (p72) also states that approximately 27.5 million wet tons of phosphate ore (21.3 million tons from H1 and 6.2 million tons from NDR) would be mined over approximately 13 years. Removal and use of the ore would deplete the deposit and would be an irretrievable and irreversible impact.

There is no discussion of the effect of fault disturbance by mining activity and haul road construction in the Husky 1 North Dry Ridge DEIS. The Smokey Canyon East DEIS Figure 3.2-1a presents a map of faults for Smokey Canyon East passing through the area of disturbance for the existing and proposed mine expansion. That DEIS (3-7) reports 40 events exceeding 4 on the Richter Scale within 100 km of the Study Area since 1962. Chapter 3 does not discuss the effect of fault disturbance by mining or haul road construction, nor does Chapter 4. Figure 5.5-1 in Chapter 5 shows the extent of mineral leases in the CEA and notes that there has been a total of 31 phosphate mines in the area (5-2), with a total disturbance of 14,200 acres with foreseeable mining disturbance of 21,700 acres (5-7). Other sources of disturbance were mentioned. This DEIS does not include any discussion regarding mining related to seismic activity. Mining through faults, drilling, blasting, haul roads carving deep grooves through the mountains all occur and will continue as one mine after the other is approved by the CTNF. See Figures 18 and 19 for photos of the Smoky Canyon Mine and Haul Road. What are the effects of removal of the large amounts of material on the faults and stresses in these faults? A quick web search indicates that mining can reactivate existing faults.62 A National Geographic Article cites a study63 of 730 sites where human activity caused earthquakes over the past 150 years.64 “According to the report's data, found on a publicly accessible database, mining accounted for the highest number of human-induced earthquakes worldwide (many earthquakes clustered around 271 sites). The removal of material from the earth can cause instability, leading to sudden collapses that trigger earthquakes.”

In recent years there have been numerous earthquakes in SE Idaho. The website for Quake Bulletin (which has mysteriously disappeared now) allows searches for earthquake history by location. For example, when a search was done for Soda Springs, the Bulletin listed 1,625 earthquakes. The date, magnitude and location can be found for each using this website.65 A temporal analysis by location and total occurrence should be done and compared to the progression of mining through the region. At Kiesha’s Preserve we feel these earthquakes and during exploratory drilling at the nearby planned Paris Hills Agricom mine, could hear/feel the vibrations from the drilling. It is a major concern for us here as faults occur in the area.

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65 http://www.quakebulletin.com/quake/ct/USID/us2411921
Figure 18. Smoky Canyon Mine, Fall 2018. Showing excavation, highwalls and pit.

Figure 19. Haul Road across ridges with deep cut Fall, 2016.
11. Groundwater and Surface Water

Due to time constraints, our detailed notes/comments for these topics are included in the marked-up PDF of the Smokey Canyon East DEIS which can be downloaded from our on-line storage as it is too large to email. 66 These comments reference our input on past project EIS in the region and express our concerns and analysis and need to be addressed as if they are comments on the Husky 1 North Dry Ridge Mine DEIS.

The problems with that analysis include the lack of an adequate pre-mining baseline for the streams in the Cumulative Effects Area (CEA). There are no comparisons available for water quality (ground or surface) prior to the initiation of mining at the Smokey Canyon Mine. What were the concentrations in Crow Creek, Sage Creek, Tygee Creek, Pole Canyon Creek prior to initiation of mining at Smoky? How do those compare to today and to the projected levels? What was ground water quality prior to mining compared to today? The Husky 1 North Dry Ridge DEIS (p78) states “For simplicity and because a complete data set of current plumes and historic loading rates is not available, only new impact from H1NDR were modeled, not existing conditions”.

For the Husky 1 North Dry Ridge mine DEIS impacts are based on modeling and predictions as to the effectiveness of cover and BMPs applied. When the Smoky Canyon mine began its first phase, then the remaining phases or Panels, what data was available? What did those models show? How is it that with these models and we suppose baseline data, we have a Superfund site today? The Pole Canyon Creek Overburden Disposal Area (ODA) is a good example. Apparently, the technology indicated it was not a problem for water quality using the design for disposal here. Yet, today Pole Canyon Creek is contaminated with selenium. The same can be said for Hoopes Spring. What did the prior analysis indicate would occur? How does this compare with today?

Then there is the stream rerouting and the springs and seeps that will be forever lost. There was no monitoring of wildlife use of these areas. Simple use of trail cams during a baseline study would have documented the species using these. Instead, we get no real analysis. At Kiesha’s Preserve in Paris Canyon, Idaho, one small spring with flow that is hardly measurable provides secure habitat for deer, elk, moose, sage grouse, sharp-tail grouse and other species. Trail cams document the occurrence of deer fawns, elk calves, and moose calves using this one area. It supports their use of surrounding habitats for bearing their young, summer use and early winter use. The failure to account for the value of any stream rerouting or lost springs occurring in the project area in any NEPA analysis for the Husky 1 North Dry Ridge mine project is a failure to take a hard look.

Streams in the phosphate region of Southeast Idaho are polluted with sediment, E. coli, and selenium. But there is little analysis of the source of the pollution. On the one hand, it is claimed that soil erosion is below the soil loss tolerance in grazed and logged areas based on a Forest Service study. However, it is our experience when it comes to livestock grazing, that monitoring of impacts due to livestock concentrations around water developments, salting areas and uplands adjacent to streams do not occur, yet these areas suffer high levels of bare soil and erosion. These watersheds are grazed by sheep and cattle, water developments and spring diversions are noted, but not how many and where or what their impacts on stream flows and soil erosion might be. Streams in the Southeast Idaho phosphate mining CEA are listed for these pollutants, yet minimal mitigation is proposed. Simplot has private land being grazed and we assume diversions on the Forest for the grazing allotment(s) they use. Instead, for selenium, we are told it is already a superfund site, so project impacts are minimal. For sediment, a few BMPs along roads, sediment ponds for the mine, but nothing to mitigate livestock impacts which are universal.

66 https://app.box.com/s/l1yeiqqw94eog6tzccp2w8j09fh874ji
Analysis of selenium in fish tissue shows elevated levels, levels that are above criteria. Effects on reproductive success are noted. There must be an analysis of the effect of sediment on reproduction in fish, particularly Yellowstone cutthroat trout. Figure 20 illustrates the impact of sediment on survival of trout to emergence. As sediment amounts increase survival rapidly declines to zero at levels above 50% fines.  

Surface water impacts by sediment and metals could be mitigated in part by restoring stream flows, retiring grazing permits through buyouts, removing diversions for livestock watering, and removing livestock to restore stream banks and riparian areas. An analysis of the location of these diversions, the net effect on spring and stream flows, riparian and wetland areas must be done for a hard look.

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**Figure 20. Percent Survival of Trout to Emergence vs. Percent Sediment less than 6.4 mm**

Data from Weaver & Fraley (1993) and Irving & Bjornn (1984)

Trendline from Irving & Bjornn (1984)

\[ y = \frac{107.7}{1+ e^{-2.2+0.1x}} \]

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12. Economics

According to the Husky 1 North Dry Ridge DEIS (p173), “the economy in Caribou County and southeastern Idaho is heavily dependent on phosphate mining and processing. The surround counties primarily rely on agriculture. Itafos is a major employer in Caribou County with more than 15% of the workforce (employed by Itafos)”. The DEIS (p175) also states that “no changes in employment or income would occur” and “that the workforce and equipment currently mining the deposits at the Rasmussen Valley Mine would be used at H1NDR when Rasmussen Valley is complete. Production would remain about the same, which would maintain employment at about the same level and continue through the 13 years of mine life then final reclamation and closure”.

The Smokey Canyon East DEIS paints a different story and provides summaries of some economic statistics such as the employment rate by industrial classification. Mining in Caribou County accounted for 7.3% of employment. Income from mining in the Four County area in 2010 was 2.9%. These are the benefits of mining. (DEIS 3-216). It is notable that footnotes in the Tables for these parameters indicate that data for natural resource values was withheld by the Counties “to avoid disclosures of confidential information”. This seems strange as these should be public data and withholding it denies the public the information that could be pertinent to the positive or negative impacts of the phosphate mining industry in SE Idaho. These Counties should explain why this economic information is “confidential” and cannot be released to the public.

The USFWS has periodically produced an analysis of fishing, hunting and wildlife watching recreation statistics, including expenditures. The current edition indicates annual national expenditures are $75.9 billion for wildlife watching, $46.1 billion for fishing and $26.2 billion for hunting. State summaries were available in an earlier edition and should be available upon request for more current information. Due to the time limitations for comments, we are providing the Idaho figures from the 2001 edition which showed expenditures in Idaho for hunting, fishing and wildlife watching totaled $767 million. Perhaps the CTNF should consider the millions of visitors to Yellowstone National Park to view wolves, bears and other wildlife and what those economic benefits are compared to the loss of these high value species in its Forest on behalf of extractive uses and ATVs/ OHVs. ATVs/OHVs are not present in YNP in summer yet look at the number of people visiting. There is an obvious connection.

In addition, there are mechanisms for evaluating ecosystem services in numerous studies published by Dr. John Loomis of Colorado State University valuing ecosystem services. The loss of these ecosystem services has many attributes over the long term such as behest values, intrinsic values and Loomis provides means of determining market values for these services. What are the losses? What about the Native American values that are compromised? The economic analysis for the Husky 1 North Dry Ridge mine project must go much further to meet the NEPA’s hard look standard and justify to the public the legacy of Superfund sites and lost ecosystem services from an industry that is a minor contributor to the local and regional economy and represents only 15% of the national phosphate rock industry, the vast majority occurring in the Southeast US.

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70 https://dare.agsci.colostate.edu/people/faculty/dr-john-b-loomis/
13. Motorized Recreation Impacts

Because the impacts of mining are concurrent with motorized recreation use of the Cumulative Effects Area (CEA), an analysis of this activity and its impacts thru road density, noise, effects on people and wildlife are additive to the mining activity and a hard look at this activity is needed in conjunction with this project and any others proposed.

The Husky 1 North Dry Ridge DEIS (p168) characterizes the analysis area as having 81 miles of National Forest System (NFS) designated roads. ATVs/OHVs, snowmobiles, motorcycles, and motorized trail bikes use approximately 15 miles of NFS trails in the analysis area and approximately 1 mile in the project footprint. NFS lands outside of the current mining lease in the analysis area are currently open to cross-country snowmobile use.

The DEIS (p37) states that the Alternative Road would entail 6.1 miles of new road construction between Dry Valley and Diamond Creek, and approximately 1.5 miles of new disturbance adjacent to the slurry line from Diamond Creek to where the new road would begin. This road would further fragment habitat for all wildlife species. Approximately 18 acres of new disturbance and 4 acres of previously disturbed areas would be included in the road construction area for the road.

The DEIS provides no data on vehicle use in the CEA. The DEIS (p169) states that there are no traffic count data for any of the NFS or Caribou County roads near the proposed mine. For example, Georgetown Canyon is a heavily used route for ATVs/OHVs in summer and fall. A similar situation exists in Paris Canyon at Kiesha’s Preserve where we are subjected to noise and dust from hundreds of vehicles per day accessing the CNF. Figure 21 is a plot of data from a USU study in Paris Canyon at Kiesha’s Preserve showing traffic patterns and types of vehicles during the summer of 2017. Peak numbers reached over 300 vehicles per day. Associated with this traffic is increased airborne dust levels. Figure 22 shows the dust plume filling the canyon after passage of a single pickup truck in early morning. As described earlier, we experience noise levels over 100 dBA from ATVs/OHVs and dirt bikes in summer and snowmobiles in winter. People and wildlife in the CEA for Husky 1 North Dry Ridge will likely experience the same problems, but the DEIS for this mine, or any of the other mine DEISs have any data or analysis of this issue.

![Figure 21. Daily Vehicle Counts (Keisha's 2017)](image-url)
Motorized recreation in the CTNF has been and remains largely unpatrolled and unenforced. The USU Institute for Outdoor Recreation and Tourism has conducted studies showing that nearly 40% of riders admit going off legal trails on their last ride. The Forest Service published a Technical Report in 2005 (RWU – 2905) that recognized there is a lack of evidence that educational programs lead to behavioral changes in motorized users. The CTNF does not monitor or report this use, its effects nor does it map and control illegal trails other than the work done by Y2U in assisting with closure of illegal roads at our own expense. The former District Ranger after retirement provided a list of those and worked with us to accomplish the work using our equipment and personnel. The mining companies and CTNF should begin doing the same.

The science on this issue is presented in the book, “Thrillcraft”, by George Wuerthner. It is a comprehensive source that Agencies must consult in evaluating any alternatives that are impacted by motorized recreation.

Quiet environments are becoming extremely rare. In a recent study by a professional sound recorder who visited 15 western and midwestern states, it was found that quiet periods longer than a minute and a half without the sound of motors were difficult to find. Another study pointed out that in 1999, the decibel levels of conversation among Americans had risen to 65 decibels, up 10 decibels from a decade earlier, or a doubling of volume due to elevation of background noise levels. While it is recognized by OSHA and other health officials that exposure to noise of 85 decibels and higher leads to hearing loss, noise at even lower levels can lead to physiological changes in blood pressure, sleep, digestion, and other stress-related disorders. Loud noise, even within established health guidelines, can lead us to feel tense, angry, frustrated, annoyed and prone to violence in addition to contributing to hearing loss. In the period between 1982 and 2000, the incidence of measurable hearing loss increased by 15 to 60%, depending on the age group. In 1999, the U.S. Census Bureau rated noise as the single biggest neighborhood problem among those surveyed. More than one in ten people cited traffic noise as of concern and nearly half of those said they had considered moving as a way of escaping such noise. The EPA has found that 20% of those surveyed are “highly

71 http://extension.usu.edu/iort/htm/professional
74 http://interact.uoregon.edu/MediaLit/WFAE/home/index.html
75 Jim Louderback, "A Sound Solution," USA Weekend, October 19, 2003
annoyed” when sound levels reach 55 decibels. Federal regulations for highways dictate that if a new or expanded road will yield noise levels of 67 decibels or higher, efforts must be made to bring about a substantial reduction in noise levels. Generally, this involves construction of sound barriers.

After Zion National Park banned private vehicles and instituted a low pollution shuttle bus system, visitors commented that the absence of RVs with generators running, buses with clouds of diesel fumes and noise were noticeable and that they could now hear birds calling, streams running, and other low-volume sounds of nature that were previously obliterated by “vehicle noise”. Noise is a particularly objectionable aspect of snowmobile use. A Park Service report showed that even “quiet” snowmobiles could be heard more than two miles away, thus affecting a four-mile-wide area adjacent to travel corridors or use areas. This means that a snowmobile traveling 50 miles in one day, which they can easily do, can affect an area of 200 square miles. A visitor survey at Grand Teton National Park found that 96% thought snowmobiles had a negative impact on the park because of noise, air pollution and negative effects on wildlife. Yet they are allowed throughout the CTNF with no consideration for impacts on wildlife and quiet user, or residences.

There have been numerous publications on the effects of roads on noise pollution, wildlife and the benefits of roadless areas. Roads increasingly provide vehicle access into more and more remote areas, forcing sensitive species to be eliminated or greatly reduced especially when the cumulative impacts from livestock, oil, gas and mineral exploration and development are included. Roads and groomed trails provide increased access to hunters and trappers who can use them in summer and winter to damage environmental resources, loot archaeological sites, and kill predators, birds, or other mammals for sport. Motorized vehicles, motorcycles and snowmobiles, with their ability to travel large distances cross-country bring these same impacts along whether there is a maintained trail or not. The ecological effects of roads and/or mechanized use include erosion, air and water pollution, spread of invasive weeds, avoidance of road or machine-affected areas by wildlife and habitat fragmentation. When roads and increased human activity and noise fragment habitats, breaking large areas into smaller areas, they no longer retain their original functions and begin losing species, including those that are wide-ranging.

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76 Environmental Protection Agency, press release, April 2, 1974; see also EPA website, www.epa.gov/history/topics/noise/01.htm.
77 www.fhwa.dot.gov/environment/htnoise.htm
Roads have been shown to have thresholds of density above which species begin to decline or be eliminated. This has been reported to generally be 1 mile per square mile, with effects to some large mammals such as bears at a road density of 0.5 miles/square mile.\(^88\)\(^89\) The importance of roadless areas was documented for both small (1,000-5,000 acres) and large (>5,000 acres) roadless areas under consideration in the Clinton roadless area environmental impact statement and for three case study regions (Klamath-Siskiyou, Appalachia/Blue Ridge, and Tongass National Forest) recognized by World Wildlife Fund (WWF) for global biodiversity importance\(^90\).

In general roadless areas in these exceptionally diverse regions were found to provide many ecological benefits compared to roaded landscapes, including: relatively high levels of intact late-seral/old-growth forests; essential habitat for many species of conservation concern; buffer areas from exotic species invasions and edge effects; landscape and regional connectivity; areas most likely to have fire regimes operating within natural bounds; essential habitat for species key to the recovery of forests following disturbance such as herbaceous plants, lichens, and mycorrhizal fungi; habitat refugia for threatened species and those with restricted distributions such as endemics; aquatic strongholds for salmonids; undisturbed habitats for mollusks and amphibians; remaining pockets of old-growth forests; overwintering habitat for resident birds and ungulates; and dispersal “stepping stones” for wildlife movement across fragmented landscapes.\(^91\)\(^92\)

Extensive literature on the effects of motorized routes on ecosystem processes has also shown many negative consequences, especially in arid environments. These include increased erosion, habitat destruction, soil and water pollution, noise pollution, exotic invasions, and wildlife disturbance, elimination and dispersion (Andrews 1990\(^93\), Brown 1994\(^94\), Dittmer and Johnson 1975\(^95\), Forman and Hersperger 1996\(^96\), Forman and Alexander 1998\(^97\), Gelbard 1999\(^98\), Harris and Gallagher 1989\(^99\), Iverson et al. 1981\(^100\), Langton 1989\(^101\), Miller et al. 1996\(^102\), Montgomery


\(^{90}\) http://www.worldwildlife.org/wildplaces/kla/pubs/exec_sum.pdf


\(^{101}\) Langton, T.E.S., ed. 1989. Amphibians and roads. ACO Polymer Products, Shefford, Bedfordshire, UK. 202 pp

\(^{102}\) Miller, J.R., L.A. Joyce, R.L. Knight, R.M. King. 1996 Forest roads and landscape structure in the southern Rocky Mountains. Landscape Ecology 11: 115-127
1994, Oxley et al. 1974, Schmidt 1989). Within Salt Creek in Canyonlands, impacts from motorized routes were documented on the distribution and abundance of small mammals, plants, and aquatic organisms, as well as increases in sedimentation from road crossings and interruption in the continuity of riparian wetlands (Mitchell and Woodward, 1993).

Road densities and effects on wildlife must be analyzed in any NEPA analysis for the Husky 1 North Dry Ridge mine project and for other projects being considered by the CTNF. Researchers, including those with the Forest Service have documented the effects of roads and ATVs/OHVs on wildlife and the benefits of roadless areas. For example, Gilbert, Noss and Wisdom et al describe the detrimental effects of road density and human activity on large mammals causing large displacements away from roads and mechanized activity. A recent publication by the National Park Service discussed the effects of snowmobiles on wildlife. Agency researchers at UC Davis have suggested an integrated approach for addressing Canada lynx linkage corridors. An integrated analysis of the effects of roads, human use and habitat fragmentation on lynx and other species that incorporates this information as well as addressing other species of wildlife must be completed.

The discussion above describes these effects and provides numerous sources of scientific information that should be considered. In addition, several of studies have documented adverse impacts of off-road vehicles on wildlife species. These include displacement from preferred habitats, increased stress and increased use of scarce energy reserves to flee from approaching vehicles. By compacting snow, snowmobiles create travel routes that can affect species distribution, movement, habitat use patterns and population dynamics. These same routes can become barriers to subnivean animals by fragmenting their habitat. Motorized use (by snowmobiles) results in impacts to animals in Yellowstone and other national parks with animals in areas of snowmobile activity exhibiting elevated stress hormones when compared with those in areas where snowmobiles were absent. In a comparison between wolves at Voyageurs National Park in Minnesota, where snowmobiles are allowed, to Isle Royale National Park in Michigan, where they are banned, wolves exhibited higher stress hormones in areas with snowmobile activity. The stress hormone increased as snowmobiling intensity rose, almost doubling in areas with heavy snowmobile use. Noise itself has detrimental effects to wildlife, creating stress, loss of hearing, and early emergence from hibernation. An evaluation of these interrelated effects on these predators, their prey and habitat requirements must be included in the NEPA analysis for the Husky 1 North Dry Ridge mine project.

108 http://www.wildlandscpr.org/resourcelibrary/reports/ecoeffectsroads.html
111 http://repositories.cdlib.org/cgi/viewcontent.cgi?article=1002&context=imie/roadeco
An alternative must be provided that proposes road closures to attain a scientifically defensible density per square mile, grazing allotment closures, fence removals, and setting noise limits on vehicles. Winter use should be closed or severely limited in the Study Area, the CEA, and the Corridor so that lynx, wolverine and other far-ranging species (elk, deer) have an opportunity to migrate and have security cover during all seasons. The Forest Service can use its Prohibition Authority (36 CFR 261) to regulate noise and other activities detrimental to wildlife such as hunting, trapping or harassing wildlife.

14. Cumulative Effects

Our notes on the Smokey Canyon East DEIS and Cumulative Effects can be downloaded and reviewed at the link provided earlier. The same issues that we outlined in those notes must be addressed in any NEPA analysis for the Husky 1 North Dry Ridge mine project. The preceding narrative points out the need for a comprehensive analysis of the Corridor, water quality, air quality, noise, road density, seismic activity and others. These are all cumulative effects and need to be addressed quantitatively in this NEPA analysis.

Figure 23. Cumulative Effects Area for Southeast Idaho Mining
Figure 23 above, which is copied from the Caldwell Canyon Mine DEIS (Figure 9 p43) showing the Caldwell Canyon Mine CEA shows that the Husky 1 North Dry Ridge mine is surrounded by other mines. No matter where wildlife attempts to go to escape one mine, they encounter another.

Again, a fundamental aspect of NEPA is to take a “hard look” at current management, conditions, assumptions, and implementation. A NEPA document that fails to analyze the following violates the purposes of NEPA:

- Validity of assumptions from previous NEPA processes
- Accuracy of predictions from previous NEPA processes
- Adequacy of Forest Service and BLM implementation of previous decisions
- Effectiveness of actions taken in previous decisions

These items outlined above are critical to be part of the NEPA analysis for the Husky 1 North Dry Ridge mine project. Without this critical link the validity of the current assumptions is baseless. Without analyzing the accuracy and validity of the assumptions used in previous NEPA processes one has no way to judge the accuracy and effectiveness of the current analysis and proposals. The predictions made in previous NEPA processes also need to be disclosed and analyzed because if these were not accurate, and the agency is making similar decisions, then the process will lead to failure. For instance, if in previous NEPA processes for phosphate mines and other projects in the CTNF the FS said they were going to do a certain monitoring plan or implement a certain type of management and these were never effectively implemented, it is important for the reader and the decision maker to know. If there have been problems with FS’s implementation in the past, it is not logical to assume that implementation will now be appropriate. Another critical component is permittee compliance. If the grazing permittee(s) have failed to properly comply with their permit terms and conditions and AMP requirements, including utilization requirements, rotation requirements and fence maintenance then it is critical to discuss this in the NEPA document and its effects on the proposed action. If prior timber harvests, salvage sales, prescribed fire and other “forest health treatments” have not been monitored to document regeneration, beetle suppression, restoration of aspen recruitment and herbaceous understory, recovery of ground cover, then there is no valid reason for this project. The CTNF must report and analyze all past vegetation projects in the CEA.

Furthermore, the reliance on BMPs is a flawed approach that assumes they work. This was outlined in detail above.

An example of these needed comparisons is the fact that Smoky Canyon Mine is a Superfund Site. This is prima facie evidence that prior predictions and commitments were not accurate. We assume there were predictions of outcomes based on the project plans, but we do not know what those were as they were excluded from the analysis. We wish to (re)emphasize that negative impacts, and conflicts among alternative uses, relating to the comments above must not just be within the scope of the NEPA process, but treated as significant and/or key alternative-driving in nature. These should be analyzed in the Study Area, the CEA, and the Corridor for cumulative effects.

15. Contamination Issues

The DEIS and MRP are inadequate at the most basic level. They provide no information or mapping of the nature and extent of the pollution to groundwater, surface water, soils, vegetation, and wildlife existing in the Analysis Area or CEA. The North Maybe Mine East Mill Dump proposed plan was inadequate in its addressing of these issues and instead referred the reader to the Remedial Investigation and Focused Feasibility Study (RI/FFS) which are available for viewing at the Soda Springs Ranger District. The Husky 1 Dry Ridge DEIS suffers the same flaws, lies adjacent to, and is interwoven with the North Maybe Mine planned reclamation and should be analyzed jointly.
As we requested for North Maybe Mine, this DEIS needs to be withdrawn and a new plan provided that addresses the true nature of the problem, does not allow continued pollution exceeding background levels in any environmental medium and restores wildlife habitat and connectivity, streams, and springs.

The North Maybe MRP (p3) describes that "There are many historical mines within the mining district, three active mines, and some future or proposed mines." A current Fact Sheet by EPA, IDEQ and the Forest Service shows 14 phosphate mine contaminated sites in SE Idaho undergoing some level of investigation and remedial action. The North and South Maybe Mines are included. Also included are currently operating mines such as the Smoky Canyon Mine. One must ask if we have not learned anything over the decades and yet, even with current modeling, BMPs, EMPs, cover and overburden pile designs, the recently permitted Smoky Canyon mine has generated a CERCLA site in Pole Canyon Creek where the creek was covered with an overburden pile and ended up being polluted with selenium.

There appears to be great uncertainty in dealing with the mining process, storage of overburden, and the outcomes for the environment. We have reviewed and commented on the EIS for Rasmussen Valley, Dairy Syncline, Smoky Canyon and Caldwell mines to permit additional mining. (Hyperlinks to our comments). In each case we were assured BMPs, EMPs, models and containment will control the pollution. Then we are also told that pollution will be allowed up to and exceeding the EPA and State Criteria, not background concentrations. This is even to the extent of setting up Points of Compliance (POC) at which the criteria are to be met. But those POCs can be miles from the mine itself, meaning that the area within the radius of that POC will exceed the criteria and do so for centuries while natural attenuation is assumed to resolve it. The EIS for the Rasmussen Valley Mine clearly demonstrated this in its POC for the Wells Aquifer and a timeframe of centuries of pollution. Now, the Husky 1 North Dry Ridge DEIS also plans to use POCs (DEIS p27) as a mechanism for monitoring performance of its caps, covers and reclamation. But where are these POCs? And will they allow pollution of selenium and other toxic compounds to be elevated above natural background levels?

The Preassessment Screen (PAS) for the Southeast Idaho Phosphate Mine Site, Idaho is a report prepared by the Southeast Idaho Phosphate Mine Site Trustee Council. Trustees are the US Department of Interior, US Fish and Wildlife Service, US Bureau of Land Management, Bureau of Indian Affairs, US Department of Agriculture (Forest Service) and Shoshone Bannock Tribes. The PAS report describes the history of phosphate mining in the area, the lack of adequate reclamation which lead to selenium contamination in the region's soils, vegetation, surface, and groundwater. In 1996, reported livestock deaths associated with selenium uptake stimulated concerns about ecological and human health impacts from past mining operations. At the time of the Assessment in 2015, there were 17 major open pit mines. This PAS has been used to evaluate the need to conduct a Natural Resource Damage Assessment under CERCLA. The following paragraphs are taken from the PAS with our comment at the end of each:

According to the PAS, 18 mines were reviewed. One was excluded from consideration as no surface disturbance had occurred. Of the 17 remaining mines, 4 were active, including 3 recently undergoing permitting for expansion. Of the 17, selenium contamination was found at all mines and livestock deaths occurred at 6 of these. At the time of the PAS, 16,527 acres had been disturbed. (PAS p3). This extent of mining disturbance has increased in the six years since.

As Trustees, the Tribes have developed a Waste Management Act and Standards for lands within Fort Hall reservation boundaries. They believe "resources must be essentially clean and free of contaminants" as the presence of contamination may "decrease and degrade traditional foods and may preclude the use of the streams/riders in the Mine Site for fishing, swimming, and other recreational uses." (PAS p5). The Husky 1 North Dry Ridge DEIS along with the North Maybe Mine Plan do nothing of this nature as contamination and its associated threats to people and ecosystems will continue indefinitely.
The PAS characterized the open spaces and accompanying air currents, wind erosion and subsequent deposition that serves as a mechanism of chemical transport at the Mine Site. Wind erosion of surface soils may transport and deposit selenium contaminated soils some distance from its source, dependent on wind speed and other factors. These wind-deposited soils may be directly taken up by vegetation, may be deposited in aquatic or riparian systems, and/or may be incidentally ingested by wildlife feeding in the depositional areas. Other pathways include infiltration of water thru waste dumps and pits, erosion from waste rock dumps to surface soils, runoff from spring snowmelt and snow events, uptake of selenium in soil placed as caps on waste rock dumps. (PAS p28). There is no characterization of existing soil and vegetation contamination at the Husky 1 North Dry Ridge site and North Maybe Mine. There is no modeling or analysis of the potential transmission of contamination from the mine or along haul roads.

Animals feeding or grazing on vegetation, animals living in or on waste rock dumps, aquatic organisms are affected. Selenium and other hazardous substances have been documented in surface water, ground water, soils, sediment, vegetation, and animal tissues in the Mine Site resulting in fish consumption advisory, elk liver consumption advisory. (PAS p29). There is no characterization of existing soil and vegetation contamination or tissue analysis at the Husky 1 North Dry Ridge site and North Maybe Mine. What species use these features? Where is the monitoring plan to monitor soil, vegetation, animal or fish tissues?

Surface water concentrations documented at the Mine Site for selenium for streams exceeding the aquatic life chronic criteria of 0.005 mg/l for 16 locations in the Blackfoot River and various other streams ranged from the standard up to 6.89 mg/l or over 1000 times the standard. (Table 3 PAS p33). The DEIS did not provide data for affected streams but merely referenced a consultant’s report. There should be an analysis of historical and current water quality for all the stream and springs in the area including data presented in EIS for the other mines in the area, including Rasmussen, Dairy Syncline, Caldwell, and Smoky Canyon as these are all sources.

Example groundwater selenium concentrations for 11 locations in the Mine Site that were above the 0.05 mg/l criterion ranged up to 12 mg/l or 240 times the criterion. (Table 4 PAS p34). The DEIS referenced consultants’ report but did not provide an analysis of current and historical groundwater contamination by these adjacent mines, while it did mention the North Maybe Mine and CERCLA. What is the extent of contamination in groundwater currently? What is background? Where is the analysis of the effectiveness of covers at South Rasmussen or these other mines? What was promised and what is the reality?

Example sediment concentrations compared to the removal action level of 2.6 mg/kg or the screening benchmark of 2.0 mg/kg in 8 locations representing the most contaminated sites ranged up to 1300 mg/kg or 500 times the removal action level for Idaho. (Table 5 PAS p36). Given the effects to native aquatic species from the combination of COPCs, sediment and nutrients from all sources, the DEIS was lacking in a comprehensive analysis of impacts across the Analysis and CEA.

Soils and vegetation concentrations compared to action levels at locations with most elevated concentrations were provided. The soils removal action level for Idaho is 5.2 mg/kg dry wt. and the EPA screening level is 0.52 mg/kg dw. Soils ranged up to 318 mg/kg. The vegetation removal action level in Idaho is 5 mg/kg dw. Concentrations ranged up to 1010 mg/kg. (Tables 6 and 7 PAS p38). The DEIS did not provide results of sampling in soil and vegetation across the potential area of effect from the Husky 1 North Dry Ridge operation itself and in combination with the other surrounding mines.

Response actions were unknown as of the PAS, but "given the geographic extent of the Mine Site, it is unlikely that the remedial actions will sufficiently remedy injury to trust resources (including past injury from historic mining activities), and it is expected that additional restoration actions will be required." (PAS 48). As expected, there is no intent to ever return environmental media or aquatic and terrestrial habitats to background levels. What is the future cost of this philosophy across the Mine Site for all mines and for the Husky 1 North Dry Ridge mine itself?
16. Alternatives and Mitigation

The Draft Environmental Impact Statement for the Husky 1 North Dry Ridge mine does not provide a reasonable range of alternatives. The only Proposed Action alternative results in two additional open phosphate mining pits. The No Action alternative is just a postponement, not a real alternative. A reasonable alternative would provide for actions by the agencies and Itafos Conda LLC and other mine operators in the region such as JR Simplot, Agricom and Bayer (Monsanto) to correct the damage to this fragile landscape, which is greatly understated in all of the mine DEISs reviewed by Y2U. The following list constitutes more suitable actions that would go further in protecting the public’s interest in clean water, forests and wildlife rather than protecting the interests of a major corporation such as Itafos Conda LLC.

All these points for analysis and mitigation were provided in the narrative above tailored to the context of the topic at hand.

1. Mitigate highway barriers to provide wildlife crossings at three locations. Highways 30, 34, 89.
2. Map all open and closed roads and trails, including those temporarily closed, illegal and analyze the resulting habitat effects to lynx, wolverine, special status species, security habitat, wilderness, IRAs, residences. Plot sound contours to background as part of this determination. This analysis would be done at various scales including HUC6 watersheds in the Study Areas, CEA, and the Corridor. We would be happy to coordinate with the CTNF and Itafos Conda LLC regarding the scope of this analysis.
3. Further map and analyze the capability, suitability of habitats and viability of populations including all Forest Sensitive, MIS, and TE species to ensure compliance with NFMA, NEPA, ESA and other applicable regulations regarding capability, suitability of habitats and viability of populations. Past timber harvest activities, roads, mining, and related activities (OHV use, including closed roads and trails illegally used) must be analyzed in the context of the importance of habitat connectivity. The Study Area, the CEA and the Corridor need to be analyzed for habitat integrity. This would be a detailed GIS analysis showing all fragmentation, vegetation types and their former and current status as recommended in Volume IV of the CNF FRP EIS. It would include appropriate noise and human activity buffers, showing all past, present, and foreseeable activities, roads, trails, powerlines, pipelines, timber harvest areas. Provide analysis, standards, mitigations, and other on-ground measures such as road crossings, overpasses, road closures, closure of areas to ATVs/OHVs and snowmobiles, and limiting noise levels to enable these and other animals that rely on migration and security areas to be allowed to do so.
4. Provide a more detailed mapping, capability and suitability analysis for lynx and wolverine habitat integrating the above information on the Corridor and current conditions (security cover, snow cover, elevation, mines, roads, timber projects and other fragmenting or habitat degrading activities) for wolverine.
5. Sage grouse leks including current and historical should be mapped and population trends over time presented along with the time frame of mining for each mine from initiation of construction to current. Road densities and proximity to leks, grazing and the other factors known to degrade sage grouse habitats should be analyzed for the entire mining district and a determination made based on science as to why, when there are hundreds of thousands of acres of sage grouse habitat in the region leks are being abandoned. Another element of the analysis is connectivity between populations, for example the Bear Lake Plateau population to the south. Connectivity is obviously important and sage grouse can range over long distances. Include the National Technical Team Report guidance including delineating the types and areas disturbed for leks and nesting areas from industrial development and roads. For example, a 4-mile radius from the disturbance is recommended, while citing a Wyoming study showing impacts up to 11 miles. Use these as buffers.
6. To mitigate climate change effects, use the principles of the Roadmap for Climate Change and National Fish, Wildlife and Plants Climate Adaptation Strategy to assess habitats and connectivity. Offset emissions by cessation of livestock grazing over an area that would allow carbon sequestration to match emissions. This would allow carbon to be stored in plants and soil, while rebuilding soils, allowing streams and riparian areas to recover, reducing soil loss and stream sediment.
7. Northern goshawk, as an MIS, must have a determination of capable and suitable habitat and these home ranges must be analyzed for current condition, and whether capable or suitable, considering past timber and
forest health treatments, roads, mining and grazing. The population data for snowshoe hare should be analyzed and compared to the level of activities occurring here.

8. The analysis must address the role of predators and the killing of these important animals by livestock permittees, trappers, DWR and Wildlife Services, disclosing the losses on an annual basis since the 2003 Forest Plan was implemented. It should also address the economics of this, and the risk to non-target animals, pets, and the ecosystem. The Forest Service and IDFG should cease trapping in the Corridor and CEA for the Southeast Idaho phosphate mines to curtail losses and allow lynx, wolverine, and others to move freely and without risk of being trapped and killed. No predator control should be allowed for livestock as predator friendly management methods are available and should be detailed and required.

9. Air quality monitors should be placed adjacent to the mine on public roads and at the edge of the disturbance area. These should continuously monitor PM. High-volume filters should be used to capture dust for Hazardous Air Pollutant analysis.

10. A temporal analysis by location and total occurrence of earthquakes should be done and compared to the progression of mining throughout the region.

11. Surface water impacts by sediment and metals could be mitigated in part by restoring stream flows, retiring grazing permits through buyouts, removing diversions for livestock watering, and removing livestock to restore stream banks and riparian areas. An analysis of the location of these diversions, the net effect on spring and stream flows, riparian and wetland areas should be done.

12. Because the impacts of mining are concurrent with motorized recreation use of the Southeast Idaho mining CEA and the Corridor, an analysis of this activity and its impacts thru road density, noise, effects on people and wildlife will be analyzed. Propose and carry out road closures to attain a scientifically defensible density per square mile, grazing allotment closures, fence removals, and setting noise limits on vehicles thru constant monitoring and enforcement. Winter use should be closed or severely limited in the Study Area, Caribou/Webster/Preuss Subsections, Diamond Mountain Block and CEA so that lynx, wolverine, and other far-ranging species (elk, deer) have an opportunity to migrate and have security cover during all seasons. The Forest Service can use its Prohibition Authority (36 CFR 261) to regulate noise and other activities detrimental to wildlife such as hunting, trapping, or harassing wildlife. The mining companies could provide the heavy equipment and labor working with the CTNF to carry out road closures in these areas.

I have also attached our July 30th, 2021, comments for the North Maybe Mine East Mill Dump project. These comments are intertwined with and are relevant to the Husky 1 North Dry Ridge project (Attachment 6).

I have also attached the recent declaration wrote by Y2U staff Ecologist Dr. John Carter for the Caribou and Targhee NF Prescribed Fire Projects. This declaration and its content is relevant to the Husky 1 North Dry Ridge mine project NEPA analysis and we are submitting the declaration as part of our comments (Attachment 7).

Respectfully,

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Attachment 1 - Pocatello ARMP Goals, Objectives, Actions

FLPMA incorporates language from the Multiple Use and Sustained Yield Act stating in part, "use of some land for less than all of the resources; a combination of balanced and diverse resource uses that takes into account the long-term needs of future generations for renewable and non-renewable resources, including, but not limited to, recreation, range, timber, minerals, watershed, wildlife and fish, and natural scenic, scientific and historical values; and harmonious and coordinated management of the various resources without permanent impairment of the productivity of the land and the quality of the environment with consideration being given to the relative values of the resources and not necessarily to the combination of uses that will give the greatest economic return or the greatest unit output."

A review of the April 2012 Record of Decision and Pocatello Field Office Approved Resource Management Plan provides a picture of management that states, through its Planning Criteria, Goals, Objectives and Actions, an intent to provide for wildlife and watershed values, and native American values. A reading of the Final Environmental Impact Statement for the Caldwell Canyon Mine and Reclamation Plan presents a vastly different picture. It is a picture of a single use, phosphate mining, that literally bulldozes all other considerations aside and is given priority over all other uses. In spite of the 545-page length of the FEIS, and the numerous technical reports referenced, we cannot say that the multiple use values espoused by FLPMA are supported. Nor can we say that the intent of the ARMP is carried out. In the following paragraphs we summarize some, but not all, of the provisions of the ARMP that are deficient in the FEIS.

ARMP Selected Planning Criteria (ARMP Table 5)

- The principles of multiple use and sustained yield, as set forth in FLPMA, will be applied in the RMP.
- Recognize Idaho Non-Point Source Management Program Plans and relevant state water quality standards.
- Maintain, improve, or restore natural functions to benefit water storage, groundwater recharge, water quality, and fish and wildlife values.
- Provide for multiple use and sustained yield of forage for wildlife and domestic livestock. In consultation with the Idaho Department of Fish and Game (IDFG), ensure that wildlife habitat is sustained.
- Incorporate management actions that do not jeopardize the continued existence of federally listed threatened or endangered plant or animal species or that result in the destruction or modification of critical habitat.
- Incorporate management actions that protect sensitive species and do not contribute to the listing of species proposed for federal listing (candidate species).
- Protect and maintain the intrinsic and recreational values associated with native and appropriate nonnative species.
- Protect critical deer and elk winter range and big game habitat.
- Consider need to minimize harassment of wildlife or significant disruption of wildlife habitats.
- Identify areas that are managed specifically to protect nonmineral resource values but may conflict with mineral resource development.
- Manage to retain values that make cultural resources and areas significant to tribal members. Protect cultural use areas, in cooperation with tribal governments. Recognize Fort Bridger Treaty rights with all associated management activities and uses.

The ARMP (p10) notes that BLM planning regulations require its plans to be consistent with those adopted by other federal, state, local and tribal governments. The 2003 Caribou National Forest Revised Forest Plan and EIS was among those listed.

The ARMP includes Goals, Objectives and Management Actions. These bullets below reflect these.
• GE-1 use inventories and surveys to document the condition and extent of resources/uses to monitor and respond to changes in conditions. Mitigate potential adverse effects.
• GE-2 consistent with multiple use and sustained yield, achieve desired conditions while providing an ecologically healthy environment. Reduce impacts from management actions and maintain or improve resource conditions.
• GE-3 provide proper nutrient cycling, hydrological cycling, restore or improve public lands adversely affected by major surface disturbance. Employ Idaho Standards for Rangeland Health (1997) to determine success of reclamation, rehabilitation, or restoration activities.
• CR-1 ensure scientific and socio-cultural values are maintained and available for appropriate uses by present and future generations. Traditional uses have long term preservation.
• TR-1 maintain traditional/cultural use values and the health of land and water resources so treaty rights and interests can be fulfilled.
• SW-1 provide for soil quality, productivity and hydrological function within naturally sustainable limits.
• SW-2 manage activities to maintain or contribute to the long-term improvement of surface and ground water quality; prioritize stream management and restoration by presence of sensitive species, amount of stream on BLM lands, condition and importance for achieving multiple use objectives.
• VE-1 mitigation measures to reduce visual contrasts with rehabilitation/restoration areas
• VE-4 maintain or increase Land Health Condition-A acres; prioritize treatment and restoration in Greater sage- and Columbian sharp-tailed grouse Source and Key habitat. habitats for conservation and recovery of special status species; in aspen/aspen conifer and dry conifer types maintain or increase LHC-A and B acres.
• FW-1 manage habitats for vegetation composition and structure assures continued presence of fish and wildlife as part of an ecologically healthy system; manage riparian areas for habitat and population linkage, restore degraded riparian areas, use seasonal restrictions for winter range, fawning and calving habitats, during planning reduce number of designated routes/roads in big game habitats; manage livestock season of use, stocking rates to provide sufficient shrub forage for wildlife. Big game winter range shown in Figure 2.
• FW-2 maintain connectivity among habitats, use opportunities to improve habitat connectivity and reduce fragmentation of upland and riparian habitats by land actions, habitat improvement projects, wildlife, fire ES&R and restoration projects.
• SS-1 manage special status species and habitats to provide for their continued presence and conservation. Conserve, inventory and monitor special status species. Maintain or improve the quality of listed species habitat by managing public land activities to support species recovery and the benefit of those species.
  o Bald eagle - determine distribution of populations and suitable habitats; cooperate in conducting nest surveys and monitoring; cooperate in maintenance and improvement of habitat in key foraging areas such as deer winter range, aquatic and riparian habitats.
  o Gray wolf - determine distribution of wolves and key gray wolf habitat areas such as dens, rendezvous sites, and crucial big game winter ranges; cooperate in improving gray wolf habitat by improving big game winter range.
  o Utah Valvata Snail - gather existing information to understand the distribution of known populations, ensure Federal actions support or do not preclude species recovery.
  o Maintain or improve the quality of sensitive species habitat by managing to support recovery and benefit those species
  o Pygmy rabbits - survey potential habitats, manage sagebrush habitats for suitable pygmy rabbit conditions, suitable and potential habitat should be managed to allow for expansion of populations.
  o Boreal toads and Northern leopard frogs - identify and inventory populations, manage riparian areas towards PFC, increase pool habitat, mitigate activities having adverse effects on habitats, manage Lane and Lander Creeks as priority areas.
  o Sage Grouse - Protect and maintain suitable habitats and reconnect separated populations, manage key habitat for sagebrush, grass and forb cover, monitor progress and adjust activities to make
progress towards Greater sage grouse goals and objectives, evaluate future actions for threats and restore shrub-steppe habitats in source areas, restoration areas and areas that link populations.

- Cutthroat trout - monitor populations, habitat quantity and quality, enhance channel integrity, water quality, and habitat connectivity, fence streams with these species to exclude livestock, eliminate or reduce threats to present or potential cutthroat trout distribution and to habitat quality and quantity, strive to achieve highest quality trout habitats

- Migratory birds - improve canopy cover and understory health of sagebrush, maintain 30 - 50% of sagebrush habitat in 5th HUC in contiguous blocks greater than 320 acres, stabilize or increase native grass and forb cover in sagebrush, restore shrub-steppe habitats in restoration or corridor areas.

- Special status plants - meet or make significant progress towards meeting Idaho Standards for Rangeland Health (BLM 1997) for special status plant habitat.

- Where special status species can be conserved and habitat connectivity improved, lands will be acquired through land tenure adjustments, easements, and interagency cooperation.

- LR-4 assure land classifications and withdrawals of public lands are appropriate to protect important resource values.

- LR-5 maintain overall public land base, protect significant resource values, high value parcels may not be suitable for disposal except through exchange for equal or higher resource value lands.

- LR-6 balance development with protection of natural resources and public enjoyment and recreation.

- ME-1 reclamation plans for minerals development operations will be designed to meet applicable Idaho Standards for Rangeland Health (BLM 1997), reclamation complete when these standards have been met.

- ME-2
  - On split estate lands approval of any operations plan will be coordinated with the surface owner to mitigate impacts; stipulations, mitigation and reclamation requirements will be the same as on public lands and/or equivalent to State standards.
  - Final reclamation will meet applicable standards for watersheds, riparian areas and wetlands, stream channels and floodplains, seedings, exotic plant communities, and water quality with future site management directed towards attaining standards for native plant communities and threatened and endangered plants and animals (BLM 1997).
  - The lessee/operator will monitor reclamation and report to the Authorized Officer annually until reclamation is accepted as adequate.
  - Mineral operations will replace or mitigate any loss of available surface water sources for uses such as wildlife or grazing.
  - Plan selection for reclamation will reflect the surrounding ecosystem and post development land use.
  - Before bond release, the site will be assessed to assure minimum ground cover exists to attain long-term soil productivity, ground cover persists, impacted lands meet or trend towards meeting applicable standards and post development land use objectives. In reclaimed areas, vegetation will include species that meet wildlife habitat needs. Cover for wildlife will be incorporated into design plans (e.g., slash piles, logs, rock piles, etc.).
  - Prevent or control sediment and the release of contaminants into the environment.
  - Monitor hydrologic function and watershed health with adjustments to operations and reclamation as necessary to achieve PFC of watersheds, revegetation objectives and protection of resources.
  - Mine site plans designed to protect SE Idaho surface water resources, wildlife habitat and ecological resources, multiple beneficial uses, ground water resources.
  - Meet ARMP Appendix F and (p101) action levels for selenium, cadmium, chromium, nickel, vanadium and zinc for vegetation, ground water, surface water, and CWA.
  - Appropriate site-specific mitigation measures will be implemented as conditions of approval.
  - Site specific mitigation measures will be developed through the NEPA process and applied to ensure that operations comply with applicable laws, land use plan guidance and do not result in unnecessary degradation.
The Pocatello ARMP (p10) states:

BLM planning regulations require its plans to be consistent with officially approved or adopted resource-related plans of other federal, state, local, and tribal governments, to the extent those plans are consistent with federal laws and regulations applicable to public lands. Plans formulated by federal, state, local, and tribal governments that relate to management of lands and resources were reviewed and considered as the Proposed RMP/Final EIS was developed. These plans are the following: Caribou National Forest Revised Forest Plan and EIS (USFS 2003).

The ARMP then goes on to list numerous other planning documents relevant to this consistency requirement. We have outlined in Attachment 2 below a few of the provisions of the 2003 CNF RFP below. These should be incorporated into the DEIS analysis and mitigation plans for the Husky 1 North Dry Ridge mine project. Chapters 1 - 3 of the Forest Plan address the Vision, Desired Future Condition, Goals, Standards and Guidelines the Forest Service committed to use. The public has relied on these commitments, but the Forest Service apparently has left these up to the project proponents. The project proponents did not address these in any depth, if at all. The quotes listed below are from the CNF RFP with the pages identified.
Attachment 2 - Forest Plan Guidance

Chapters 1 - 3 of the Caribou National Revised Forest Plan (RFP) address the Vision, Desired Future Condition, Goals, Standards and Guidelines the Forest Service committed to use. The public has relied on these commitments, but the Forest Service apparently has left these up to the Project Proponents. The Project Proponents did not address these in any depth, if at all. There is no demonstration that the Forest Service has complied with or addressed these commitments. Quotes are from the RFP with pages identified.

"Develops and uses scientifically credible strategies for the protection of species and ecosystems." (p1-2). Migration corridors, linkages, peripheral habitat were not analyzed.

"Monitoring evaluation is an essential feature of the Plan." and (p1-4). No Forest Service monitoring of DFC, habitat and populations presented.

"The NFMA diversity provision and the fish and wildlife resource regulation establish a goal to provide habitat for the continued existence of vertebrate species in the planning area. The goal is met by following the provisions of 36 CFR 219.19(a)(1) through (a)(7). The bottom line is that the Forest Service may not adopt a plan that it knows or believes would, through possible future Forest Service actions, extirpate a vertebrate species from the planning area." (p1-4). The destruction of habitat from mining, roads and other activities is effectively extirpating most species from the mine footprint and project areas during mining and for some species, permanently. There was no analysis of population data from Forest Service monitoring of population trends and no analysis of project and cumulative effects on habitats and species other than broad general assertions.

"Watershed protection and ecological restoration have been given a high priority in the Forest Service in decision-making processes, including budget and program planning, land management planning, project implementation, and watershed assessments for forest and interagency plans." (p2-1). Other than reclamation of the mine footprint to some early seral plant community, habitat structure and ecological restoration were not addressed.

"New scientific information indicates that 60 percent of the healthiest aquatic habitats occur in roadless or very low road density areas on federal land, specifically in the Columbia River Basin (ICBEMP, 2000)." (p2-2). Our analysis shows the HBIRA in already degraded condition and the project will eliminate all security habitat, yet security habitat in the HBIRA was not analyzed.

Only 10% of watersheds are in good condition, 80% need restoration and improvement. Only about 30% of riparian areas are in pfc. (p2-3). Aspen are in a high departure from HRV and a 40% decline in aspen acres on the Forest. (p2-4). Sagebrush habitats have more bare ground and suffer increasing soil loss. (p2-5). We have recommended mitigation for many aspects of the ecosystem. These areas are all degraded, yet we see no intent to restore or improve habitats in the Study Area or CESA.

"Due to changes in and loss of historic habitat, big game animals are pioneering new winter ranges on and adjacent to the Forest. The most recent impact is urban residential development on historic winter ranges." (p2-6). Winter range is effectively destroyed by this project, yet there is no concomitant restoration effort such as road closures to partially offset this loss.

"The Revised Forest Plan addresses minerals operations, reclamation and hazardous substance management by requiring the mine operators to use the most current science and research as it becomes available." (p2-11). We saw no studies of successful reclamation or covers, no data from other projects in the mining area to validate the practices proposed. This also applies to BMPs or EMPS.
"In six of the seven ecological subsections on the Forest, Yellowstone and Bonneville cutthroat trout stronghold restoration and protection will be emphasized." (p2-12). In spite of Slug Creek being a biological desert for native cutthroat trout, we saw no restoration effort to restore flows and habitat through addressing livestock impacts from direct access to streams, springs, wetlands, riparian areas, AIZ or water diversion impacts. Restoration mechanisms and locations should have been identified and proposed as part of the mitigation.

"The National Forest Management Act (NFMA) regulations require National Forests to provide habitat in order ‘to maintain viable populations of existing native and desired non-native vertebrate species in the planning area.’” (p2-13). There was no population analysis for species at risk, nor was the habitat fragmentation affecting big game, sage grouse, lynx, wolverine, raptors such as goshawk analyzed.

"The Plan addresses big game issues important to the Idaho Department of Fish and Game by designating winter ranges and prescription areas which emphasize big game security. It will maintain habitat for threatened, endangered, and sensitive species, where they exist." (p2-13). There was no analysis of the current state of wildlife security areas and our analysis using a sound buffer of one mile, showed the security habitat in the HBIRA was zero.

DFCs and Vision for the CNF: "Landscapes display a balance of physical landscape components, including upland terrestrial habitats, riparian areas, wetlands, and clean water. Both aquatic and terrestrial habitats are becoming less fragmented and more connected." (p3-2). Once again there was no analysis showing that habitats are becoming less, not more, fragmented. The maps we provided indicate severe fragmentation in the mining area and this has not been analyzed.

"Within 10 years of signing of the Record of Decision (ROD), reassess composition and structure and other indicators used in the Caribou Sub-regional Properly Functioning Condition Assessment. This should include the Caribou and adjacent areas to determine changes achieved." (p3-3). No information on PFC of the habitats was provided.

"Soil quality, productivity, and hydrologic function are maintained and restored where needed. Long term soil productivity is sustained and meets future land needs. Soils have adequate protective cover, adequate levels of soil organic matter (litter), and coarse woody material. Physical, chemical and biological processes in most soils function to sustain the site. Microbiotic crusts and their importance to soil stability are recognized. Management practices are designed to retain these soil components.” (p3-5). There was nothing in the DEIS describing how these processes and components are to be restored.

"Long-term soil productivity is sustained by limiting detrimental soil disturbances and by retaining ground cover, microbiotic crusts, fine organic matter and, where applicable, woody residue on activity areas." (p3-6). All woody residues will be lost from the forested and shrub habitats, and soil organic matter, microbes will be disrupted by excavation, storage and mixing. This was not addressed.

"For ground-disturbing activities where detrimental soil disturbances (defined in FSH 2509.18) occur on areas of 10 acres or greater, plan and implement rehabilitation to meet desired future conditions." (p3-6). The DEIS did not address DFC for the disturbed areas.

"Detrimental soil disturbance such as compaction, erosion, puddling, displacement, and severely burned soils caused by management practices should be limited or mitigated to meet long-term soil productivity goals." (p3-6). No data or research was provided to demonstrate that reclaimed areas will meet this.

"Sustain site productivity by providing the following minimum amounts of woody residue =3
inches in diameter dispersed on the site as outlined in Table 3.1." (p3-7). Reclamation description did not provide for woody residue.

"Manage air quality to meet health and safety requirements and existing laws, rules, regulations and agreements." (p3-7). The air quality analysis just made comparisons to NAAQS, not short-term, local effects. It did not collect or provide short term exposure data for PM in the CESA.

"Priority shall be given to acquiring lands having special importance or unique characteristics such as riparian areas, historic sites, habitat for federally listed species, recreation sites, etc." (p3-9). The land exchange did not provide for these unique characteristics.

"Adequate bonds or other security instruments shall be required for special use authorizations if it is determined that the use has potential for disturbance that may require rehabilitation or when needed to ensure other performance." (p3-10). Only a reclamation bond for the mine footprint was provided. Nothing to ensure that long term damage is corrected, or habitats restored.

"Proponents of new facilities within existing corridors, and new corridor routes, shall demonstrate that the proposal is in the public interest, and that no other reasonable alternative exists to public land routing. Utility corridors should have irregular clearing widths and follow patterns of existing natural openings." (p3-10). There was no provision for maintaining natural patterns for the utility corridor.

"Mineral resources are available for development, consistent with other resource uses. Paleontological resources are properly managed to provide for preservation and use of these resources for current and future generations. Drastically disturbed sites are reclaimed so that natural recovery to pre-disturbed conditions is most likely. Reclamation emphasizes: 1) suitable topsoil preservation; 2) use of native plant species; and 3) stabilizing lands to a topographic relief (landform) that conforms to natural surroundings. Drastically disturbed lands are reclaimed to prescribed post-disturbance land uses as soon after disturbance as is practical. On mined lands and other drastically disturbed lands, maintain or reestablish hydrologic function, integrity, quality and other surface resource values within the capability of affected lands. Provide for mineral resource development using state of the art practices for surface resource protection and reclamation, and with consideration of social and economic resources. Mining activities are administered to prevent the release of hazardous substances in excess of established state and/or federal standards. Reclamation is designed to eliminate or minimize wildlife, livestock, and/or human exposure to hazardous substances." (p3-11). No science provided or studies from reclaimed areas in the phosphate mining area to show the success of reclaiming these areas, the plant communities developed over time, the status of COPCs in soils and vegetation. Did not address restoration of hydrologic function, particularly for streams and springs and their associated riparian or wetland areas.

"Conduct annual reviews of Best Management Practices (BMPs) and make appropriate adjustments to ensure that hazardous substance releases do not exceed state and/or federal standards." (p3-12). There was no summary of these reviews or any studies documenting the effectiveness of BMPs or EPMs.

"Lessee/ operator shall conduct pre-mining, concurrent, and/or post-mining water quality and aquatic habitat monitoring (both surface and groundwater) on all phosphate-mining sites where bond release has not occurred, using most current sampling procedures and protocols." (p3-12). Studies were from a decade earlier, nothing current and no apparent monitoring plan to determine ongoing conditions as mining proceeds, or for that matter during and after reclamation.

"Best Management Practices shall continue to be developed, refined and implemented to ensure that no release of hazardous substances into the environment exceeding established state and/or federal standards occurs." (p3-12). We commented in detail on the past failures of covers and BMPs. The existence of COPC contamination at Smoky indicates the technology is still experimental.
and cannot be relied upon.

"When surface disturbing activities are proposed within geologic units having a moderate or high potential for the occurrence of vertebrate fossils (other than fish or sharks), a field survey of the area shall be made prior to, and if possible, during the proposed activities." (p3-12). We did not find reference to field surveys for paleontology in the DEIS, only review of studies.

"Reclamation vegetation shall be monitored for bio-accumulation of hazardous substances prior to release for multiple use management." (p3-13). No studies or summaries of past projects reclamation or affected areas other than the PAS. Are mining companies collecting data on reclamation areas and soils adjacent to the mine footprint and haul roads to ascertain the concentration of COPCs in soils and vegetation?

"The lessee/operator shall monitor reclamation work annually and report to the Forest Service until reclamation is accepted and the bond released." (p3-13). DEIS should have reported the results of this monitoring across the phosphate mine area to inform the public. Apparently, some reclamation of covers remains very sparse and the PAS reported high concentrations in soil and vegetation.

"Loss of available surface water sources for uses such as wildlife or grazing, as a consequence of mining operations shall be replaced or mitigated by the mine operator. This includes the loss of water quality sufficient to maintain post-mining uses." (p3-13). No mitigation described for loss of these nor any monitoring and mitigation plan for post mining water quality.

"Ground cover should be assessed prior to release of the reclamation bond to assure: 1) minimum ground cover exists to attain long-term soil productivity requirements; 2) ground cover should persist at minimum cover needs without artificial assistance (e.g. watering, fertilizers, etc.); and 3) meet or trend towards post-mining land use goals." (p3-14). Same comments as above. No reported data for the various mines showing the status of revegetation.

"In reclaimed areas, vegetation should include species that meet wildlife habitat needs. Wildlife structures (slash piles, logs, rock piles) using native vegetation and materials are designed to provide cover for wildlife movements in created openings." (p3-14). No provision for these features in the DEIS reclamation description.

"Watersheds provide infiltration, retention, and release of water appropriate to soil type, vegetation, climate, and landform. Watersheds provide a well-distributed pattern of nutrients and energy as well as diverse age-classes of vegetation that contribute to watershed health. Restoration strategies promote recovery of watershed, riparian, water quality and aquatic conditions characteristic of the geoclimatic setting." (p3-15). No restoration strategy described to restore these structural and functional characteristics.

"Each year, complete at least one Watershed Assessment for a 5th HUC watershed. Incorporate Hydrologic Condition Inventories using A Framework for Analyzing the Hydrologic Condition of Watersheds or current equivalent Regional or National guidance." (p3-16). Nothing provided in the DEIS. Surely these watersheds affected by mining have high priority for investigation. "Not more than 30 percent of any of the principal watershed and/or their subwatersheds (6th HUC) should be in a hydrologically disturbed condition at any one time." Note hydrologically disturbed applies to changes in natural canopy, surface soil characteristics that may alter natural streamflow quantities and character. (p3-16). The DEIS presumes that 30% of a watershed can be dug up and destroyed by mining by conflating timber harvest or sagebrush treatment, i.e., canopy removal with mining. These need to be separated, the disturbances in the CESA mapped, described and their characteristics, monitoring data provided and analyzed.
"Proposed actions analyzed under NEPA should adhere to the State Nonpoint Source Management Plan to best achieve consistency with both Sections 313 and 319 of the Federal Water Pollution Control Act." (p3-16). IDAPA provides for practices such as livestock exclusion and buffer zones for riparian areas to address sediment and e. coli pollution. There was no plan to relieve stress on the streams and springs in the CSA by reducing livestock impacts or water diversions.

"Diverse forested and non-forested ecosystems are maintained within their historic range of variability and/or restored through time with emphasis on aspen, aspen-conifer, mixed conifer, big sagebrush, mountain brush and tall forbs." (p3-17). Reclaimed ODAs and mine pit do not provide this HRV.

"In each 5th code HUC which has the ecological capability to produce forested vegetation, the combination of mature and old age classes (including old growth) shall be at least 20 percent of the forested acres. At least 15 percent of all the forested acres in the HUC are to meet or be actively managed to attain old growth characteristics." (p3-19). There was no discussion or analysis of the current status of forested vegetation, the amount removed, the percentage of mature and old age classes to compare with this criterion.

"Maintain the dead and down woody material guidelines for wildlife. (See Wildlife Standards and Guidelines for Dead and Down material)." (p3-19). No mention of how this is to be achieved in the reclamation plan or in areas outside the mine footprint.

"The Forest provides habitat that contributes to state wildlife management plans. Forest management contributes to the recovery of federally listed threatened, endangered, and proposed species and provides for conditions, which help preclude sensitive species from being proposed for federal listing." (p3-24). We discussed the displacement of wildlife and fragmentation of habitats, loss of security areas and blocking of migration corridors for lynx and other species by roads, mines, transmission lines. This was not fulfilled in the DEIS.

"Maintain, and where necessary and feasible, provide for habitat connectivity across forested and non-forested landscapes." (p3-24). Nothing was provided in the DEIS to mitigate fragmentation or restore connectivity.

Wolverine Habitat: "Within two years of signing the ROD, complete a GIS analysis to identify potential wolverine natal den sites. Within four years of the ROD, survey potential wolverine natal den sites to document wolverine presence and assess suitability as natal denning habitat." (p3-24). The FEIS for the RFP provided information on wolverines, but there was no mention of these studies in the DEIS.

Canada Lynx Habitat: "Within three years of signing the ROD, complete surveys on the Soda Springs and Montpelier Ranger Districts." (p3-24). No evidence in the DEIS that this was done.

Sage Grouse: "Within five years of signing the ROD, map functional and degraded sage grouse nesting and winter habitat within 5 miles of known leks. Identify opportunities to increase quality or quantity of that habitat." (p3-25). No evidence that this was done, in fact, ground cover and herbaceous vegetation cover was not documented while the DEIS claims sage grouse habitat is marginal in the area. This is an unsubstantiated claim.

Migratory Land Birds: "Within five years of signing the ROD, establish breeding bird trend plots to monitor changes in breeding birds in relation to structure or shrub riparian habitats. Once established, reread plots every three years." (p3-25). There was no discussion of these trend plots and the resulting data if they were ever established and monitored.
Amphibians: “Repeat amphibian surveys at 10-year intervals to determine habitat and population trends.” Survey potential habitat. (p3-25). No evidence of these surveys.

Boreal toads: "Within 2 years of signing the ROD, assess the potential for impacts to breeding boreal toads from migratory movements across Tincup Highway and impacts from trampling by recreational activities and fishing at the site. If problems are found, identify and implement measures to mitigate impacts." (p3-25). No evidence this was done. It provides an opportunity for mitigation.

In project analyses affecting grassland, sagebrush, mature and old forest habitats, assess impacts to habitat and populations for MIS Columbian sharp-tailed grouse, sage grouse and northern goshawk. (p3-25). No data provided for the cover and vegetation community characteristics needed for these MIS. No population trends provided.

Snag/cavity nesting habitat not characterized. Table 3.3 lists biological potentials by forested vegetation type. (p3-28). There was no analysis of these characteristics for the Study Area or CESA.

"Management direction which will maintain linkages for Canada lynx on the Forest is located in the following places: Vegetation Desired Future Conditions; Vegetation Goals 1-4; Vegetation Standard 2; Wildlife Goals 2, 3, and 5; Vegetation Goal 7; Lands Objective 1; and Lands Standard 1." (p3-28). There was no analysis of the current status of these attributes or measures needed to maintain or restore the linkages.

Northern goshawk standards and guidelines are provided in Table 3.5. "Open roads in goshawk territories shall be given priority for closure to meet management prescription road density standards. First priority shall be to close roads in nest areas; second priority in post-fledging family areas; third priority in foraging areas. Where possible, open road density should be zero in the nest areas and the post-fledging family areas." (p3-30). Road density was not addressed, goshawk home ranges were not mapped and analyzed for the habitat characteristics, security and road densities.

Habitat guidelines for Flammulated, Boreal and Great Gray owls include limiting timber harvest and maintaining mature and old forest age classes. (p3-31). Nothing was discussed regarding the current status of habitats for these owls relative to their needs.

Big game guidelines provide for buffers for sight distance around big game concentration areas and provide for security or travel corridors near created opening. (p3-31). These were not identified by location and no mapping or analysis of travel corridors functionality occurred.

For Sage grouse, "Management activities should consider proximity to active lek locations during sitespecific project planning. Those within 10 miles of an active sage grouse lek and 2 miles of active sharp-tailed grouse leks should be considered further for suitability as grouse habitat." (p3-32). The DEIS did not provide data or analysis of the current condition of habitats for sage grouse within 10 miles of the Study Area or the CESA.

Amphibian guidelines include "Maintain amphibian habitats when developing and modifying springs and wetlands." (p3-32). Habitats are to be reduced or destroyed. Nothing was discussed relative to restoring or mitigating these other than the HEA which appears to do little for local species.

Land Bird guidelines include: "Stands of mature trees (including snags and dead-topped trees) should be maintained next to wet meadows. Where feasible, maintain 30 to 50 percent of the sagebrush habitat in
a 5th code HUC in contiguous blocks greater than 320 acres to support sagebrush obligate species. (Page and Ritter, 1999). Practices which stabilize or increase native grass and forbs cover in sagebrush habitats with 5% to 25% sagebrush canopy cover should be implemented. (Page and Ritter, 1999). In sagebrush habitats, manage herbaceous cover to conceal nests through the first incubation period for ground and low shrub-nesting birds. It is assumed that proper use of rest-rotation or deferred-rotation grazing should meet these conditions, although not every year on every area (Idaho Partners in Flight 2000)." (p3-33). These attributes and their management were not addressed.

Transportation goals, standards, guidelines and objectives include: "Roads and trails not needed for long-term objectives are decommissioned, stabilized, and restored to a more natural state. Within three years of signing the ROD, initiate site-specific travel planning to incorporate Revised Forest Plan direction on access management. Roads identified as unneeded in a roads analysis should be decommissioned, stabilized and returned to production. " (p3-36). This was not addressed. All temporary and illegal roads and trails should be mapped and, as we suggest, the mining companies could do this as a mitigation.
Attachment 3 – Laws and Regulations Pertaining to Mining

Idaho State Title 47 Mines and Mining

47-1803 (2) "An operator’s commitment to reclaim affected lands and operator’s payments to the reclamation fund shall be documented on a department of lands form requiring that the operator shall faithfully perform the requirements of the approved plan and comply with all administrative rules and policy governing the operation."

Idaho Department of Lands Resource Protection and Assistance Bureau - FAQs.

- Bond rate not to exceed $15,000 per acre
- Department may deny a reclamation plan if it does not address all requirements of the Act.
- Bond may be posted with Forest Service or BLM
- Appeal under Rule 080 and 160.07 of Rules and Regulations Governing Exploration and Surface Mining Operations in Idaho

47-1501. Purpose of Chapter. It is the purpose of this chapter to provide for the protection of the public health, safety and welfare, through measures to reclaim the surface of all the lands within the state disturbed by exploration and surface mining operations and measures to assure the proper closure of cyanidation facilities and thereby conserve natural resources, aid in the protection of wildlife, domestic animals, aquatic resources, and reduce soil erosion.

47-1501 (19) Permanent Closure Plan means a description of the procedures, methods, and schedule that will be implemented to meet the intent and purposes of this chapter in treating and disposing of cyanide containing materials including spent ore, tailings, and process water and in controlling and monitoring discharges and potential discharges for a reasonable period of time based on site specific conditions.

47-1510. VEGETATION PLANTING. (a) Except as otherwise provided in this act, an operator shall plant, on affected lands, vegetation species which can be expected to result in vegetation comparable to the vegetation which was growing on the area occupied by the affected lands prior to the exploration and surface mining operations. (b) No planting shall be required on any affected lands, or portions thereof, where planting would not be practicable or reasonable because the soil is composed of sand, gravel, shale…


FLPMA and BLM

FLPMA 43 U.S.C. 1732(b) 43 CFR 3809.411(d)(3)(iii) requires BLM and USFS to prevent "unnecessary or undue degradation" of public lands.

43 CFR 3809.11, 3809.401 require a detailed reclamation plan.

43 CFR 3809.420 require saving topsoil for reshaping disturbed areas, erosion and water control measures, toxic materials measures, reshaping and re-vegetation where reasonably practicable, and rehabilitation of fish and wildlife habitat.

43 CFR 3802.0-5(d) mining in WSA additionally requires surface disturbance be "reclaimed to the point of being substantially unnoticeable in the area as a whole"

43 CFR 3000.0-5 to 3936.40 BLM Mining regulations
3501.17 Are there any general planning or environmental considerations that affect issuance of my permit or lease?
(a) BLM will not issue you a permit or lease unless it conforms with the decisions, terms and conditions of an applicable comprehensive land use plan.
(b) BLM or the surface management agency will comply with any applicable environmental requirements before issuing you a permit or lease. This may result in conditions on your permit or lease.
(c) BLM will issue permits and leases consistent with any unsuitability designation under part 1600 of this title.

§3503.21 What happens if the surface of the land I am interested in belongs to a non-Federal political subdivision or charitable organization?
(a) BLM will notify the entity who owns the surface of the lands included within your permit or lease application if that entity is:
(1) Any State or political subdivision, agency or instrumentality thereof;
(2) A college or any other educational corporation or association; or
(3) A charitable or religious corporation or association.
(b) The entity who owns the surface of the lands in your application will have up to 90 days to suggest any lease stipulations to protect existing surface improvements or uses, or to object to the permit or lease. BLM will then decide whether to issue the permit or lease and which, if any, stipulations identified by the surface owner to include, based on how the interests of the United States would best be served.

§3503.28 Does BLM incorporate any special requirements to protect the lands and resources?
BLM will specify permit or lease stipulations to adequately use and protect the lands and their resources. This may include stipulations which are required by the surface managing agency, or which are recommended by the surface managing agency or non-federal surface owner and accepted by BLM. (See also part 3580 of this chapter.)

§3504.71 When will BLM release my bond?
(a) BLM will release your bond when we have determined, after the passage of a reasonable period of time, that you have done the following:
(1) Paid all royalties, rentals, penalties, and assessments;
(2) Satisfied all permit or lease obligations;
(3) Reclaimed the site; and
(4) Taken effective measures to ensure that the mineral prospecting or development activities will not adversely affect surface or subsurface resources.
36 CFR 228.1 mining on National Forest lands conducted "so as to minimize adverse environmental impacts on National Forest System surface resources" 36 CFR 228.8(g) take measures to "prevent or control on-site and off-site damage to the environment and forest surface resources: including erosion control, water run-off control, toxic materials control, reshaping and re-vegetation where reasonable practicable, and rehabilitation of fish and wildlife habitat.

36 CFR 228.1 - 228.116 Forest Service Mining regulations

§228.8 Requirements for environmental protection.
All operations shall be conducted so as, where feasible, to minimize adverse environmental impacts on National Forest surface resources, including the following requirements:

(a) Air Quality. Operator shall comply with applicable Federal and State air quality standards, including the requirements of the Clean Air Act, as amended (42 U.S.C. 1857 et seq.).

(b) Water Quality. Operator shall comply with applicable Federal and State water quality standards, including regulations issued pursuant to the Federal Water Pollution Control Act, as amended (33 U.S.C. 1151 et seq.).

(c) Solid Wastes. Operator shall comply with applicable Federal and State standards for the disposal and treatment of solid wastes. All garbage, refuse, or waste, shall either be removed from National Forest lands or disposed of or treated so as to minimize, so far as is practicable, its impact on the environment and the forest surface resources. All tailings, dumpage, deleterious materials, or substances and other waste produced by operations shall be deployed, arranged, disposed of or treated so as to minimize adverse impact upon the environment and forest surface resources.

(d) Scenic Values. Operator shall, to the extent practicable, harmonize operations with scenic values through such measures as the design and location of operating facilities, including roads and other means of access, vegetative screening of operations, and construction of structures and improvements which blend with the landscape.

(e) Fisheries and Wildlife Habitat. In addition to compliance with water quality and solid waste disposal standards required by this section, operator shall take all practicable measures to maintain and protect fisheries and wildlife habitat which may be affected by the operations.

(f) Roads. Operator shall construct and maintain all roads so as to assure adequate drainage and to minimize or, where practicable, eliminate damage to soil, water, and other resource values. Unless otherwise approved by the authorized officer, roads no longer needed for operations:

(1) Shall be closed to normal vehicular traffic,

(2) Bridges and culverts shall be removed,

(3) Cross drains, dips, or water bars shall be constructed, and

(4) The road surface shall be shaped to as near a natural contour as practicable and be stabilized.

(g) Reclamation. Upon exhaustion of the mineral deposit or at the earliest practicable time during operations, or within 1 year of the conclusion of operations, unless a longer time is allowed by the authorized officer, operator shall, where practicable, reclaim the surface disturbed in operations by taking such measures as will prevent or control onsite and off-site damage to the environment and forest surface resources including:
(1) Control of erosion and landslides;

(2) Control of water runoff;

(3) Isolation, removal or control of toxic materials;

(4) Reshaping and revegetation of disturbed areas, where reasonably practicable; and

(5) Rehabilitation of fisheries and wildlife habitat.

(h) Certification or other approval issued by State agencies or other Federal agencies of compliance with laws and regulations relating to mining operations will be accepted as compliance with similar or parallel requirements of these regulations.

**Mineral Leasing Act of 1920 and Amendments**

Sec. 10. That each lease shall be for not to exceed two thousand five hundred and sixty acres of land to be described by the legal subdivisions of the public land surveys, if surveyed; if not surveyed, to be surveyed by the Government at the expense of the applicant for lease, in accordance with rules and regulations prescribed by the Secretary of the Interior and the lands leased shall be conformed to and taken in accordance with the legal subdivisions of such survey; deposits made to cover expenses of surveys shall be deemed appropriated for that purpose; and any excess deposits shall be repaid to the person, association, or corporation making such deposits or their legal representatives: Provided, That the land embraced in any one lease shall be in compact form, the length of which shall not exceed two and one half times its width.

Section 28 of the Mineral Leasing Act of 1920 (41 Stat. 449), as amended (30 U.S.C. 185), is further amended to read as follows:

“(h) (1) Nothing in this section shall be construed to amend, repeal, modify, or change in any way the requirements of section 102 (2) (c) of any other provision of the National Environmental Policy Act of 1969 (Public Law 91-190, 83 Stat, 852).

“(2) The Secretary or agency head, prior to granting a right-of-way or permit pursuant to this section for a new project which may have a significant impact on the environment, shall require the applicant to submit a plan of construction, operation, and rehabilitation for such right-of-way or permit which shall comply with this section. The Secretary or agency head shall issue regulations or impose stipulations which shall include, but shall not be limited to: (A) requirements for restoration, revegetation, and curtailment of erosion of the surface of the land; (B) requirements to insure that activities in connection with the right-of-way or permit will not violate applicable air and water quality standards nor related facility siting standards established by or pursuant to law; (C) requirements designed to control or prevent (i) damage to the environment (including damage to fish and wildlife habitat), (ii) damage to public or private property, and (iii) hazards to public health and safety; and (D) requirements to protect the interests of individuals living in the general area of the right-of-way or permit who rely on the fish, wildlife, and biotic resources of the area for subsistence purposes. Such regulations shall be applicable to every right-of-way or permit granted pursuant to this section, and may be made applicable by the Secretary or agency head to existing rights-of-way or permits, or rights-of-way or permits to be renewed pursuant to this section.
Attachment 4. Request for Response on Lynx Analysis in the CTNF

August 13, 2021

Mr. Mel Bolling, Supervisor
Caribou-Targhee National Forest
1405 Hollipark Drive
Idaho Falls, ID 83401

Re: Request for Response on Lynx Analysis in the CTNF

VIA Email to: mel.bolling@usda.gov

Dear Mr. Bolling:

This letter is sent on behalf of the Yellowstone to Uintas Connection, Alliance for the Wild Rockies, Native Ecosystems Council, and Wildlands Defense. All are 501c3 public interest organizations advocating for protection and restoration of wildlife habitat in the West and have been addressing proposed projects in the CTNF. The absence of meaningful analysis about the habitat and occurrence of Canada lynx in the CTNF has stimulated this letter.

We are requesting that the Caribou Targhee NF conduct an objective analysis of the habitat and historical occurrence of Canada lynx in Idaho and respond with a plan as to how it will proceed with the analysis. The analysis should document the Forest types and elevations where lynx have historically been observed or tracked in Colorado, Idaho, Montana, Wyoming, and Utah as these states have many similar forest and habitat types where lynx have historically occurred or now live and migrate after reintroduction, such as the Colorado reintroductions. It should also document migration corridors and habitat connections. A broad look such as this will likely capture the full range of habitats and connections once used by lynx.

Once determined, these habitat types within the Caribou Targhee NF (CTNF) should be mapped and delineated as lynx habitat. That habitat should then be further analyzed to document the nature and extent of human alteration or fragmentation by roads, mines, pipelines, transmission lines, ATV/OHV and snowmobile use, timber projects, fires (both natural and prescribed burns) and other alterations. This analysis should be supplemented using recent published information on lynx habitat use along with incorporation of the comments provided below.

Over the years we have commented on numerous projects in the CTNF. Most recently we have been addressing phosphate mines, timber-related projects, and the Crow Creek Pipeline. We are also aware of the change in Lynx Analysis Units (LAU) in the Targhee NF from 2001 to 2014, resulting in a decline in the number and area of LAUs and by implication, lynx habitat. We have seen no designation of LAUs in the Caribou NF and no analysis of historical or current lynx habitat in either Forest. The Caribou NF
RFP FEIS Appendix D Map 1 depicts lynx linkage and provides for a process to assess connectivity (pD-4). To date, we have seen no such analysis to provide for Canada lynx.

The closest thing to an analysis we have seen is the 2018 Targhee National Forest Lynx Analysis Units FEIS (LAU FEIS). The LAU FEIS describes the changes to LAUs between 2001, 2005, and 2014 and the rationale for the changes. Citing the Canada Lynx Conservation Assessment and Strategy (LCAS) as its basis, the Forest Service and Fish and Wildlife Service delineated LAUs totaling 1,134,779 acres of lynx habitat (2001 map). These consisted of 645,049 acres of primary suitable habitat, 126,795 acres of secondary suitable habitat, 98,554 acres of primary unsuitable habitat and 8,565 acres of secondary unsuitable habitat (citing USDA FS 1999). (LAU FEIS p3). The overall acreage declined significantly in further modeling efforts that produced the 2005 and 2014 maps of LAUs.

We find that the LAU FEIS is flawed in its analysis. For example, the model painted black and white lines such as 70% subalpine fir as the demarcation between primary and secondary habitat. Also, the modeling seemed to be saying lynx habitat here in the Caribou Targhee NF had to be the same as in Alaska and Canada where most of the research used in the LCAS occurred. It’s as if a lynx, which is moving through the forest, encounters a change in subalpine fir cover from 70% to 69% and then turns around. Or, a lynx, walking over the snow, encounters lodgepole pine or rhyolitic soils in Island Park, and turns around.

The LCAS acknowledges that lynx use many different habitat types across its range and as one moves from north to south the forested types and food resources transition. Canada lynx eat rabbits, not just snowshoe hares, they eat grouse, red squirrels, beaver, mice, voles, and other available prey. What the models appear to miss is the concept of habitat functionality vs habitat structure and the concept of ecotones, or transitions. For example, the omission of winter range in the 2001 map was an arbitrary construct as if it doesn’t snow on winter range, or there are no prey items there, or lynx would avoid winter range if moving across the landscape. Or, considering lodgepole or less than 50% subalpine fir as dry habitat in places like Island Park with the substantial snow that occurs there.

Then there is the assumption that lower snowshoe hare densities on rhyolitic soils would not support lynx, while forgetting that lynx use a variety of prey items. These dry habitat types were then excluded due not only to the snowshoe hare, but also low subalpine fir occurrence. Using watershed boundaries as artificial limits on LAUs, combined with the minimum 10 sq. mi. lower threshold of an LAU also has the probability of breaking up larger areas that could qualify as lynx habitat into smaller areas that would then be disqualified.


Overriding much of this is the lack of observational data that could have documented a wider range of lynx in SE Idaho. Recent survey efforts are occurring in areas heavily altered by roads, mines, timber harvest, ATV/OHV and snowmobiles (note that snowmobile have access to 97% of the Caribou NF). Then there is the grazing of cattle and sheep with the resulting depletion of herbaceous forage, loss of aspen habitats and riparian shrubs and grasses that snowshoe hares and other rabbits and prey depend upon. All these combined factors are not addressed in the habitat evaluations, project NEPA analyses, or surveys we have seen. The result is a finding that no lynx are present and therefore there is no impact or effect. Yet these very activities may be the reason there are no lynx present.

As an aside, having lived and observed snowshoe hares and red squirrels over the years in Kiesha’s Preserve in Paris Canyon, they prosper in the absence of livestock, as do beaver and other wildlife. Snowshoe hares occur in Douglas fir and mixed conifer stands with low to high canopy cover. They use the adjacent aspen as a foraging area and corridor to the riparian area where they forage at night finding plentiful twigs, buds, and other foods. They also will move through the sagebrush between conifer stands and the riparian area. Trail cameras find them on ridges, in mountain mahogany and other non-fir habitats.

In our comments on mines and timber projects, or the Crow Creek pipeline, we have consistently pointed out the habitat fragmentation from roads, mines, and other activities. We point out the failure of the Forest Service to analyze the quality of lynx habitat as each project NEPA analysis tends to state that the animals will migrate around the periphery of the project area. But the quality of that habitat in the periphery is never analyzed relative to the habitat needs for lynx. There have been no reports of lynx presence in SE Idaho for over a decade. We do not see any analysis as to why this is so since the CTNF borders lynx Critical Habitat and lynx historically occurred here.

We have also described the Regionally Significant Wildlife Corridor connecting the Greater Yellowstone Ecosystem to the Uinta Mountains and Southern Rockies and how the higher elevation component occurs in SE Idaho and NE Utah. Figures [1 - 4] show this Regional Corridor, LAUs in the Forests in NE Utah, and maps generated from an analysis of lynx habitat requirements and habitat fragmentation. These show areas of focus for Forest Service analysis to develop criteria to restore and maintain functionality and connectivity for lynx and other species such as wolverine. We just need that analysis to happen, those criteria to be set in place and used, instead it is never done as each successive project is approved.

As Lewis and Wenger report, ” Questions about the most basic habits of Canada lynx in Idaho, such as their prey base, remain unanswered. The lack of Canada lynx studies —none have been done in Idaho and very few in the adjacent states —only adds to the puzzling nature of the species.” They also note that comparing Idaho to data from Canada and extrapolating data is "not a perfect fit". The reports of

lynx observations and food habits from the numerous interviews in their report should be incorporated into any analysis about lynx in Idaho and Utah. They indicate lynx move in many different habitats. For example, lynx were found in places like Ashton and Island Park, near Soda Springs and Montpelier, and in sagebrush habitats where jackrabbits were plentiful. These places were likely excluded as habitat based on modeling in the Targhee LAU FEIS and apparently have never been analyzed in the Caribou NF.

Lewis and Wenger further describe the records of Canada lynx in Idaho between 1874 and 1998 as including 215 records at the Idaho Conservation Data Center which has since been phased out and replaced by integration into the Idaho Fish and Game website. The records are not accessible without paying a large fee and it is uncertain if the original records have been retained. Many records of lynx in SE Idaho were described by Lewis and Wenger and they noted that human activities such as timber harvest, snowmobile and ATV use have negative impacts on lynx populations and those activities were increasing in these areas. They also describe the lynx population that existed in the Uinta Mountains in the 1950’s as reported by Harold Wadley, who worked for the Forest Service there. Today, the Forest Service denies any populations ever existed there.119

What is needed is an analysis of this information, including a broader definition of what constitutes lynx habitat and the effects of habitat fragmentation and livestock grazing on lynx habitat, prey, connectivity, and populations. The Forest Service should have a consistent approach that would evaluate this across the Region. For example, how do the criteria used in determining LAUs in the Utah National Forests compare to that in the Caribou Targhee NF. What habitats were used by lynx historically observed in Idaho, Utah, and other Rocky Mountain states? Please update us on what the CTNF plans to do to address this situation.

Sincerely yours,

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Attchement 5 - Lynx Habitat

Lynx Habitat Defined by the Current Best Science:

This is based on Table 2 in Holbrook et al. 2017a, and additional information in the text of Holbrook et al. 2019, where specific information on the age classes of the various vegetation groups was identified. There are 4 vegetation types defined for lynx.

1. Stand Initiation: ages 0-8 years after harvest or fire.

   Stands with few trees and an open canopy as the result of recent disturbance; median basal area (density) of zero; median canopy cover of 8%; median tree height of one foot; median number of trees under 5 inches dbh is zero, and median number of trees over 5 inches dbh is zero.

2. Sparse: ages 9-24 years

   Mixed conifer stands that are sparsely stocked naturally or mechanically thinned; tend to be younger but can be any age; median dbh of 6 inches; median canopy cover of 28%; median tree height of 34 feet; median basal area (stand density) of 40 feet per acre; median number of trees over 5 inches dbh is 48 trees per acre; median number of trees under 5 inches dbh is zero.

3. Advanced Regeneration: ages 25-40, possibly 50 years

   Early-mid seral stands with mixed species composition, but abundant spruce-fir; median dbh of 8 inches; median canopy cover of 45%; median tree height of 51 feet; median basal area of 89 square feet per acre; number of trees under 5 inches dbh is 900 trees/acre; number of trees over 5 inches dbh is 167 trees/acre.

4. Mature: ages 40-50 years and older

   Mid-seral stands of age over 40 years arranged in a multi-storied structure with a mixed species composition, with abundant spruce/fir; median dbh is 10 inches; median canopy cover of 56%; median tree height is 65 feet; median basal area is 140 square feet/acre; median number of trees under 5 inches dbh is 1500 trees/acre; median number of trees over 5 inches dbh is 217 trees/acre.

   Average composition of these 4 habitat categories for lynx has been defined for core areas (2-5 areas of a female lynx’s home range comprising from 739-5178 acres):

   - Stand Initiation (new openings): 4%
   - Sparse: 23%
   - Advanced Regeneration: 18%
   - Mature: 58%

Average Composition of Lynx Habitat within the Total Home Ranges, which were 4,435-16,256 acres (the median home range for female lynx is 55 square km, which comes to about 13,500 acres as per Holbrook et al. 2017)

   - Stand Initiation (new openings): 5%
   - Sparse: 26%
   - Advanced Regeneration: 19%
   - Mature: 49%
References:


Lynx Habitat as Defined by the Lynx Amendment (2007).

These 7 definitions for lynx habitat are taken from the Lynx Amendment Record of Decision (2007):

1. Lynx habitat in an unsuitable condition; (ROD glossary at 12):

   Consists of lynx habitat in the stand initiation structural stage where the trees are generally less than 10-30 years old and have not grown tall enough to protrude above the snow during winter; stand replacing fire or certain vegetation management projects can create unsuitable conditions, including clearcuts, seed tree harvests and sometimes shelterwood cuts and commercial thinning depending on the resulting stand composition and structure.

2. Stand Initiation Structural Stage; (ROD glossary at 14):

   Generally, develops after stand-replacing disturbance by fire or regeneration harvest; a new single-story layer of shrubs, trees seedlings, and saplings establish and develop, reoccupying the sites; trees that need full sun are likely to dominate these even-aged stands.

   Can be winter snowshoe hare habitat with thousands of woody stems per acre and tall enough to protrude above the snow during winter, so snowshoe hares can browse on the bark and small twigs (ROD glossary at 15).

3. Stem Exclusion Structural Stage (Closed canopy structural stage); (ROD glossary at 14):

   Trees initially grow fast and quickly occupy all the growing space, creating a closed canopy; because the trees are tall, little light reaches the forest floor so understory plants, including smaller trees, are shaded and grow more slowly; species that need full sunlight usually die; shrubs and herbs may become dormant; new trees are precluded by a lack of sunlight or moisture.

4. Understory re-initiation structural stage; (ROD glossary at 14-15):

   A new age class of trees gets established after overstory trees begin to die, are removed and no longer fully occupy their growing space after tall trees abrade each other in the wind; understory seedlings then re-grow and the trees being to stratify into vertical layers; a low to moderately dense uneven-aged overstory develops, with some small shade-tolerant trees in the understory.

   Can be winter snowshoe hare habitat (ROD glossary at 15).

5. Old Multistory Structural Stage; (ROD glossary at 13):
Many age classes and vegetation layers mark the old forest, multistoried stage; it usually contains large, old trees; decaying fallen trees may be present that leave a discontinuous overstory canopy; on cold or moist sites without frequent fires or other disturbance, multi-layer stands with large trees in the uppermost layer develop.

This stage can be winter snowshoe hare habitat (ROD glossary at 15).

6. Multi-story Mature or Late Successional Forest; (ROD glossary at 13).

This stage is like the old multistoried structural stage; but trees are generally not as old, and decaying trees may be somewhat less abundant.

It is not clear in the ROD if this structural stage is considered snowshoe winter hare habitat.

7. Non-lynx Habitat; (ROD Glossary at 12).

Dry forests do not provide lynx habitat.

Since the ROD was released in 2007, the Forest Service has not used all these definitions, and as well, has changed some of them. There have not been any Forest Plan amendments for these changes. These changes are not completely similar between Forests.

Elk Smith Project on the Helena Lewis and Clark National Forest defines these 5 categories of lynx habitat, which do not include a definition of non-lynx habitat.

1. Early stand initiation structural stage, currently does not provide winter snowshoe hare habitat because trees have not grown tall enough to protrude above the snow in winter.

2. Stand Initiation structural stage that currently provides winter snowshoe hare habitat.

3. Multistory structural stage of mature stands with multiple age classes and vegetation layers that appear to currently provide winter snowshoe hare habitat.

4. Stem exclusion structural stage with closed canopy and limited understory that does not provide winter snowshoe hare habitat.

5. Other (Other) mid-seral structural stages of multiple age classes and vegetation layers that do not provide winter snowshoe hare habitat and do not fall within one of the other four classifications.

The Stonewall Project FEIS on the Helena-Lewis and Clark National Forest and the draft Environmental Assessment for the Bug Creek Project on the Flathead National Forest have the following definitions of lynx habitat:

1. Stand initiation structural stage that does not provide winter snowshoe hare habitat because trees have not grown tall enough to protrude above the snow in winter.

2. Stand initiation structural stage that currently provides winter snowshoe hare habitat.

3. Multistory structural stage with multiple age classes and vegetation layers that appear to currently provide winter snowshoe hare habitat.
4. Other structural stage are forested conditions that do not fit 1-3 above; includes stem exclusion structural stage (with a closed canopy with limited understory) and Mid-seral structural stage (multiple age classes and vegetation layers) that do not provide snowshoe hare habitat.

The Bug Creek draft EA on the Flathead National Forest defines lynx habitat as follows:

1. Stand initiation structural stage where the trees have not grown tall/dense enough to protrude above the snow in winter; this may provide summer hare habitat.

2. Stand initiation structural stage with sufficient density that currently provides winter lynx foraging habitat.

3. Multistory structural stage with many age classes and vegetation layers of sufficient density to provide winter lynx foraging conditions; may contain denning habitat.

4. Other (stem exclusion) structural stage, with a closed canopy with understory limited; multistory structural stage with many age classes and vegetation layers that do not provide snowshoe hare habitat; this stage may contain denning habitat.

**Standards for Structural Stages in the Lynx Amendment:**

There are only 2 standards in the Lynx Amendment as per structural stages. VEG S1 requires that no more than 30% “of lynx habitat” within an LAU can be in the unsuitable condition or has not developed yet into the advanced regeneration phase (stand initiation stage). VEG S2 limits new regeneration cuts to no more than 15% of an LAU within 10 years. This standard is much higher than the current best science as per new openings (0-8 years in age) of only 4-5% in lynx core areas and lynx home ranges, respectively. The Lynx Amendment does not require any level of the 2 key features of productive female lynx home ranges, which are 18-19% advanced regeneration (stand initiation stage) and 49-58% mature forest.

**Size of the LAU:**

Holbrook et al. 2017 identified the median size of a female lynx’s home range as 55 square kilometers, which converts to 21.18 square miles, which converts to 13,555 acres. LAUs are generally somewhat or considerably larger than this home range size. The Lynx Amendment says LAUs should approximate the size of a lynx home range, but this is not a standard. Here are a few examples of LAU sizes:

The Stonewall Project on the Helena-Lewis and Clark, 2 LAUs are 26,662 and 27,352 acres; only 66% and 78% are identified as lynx habitat.

The Elk Smith Project Area on the Helena-Lewis and Clark National Forest affects one LAU that is 19,720 acres, of which only 11,148 acres, or 57%, is identified as lynx habitat.

The Bug Creek Project on the Flathead National Forest affects 2 LAUs, which are 17,817 and 18,306 acres. Only 59% and 76% of these LAUs are classified as lynx habitat.

The Greater Red Lodge Project on the Custer-Gallatin National Forest has 2 LAUs. These are 151,315 and 160,100 acres. The percentage of lynx habitat within these are 16% and 13.4%.

The current best science (Holbrook et al. 2017a; Holbrook et al. 2019; Kosterman et al. 2018) all include the entire landscape in defining lynx habitat. The Lynx Amendment allows exclusion of many acres in the landscape as non-lynx habitat but does not require any actual documentation of how habitat categories were identified, including non-lynx habitat. First, areas that provide snowshoe hare habitat may be classified as non-lynx habitat, so that vegetation management effects (both logging and prescribed burning) are not evaluated on these excluded acres,
providing invalid conclusions on project impacts. Holbrook et al. (2017b) found 67% of their random plots in their 3.6 million ha study area had snowshoe hares. And they also reported high variability in snowshoe hare densities, reported as 0.28, 0.81, 1.48, and 4.21 hares/ha. Excluding habitat for lynx based on the purported absence of snowshoe hares is unreliable, and general habitat descriptions for lynx as per the current best science should be used instead.

Second, by managing lynx habitat within an LAU in pieces means that extensive habitat fragmentation will occur. The cumulative impact of vegetation treatments within both lynx and non-lynx habitat within an LAU could severely impact habitat connectivity. Habitat connectivity has been identified as a key factor in affecting lynx productivity (Kosterman et al. 2018; Holbrook et al. 2019).

Additional References:

Holbrook, J Squires, L. Olson, R. Lawrence, and S. Savage. 2017b. Multiscale habitat relationships of snowshoe hares (Lepus americanus) in the mixed conifer landscape of the Northern Rockies, USA: cross-scale effect of horizontal cover with implications for forest management.


Avoidance of Vegetation Treatment Units:

Lynx have been found to reduce use of forest vegetation treatments up to 34-40 years after treatment (Holbrook et al. 2018). This study classified forest silvicultural treatments as (1) regeneration harvest, (2) selection harvest which included group selection of small openings and liberation cuts with overstory removal or thinning, and (3) thinning of improvement cuts and precommercial thinning. They measured subsequent use of these 3 types of treatments based on the predicted intensity of use from 0-100%. Lynx use was low for roughly 10 years following all types of these treatments. For thinning, restoration to 50% of predicted use took 20 years. For selection and regeneration harvests, 50% restoration of predicted use took from 34-40 years.


Take-Away for Outdated Lynx Amendment.

If the current best science is used to measure existing and proposed levels of lynx habitat within an LAU, this approach would ensure that such an assessment would provide a reliable measure of project impacts on lynx, which the Lynx Amendment is incapable of achieving. For example, use of the current best science to measure current and proposed conditions for lynx in 3 project areas would be as follows, all of which were noted to be consistent with the Lynx Amendment:

Stonewall Project Area:

Current mature forest (multistory, stem exclusion and other) in LAU BL-07 is 48% and would be reduced to 46.6% with treatments; the 49-58% levels of mature forest in a female lynx’s home range and core areas would not be maintained. In LAU BL-08, mature forest is 24%, and would be maintained at 24% with the project.
Stand Initiation, or advanced regeneration in the 2 LAU would be reduced from 13% to 3% in one LAU and maintained at 53% in the second. Thus the 18-19% level of advanced regeneration reported in the current best science would not be even marginally present in one LAU after treatment.

Early stand initiation, or new openings less than about 10 years old, would be 3% of the LAU in one BL-07, and no new openings in BL-08; Due to the fire, 53% of this LAU was opened by the Park Creek fire.

Bug Creek Project:

Current mature forest habitat in the North Crane LAU is 39% and would be reduced to 38% with treatment. Mature forest in the South Crane LAU is currently 56.5%, but would be reduced to 37.5% with treatment, which would be far below the 49% mature in lynx home ranges, and 58% mature in lynx core areas.

Advanced regeneration, or stand initiation, habitat is currently 10.4% of the landscape in the North Crane LAU and would be reduced to 6.4% with treatment. Thus the 18-19% advanced regeneration needed in lynx home ranges would not be provided and reduced further below recommended levels. A decrease in advanced regeneration would occur from the existing 5% down to 4% in the South Crane LAU, which is far below identified levels currently, yet would be reduced further.

Openings, or early stand initiation habitat, would be created on 5.4% of the North Crane LAU and only 2.6% in the South Crane LAU. Thus the 4% new opening level recommended by the current best science of 4% in corew areas would not be met, while the 5% level of openings across a home range would be met.

Elk Smith Project:

The mature habitat level in LAU RM-25 is currently 20% and would be reduced to 19% with the project. This LAU is far below the 49% level of mature forest reported for productive female lynx home ranges; core areas need to have 59% mature forest.

The advanced regeneration habitat (stand initiation stage) is currently 30% and would be reduced to 20%, which would be within the 19% recommended level of advanced regeneration as per the current best science.

The level of new openings under 10 years in age would be 11% for this project, which would be over double the recommended level for productive female lynx home ranges, which is 5% per home range, and 4% in core areas.

Definitions of Lynx Habitat as per the U.S. Fish and Wildlife Service:

These definitions are not consistent with the current best science or with the Lynx Amendment. These definitions cannot be used to measure current or projected levels of lynx habitat within LAUs due to vegetation treatments. These definitions define Primary Constituent Elements (PCE) within a boreal forest landscape supporting a mosaic of differing successional forest stages and containing:

a. PCE a – presence of snowshoe hares and their preferred habitat conditions, which include dense understories of young trees, shrubs or overhanging boughs that protrude above the snow, and mature multistoried stands with conifer boughs touching the snow surface.

b. PCE b – Winter conditions that provide and maintain deep, fluffy snows for extended periods of time.

c. PCE c – Sites for denning that have abundant coarse woody debris such as downed trees and root wads.
d. PCE d – Matrix habitat (e.g., hardwood forest, dry forest, non-forest, or other habitat types that do not support snowshoe hares) that occurs between patches of boreal forest in close juxtaposition (at the scale of a lynx home range) such that lynx are likely to travel through such habitat while accessing patches of boreal forest within a home range.
Attachment 6 – North Maybe Mine East Mill Dump Comments

Attn: NMM EMD Comments
Brian Deeken
USDA Forest Service
4350 Cliffs Drive
Pocatello, ID 83204

Re: Comments Proposed Plan North Maybe Mine East Mill Dump

VIA: Certified Mail Return Receipt and Email To: brian.deeken@usda.gov; Email To: comments-intermtn-caribou-targhee@fs.fed.us ; mel.bolling@usda.gov

To All Concerned:

Yellowstone to Uintas Connection, Alliance for the Wild Rockies, Native Ecosystems Council, Snake River Waterkeeper and Wildlands Defense are submitting these comments on the Proposed Plan North Maybe Mine East Mill Dump.

Yellowstone to Uintas Connection (Y2U) is a 501c3 public interest organization whose staff and members have and will continue to work to protect the integrity of habitat for fish and wildlife as well as recreate in this region. We are concerned about the loss of integrity of the Regionally Significant Wildlife Corridor (Corridor) that connects the Greater Yellowstone Ecosystem and Northern Rockies to the Uinta Wilderness and Southern Rockies. Y2U has been addressing the damage to the SE Idaho ecosystem due to phosphate mining for many years. Yellowstone to Uintas Connection is headquartered in Paris, Idaho with a satellite office in Bondurant, Wyoming.

Alliance for the Wild Rockies (AWR) is a 501c3 public interest organization whose mission is to secure the ecological integrity of the Wild Rockies Bioregion through citizen empowerment and the application of conservation biology, sustainable economic models, and environmental law. Alliance for the Wild Rockies is headquartered in Helena, Montana.

Native Ecosystems Council (NEC) is a 501c3 public interest organization whose staff reviews Forest Service National Environmental Policy Act (NEPA) assessments of Forest Service impact on wildlife in the Northern Rockies. NEC is headquartered in Willow Creek, Montana.

Snake River Waterkeeper (SRW) is a 501c3 public interest organization applying science and law to protect, restore and sustain the waters of the Snake River Basin. SRW is a member of the Waterkeeper Alliance, composed of more than 350 on-the-water advocates who patrol and protect more than 100,000 miles of rivers, lakes, and coastlines on 6 continents. SRW is headquartered in Boise, Idaho.

Wildlands Defense (WLD) is a 501c3 public interest organization dedicated to protecting and improving the ecological and aesthetic qualities of the wildlands and wildlife communities of the western United States for present and future generations. WLD does so by fostering the natural enjoyment and appreciation for wildlands habitats and wildlife by means of legal and administrative advocacy, wildland and wildlife monitoring and scientific research, and by supporting and empowering active public engagement. Wildlands Defense has offices in Boise and Hailey, Idaho.
As advocates for clean water, clean air, and wildlife, we are deeply disturbed by this Proposed Plan. The phosphate industry came to this area, has been mining the phosphate ore while bringing in billions of dollars in revenue, then offers an Alternative 7 to leave the problem in place while only spending an estimated $14,698,600 for reclamation. With this proposed reclamation, the industry is leaving pollution and damaged or destroyed habitat that will not recover for decades to centuries, if ever. The public is expected to accept this pollution, loss of access and wildlife habitat that is not only occurring at the Maybe Mine but at over a dozen other SE Idaho mines that are now CERCLA sites due to this chemical pollution. How is this acceptable? Yet the Caribou Targhee NF, Bureau of Land Management and the State of Idaho continue to allow this ongoing disaster to proceed by permitting new mines, one after the other.

The Proposed Plan is inadequate at the most basic level. It provides no information or mapping of the nature and extent of the pollution to groundwater, surface water, soils, vegetation, and wildlife. Instead, it refers the reader to the Remedial Investigation and Focused Feasibility Study (RI/FFS) which are available for viewing at the Soda Springs Ranger District. There is no link on the Forest Service website to project documents such as this where one can access and view the information without a trip to Soda Springs. A FOIA request for the documents could not be addressed within the time frame allowed for commenting.

It is unclear how the Caribou Targhee Forest Plan, BLM Resource Management Plan, NEPA, NFMA, APA and other laws and regulations apply here. This is a decision to be issued by the Forest Service based on analysis by the mining company consultants. While CERCLA is cited, there must be other mandates to be met. The public needs to fully understand the legal environment applicable here and it is the duty of the agency to provide that context and additional opportunities for input. Since this is a Forest Service current action, all the rules of NEPA, NFMA, FLPMA, CWA, ESA apply. The public must be given a comprehensive analysis under these laws in addition to that provided under CERCLA.

This entire Plan needs to be withdrawn and a new plan provided that addresses the true nature of the problem, does not allow continued pollution exceeding background levels in any environmental medium, restores wildlife habitat and connectivity, streams and springs and pays the piper to do what is right. As the old saying goes, "You broke it, you fix it!"

1. What is the Extent of the Problem?

The Plan (p3) describes that "There are many historical mines within the mining district, three active mines, and some future or proposed mines." A current Fact Sheet by EPA, IDEQ and the Forest Service shows 14 phosphate mine contaminated sites in SE Idaho undergoing some level of investigation and remedial action. The North and South Maybe Mines are included. Also included are currently operating mines such as the Smoky Canyon Mine. One must ask if we have not learned anything over the decades and yet, even with current modeling, BMPs, EMPs, cover and overburden pile designs, the recently permitted Smoky Canyon mine has generated a CERCLA site in Pole Canyon Creek where the Creek was covered with an overburden pile and ended up being polluted with selenium.

There appears to be great uncertainty in dealing with the mining process, storage of overburden, and the outcomes for the environment. We reviewed and commented on the EIS for Rasmussen Valley, Dairy Syncline, Smoky Canyon and Caldwell Mines to permit additional mining. (Hyperlinks to our comments). In each case we were assured BMPs, EMPs, models and containment will control the pollution. Then we are also told that pollution will be allowed up to and exceeding the EPA and State Criteria, not background concentrations. This is even to the extent of setting up Points of Compliance (POC) at which the criteria are to be met. But those POCs can be miles from the mine itself, meaning that the area within the radius of that POC will exceed the criteria and do so for centuries while natural attenuation is assumed to resolve it. The EIS for the Rasmussen Valley Mine clearly demonstrated this in its POC for the Wells Aquifer and a timeframe of centuries of pollution.
The Preassessment Screen (PAS) for the Southeast Idaho Phosphate Mine Site, Idaho is a report prepared by the Southeast Idaho Phosphate Mine Site Trustee Council. Trustees are the US Department of Interior, US Fish and Wildlife Service, US Bureau of Land Management, Bureau of Indian Affairs, US Department of Agriculture (Forest Service) and Shoshone Bannock Tribes. The PAS report describes the history of phosphate mining in the area, the lack of adequate reclamation which lead to selenium contamination in the region's soils, vegetation, surface, and groundwater. In 1996, reported livestock deaths associated with selenium uptake stimulated concerns about ecological and human health impacts from past mining operations. At the time of the Assessment in 2015, there were 17 major open pit mines. This PAS has been used to evaluate the need to conduct a Natural Resource Damage Assessment under CERCLA. The following paragraphs are taken from the PAS with our comment at the end of each.

According to the PAS, 18 mines were reviewed. One was excluded from consideration as no surface disturbance had occurred. Of the 17 remaining mines, 4 were active, including 3 recently undergoing permitting for expansion. Of the 17, selenium contamination was found at all mines and livestock deaths occurred at 6 of these. At the time of the PAS, 16,527 acres had been disturbed. (PAS p3). This extent of mining disturbance has increased in the six years since.

As Trustees, the Tribes have developed a Waste Management Act and Standards for lands within Fort Hall reservation boundaries. They believe "resources must be essentially clean and free of contaminants" as the presence of contamination may "decrease and degrade traditional foods and may preclude the use of the streams/rivers in the Mine Site for fishing, swimming, and other recreational uses." (PAS p5). This Proposed Plan does nothing of this nature as contamination and threats to people and ecosystems will continue indefinitely.

Due to the open spaces and accompanying air currents, wind erosion and subsequent deposition also serves as a mechanism of chemical transport at the Mine Site (IDEQ 2002). Wind erosion of surface soils may transport and deposit selenium contaminated soils some distance from its source, dependent on wind speed and other factors. These wind-deposited soils may be directly taken up by vegetation, may be deposited in aquatic or riparian systems, and/or may be incidentally ingested by wildlife feeding in the depositional areas. Other pathways include infiltration of water thru waste dumps and pits, erosion from waste rock dumps to surface soils, runoff from spring snowmelt and snow events, uptake of selenium in soil placed as caps on waste rock dumps. (PAS p28). Was this addressed across the potential area affected by NMM? There was no evidence of this in the Proposed Plan.

Animals feeding or grazing on vegetation, animals living in or on waste rock dumps, aquatic organisms are affected. Selenium and other hazardous substances have been documented in surface water, ground water, soils, sediment, vegetation, and animal tissues in the Mine Site resulting in fish consumption advisory, elk liver consumption advisory. (PAS p29). The Proposed Plan did not report on the species using these features nor did it provide results testing in each of these ecosystem components across the region of potential contamination from NMM.

Surface water concentrations documented at the Mine Site for selenium for streams exceeding the aquatic life chronic criteria of 0.005 mg/l for 16 locations in the Blackfoot River and various other streams ranged from the standard up to 6.89 mg/l or over 1000 times the standard. (Table 3 PAS p33). The Proposed Plan did not provide results for the suite of COPCs in all streams and springs potentially affected by its operation, meaning all waste dumps and the open pit and secondary sources from wind deposition of contaminants. There was no data for water quality in the NMM open pit lake shown in the Proposed Plan.

Example groundwater selenium concentrations for 11 locations in the Mine Site that were above the 0.05 mg/l criterion ranged up to 12 mg/l or 240 times the criterion. (Table 4 PAS p34). The Proposed Plan did not provide results of ground water monitoring across the potential area affected and from all primary and secondary source areas generated by NMM.

Example sediment concentrations compared to the removal action level of 2.6 mg/kg or the screening benchmark of 2.0 mg/kg in 8 locations representing the most contaminated sites ranged up to 1300
mg/kg or 500 times the removal action level for Idaho. (Table 5 PAS p36). The Proposed Plan did not provide sediment results for the potential area affected by NMM.

Soils and vegetation concentrations compared to action levels at locations with most elevated concentrations were provided. The soils removal action level for Idaho is 5.2 mg/kg dry wt. and the EPA screening level is 0.52 mg/kg dw. Soils ranged up to 318 mg/kg. The vegetation removal action level in Idaho is 5 mg/kg dw. Concentrations ranged up to 1010 mg/kg. (Tables 6 and 7 PAS p38). The Proposed Plan did not provide results of sampling in soil and vegetation across the potential area of effect from NMM.

Response actions were unknown as of the PAS, but "given the geographic extent of the Mine Site, it is unlikely that the remedial actions will sufficiently remedy injury to trust resources (including past injury from historic mining activities), and it is expected that additional restoration actions will be required." (PAS 48). As expected, there is no intent to ever return environmental media or aquatic and terrestrial habitats to background levels. What is the future cost of this philosophy across the Mine Site for all mines and for the NMM itself?

2. BMPs and the Current State of Affairs

Each mine, as it is undergoing NEPA analysis and pursuing various permits, plans to use BMPs and Environmental Protection Measures (EPM) to avoid environmental pollution. These are detailed in each EIS and associated documents and used as a basis by agencies to dismiss impacts as not significant under NEPA. These mechanisms are assumed to be effective and relied upon. However, a fundamental aspect of NEPA is to take a “Hard Look” at current management, conditions, assumptions, and implementation.

What is the history of this project area? What Forest actions or permitted activities play a role in the current state of aspen, wildlife habitat, watershed health and other ecosystem attributes? What is the current nature and extent of contamination across the entire Mine Site? What was promised in permitting documents? How do current conditions compare to those commitments? Or were all commitments hedged to avoid future accountability?

There should be an analysis of:

- Validity of assumptions from previous decisions, permit requirements, and NEPA processes;
- Accuracy of predictions from these same processes;
- Adequacy of Forest Service, BLM, and mining company implementation of previous decisions; and,
- Effectiveness of actions taken in previous decisions, including an analysis of the design criteria, BMPs, EMPs, and models.

The above items are critical for effective decisions and outcomes and for the public to be informed. After all, there have been assurances to the public regarding controlling pollution, doing reclamation, and not damaging habitats to a significant degree. We return to the example of the Smoky Canyon mine and its Pole Canyon Creek pollution issue. This is not a seventy-year-old mine constructed and operated before NEPA and other current environmental laws, yet it is a CERCLA site for selenium contamination. A full and robust explanation of this situation is needed otherwise how can current designs be trusted? This must be done across all the remediation and reclamation projects to date.
Without this analysis the validity of the current assumptions cannot be determined. Without analyzing the accuracy and validity of the assumptions used in previous NEPA processes and projects, one has no way to judge the accuracy and effectiveness of the current analysis and proposals. The predictions made in previous NEPA and permitting processes also need to be disclosed and analyzed because if these were not accurate, and the agency is making similar decisions, then the process will lead to failure.

For instance, if in previous processes the agency or permittee said they were going to perform a certain monitoring plan or implement a certain type of management, meet certain goals and objectives, and these were never effectively implemented or attained, it is important for the reader and the decision maker to know. If there have been problems with implementation in the past, it is not logical to assume that implementation will now be appropriate. If prior projects have not been monitored to document and compare post project initiation conditions to baseline data, then there is no proof that models, design criteria, BMPs, and EPMs are accurate, effective, or can be relied upon. What commitments have been made in the Forest Plan and subsequent project plans? Have these been realized?

The reliance on BMPs (and EPMs) is a flawed approach that assumes they work. There are no reliable data showing that BMP’s are cumulatively effective in protecting aquatic, or other resources. 1 Case histories from Idaho showed that BMP’s thoroughly failed to cumulatively protect salmonid habitats and streams from severe damage from roads and logging. 2 In analyses of case histories of resource degradation by stereotypical land management (logging, grazing, mining, and roads) several researchers have concluded that BMP’s increased watershed and stream damage because they encourage heavy levels of resource extraction under the false premise that resources can be protected by BMP’s.3 4 This phenomenon is called the *“illusion of technique.”*5

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The Proposed Plan outlines that waste rock, surface water, sediment, groundwater, soil, vegetation, and beef were potentially contaminated. It is uncertain whether this was based on the review of Site information (Plan p4) or actual sampling and analysis throughout the region of contamination.

"The following metals were identified as contaminants of potential concern (COPC) at the NMM EMD:

- Surface water – arsenic, hexavalent chromium, molybdenum, selenium, thallium, uranium, and vanadium;
- Groundwater – aluminum, antimony, arsenic, cadmium, chromium, cobalt, iron, lead, manganese, molybdenum, nickel, selenium, thallium, uranium, and vanadium;
- Sediment – aluminum, arsenic, cadmium, cobalt, iron, selenium, thallium, and vanadium; and,
- Soil, vegetation, and beef – aluminum, antimony, arsenic, cadmium, cobalt, iron, manganese, nickel, selenium, thallium, uranium, and vanadium.

In addition, the calculated concentrations of uranium-238 and radium-226 exceed screening levels in soil and sediment." (Plan p5).

What is needed is a description/analysis of the regional and local scale contamination resulting from the North Maybe Mine and in combination with the other mines for cumulative effects.

This should describe the extent of contamination from deposition by wind and water. The position of the EMD and mine on top of a ridge means that regional winds can carry the particulates and associated contaminants long distances in each direction. The deposited particulates and associated contaminants can then move downgradient throughout the watershed with surface flows. They will be carried downgradient in ground water after leaching or percolating into lower soil layers and can re-emerge in streams long distances from the source. It is not clear from the Proposed Plan what the extent of actual sampling was, or if a sampling and analysis plan was designed and carried out, or whether these "potential contaminants of concern" were arrived at from knowledge of the characteristics of the overburden or mined material.

Our personal experience from working on the first Natural Resource Damage Assessments in the nation in the 1980's in Colorado showed that wind deposited metals and radiological elements traveled miles from the point of origin, that they moved in the surface and ground water and could also be documented in soils, vegetation, fish, invertebrate, and sediment components of the system. The question is whether the Forest Service and Nu-West completed an adequate sampling and analysis program to document the extent of the contamination in all

6 Dr. John Carter now with Yellowstone to Uintas Connection directed the surface media investigations at the Uravan Uranium Mill, ASARCO Globe Smelter, Cotter Uranium Mill and Idarado Mine and Mill facilities in Colorado. This work was done under contract with the Colorado Attorney General's office. The comments describe the global results found at these sites.
ecosystem components. The Proposed Plan does not describe the monitoring or its results and does not illustrate these results using maps, analysis, and interpretations. This leaves the public in the dark about the nature and extent of the contamination and the effects on the ecosystem.

3. Summary of Site Risks

The Proposed Plan presents an overview of human health and ecological risks. (Plan p6 - 8). These were presented as non-Radiological and Radiological risk estimates using modeled or "screening level" scenarios at the NMM EMD. It is not clear if all the subunits of NMM were included or only the EMD was considered. It is not clear over what area or extent from the EMD the analysis was conducted or if it was based on actual data collected from the different environmental media.

The metals, non-metals and radionuclides listed above all exceeded their respective human health screening values for all media listed. Risk estimates were "calculated" for the most plausible ecological exposure pathways. The areas evaluated included the EMD Upland Area and the EMD Sediment Control Structure. Apparently, no actual sampling or measurement of the actual levels of contaminants in environmental media downgradient from the Source Areas (including these two subunits plus the open pit and other subunits) was used to make this determination or validate model results. The Proposed Plan does not present the actual concentrations throughout the region affected by these sources, so the public has no idea of what, where and how much. These risks were evaluated in the Screening Level Ecological Risk Assessment (SLERA) which concluded:

EMD Upland Area, "The SLERA concluded that ecological risk for terrestrial plants and soil invertebrates and amphibians in the EMD upland area cannot be excluded. Further, the SLERA also concludes that risk to amphibians and wildlifereceptors (terrestrial and aquatic birds and mammals) in the EMD upland area cannot be excluded. Risk to receptors at the EMD upland area is due to 17 soil COPECs: antimony, arsenic, boron, cadmium, chromium (total), copper, lead, manganese, mercury, molybdenum, nickel, selenium, silver, thallium, uranium, vanadium, and zinc."

EMD Sediment Control Structure, "The SLERA concludes that ecological risk for small to moderate ranging aquatic-feeding wildlife receptors using the Sediment Control Structure for food and water cannot be excluded. Risks to receptors in the aquatic environment are possible from exposure to 10 surface water COPECs: aluminum, barium, boron, cadmium, chromium (total and hexavalent), selenium, silver, uranium, and vanadium. Risks to receptors in the aquatic environment are possible from exposure to 14 sediment COPECs: aluminum, arsenic, barium, cadmium, chromium (total), copper, lead, molybdenum, nickel, selenium, silver, thallium, vanadium, and zinc."

"As described above, the SLERA for the Site identified several COPECs in surface soil, sediment, and surface water. Therefore, the possibility of adverse risks for ecological receptors cannot be excluded under current conditions and remediation may be warranted."

It appears these models were not validated by actual sampling of all media at and downgradient of the Site. As discussed above in Section 2 of these comments, BMPs and agency EPMs need validation so that the assumptions used in making these determinations and their outcomes can be proven. In addition, the meaning of reclamation and remediation is not made clear for either contaminated media or habitats.
4. Reclamation

The Proposed Plan briefly describes the habitat of the EMD Upland area as being limited "relative to undisturbed native habitat in nearby areas" and having undergone reclamation. It is sloping terrain with grasses, herbaceous plants, and low shrubs. There was no mention of surveys of wildlife in the area documenting what species are present in the EMD and in these "nearby areas" of native habitat. Nor is the native habitat described. The aquatic habitat in the Sediment Control Structure is limited, but an aquatic community has been observed. Fish are absent due to the separation of the SCS from East Mill Creek. No discussion of the aquatic community or contamination levels in the open pit pond or East Mill Creek, or other aquatic environments (springs, seeps, ponds, streams) was presented.

In our comments on the mines mentioned earlier, we have cited Forest Plan and Pocatello ARMP goals and objectives. A summary of these is provided in Attachments 1 and 2 to these comments. Commitments by the Forest Service in its Vision, DFCs and Goals for fish and wildlife rely on prescriptions, standards, and objectives for their attainment. We have included some of these in the following paragraphs. The page numbers refer to pages in the Caribou NFRFP. We have noted brief comments with each.

"Watershed protection and ecological restoration have been given a high priority in the Forest Service in decision-making processes, including budget and program planning, land management planning, project implementation, and watershed assessments for forest and interagency plans." (p2-1). Other than reclamation of the mine footprint to some early seral plant community, habitat structure and ecological restoration were not addressed. The Proposed Plan merely posits, but does not commit to remediation for contamination, let alone the full extent of contamination in all media, nor does it commit to watershed and habitat restoration.

"The Revised Forest Plan addresses minerals operations, reclamation and hazardous substance management by requiring the mine operators to use the most current science and research as it becomes available." (p2-11). We saw no studies of successful reclamation or covers, and no data from other projects in the mining area to validate the practices proposed or models used. This also applies to BMPs or EPMs.

"Sustain site productivity by providing the following minimum amounts of woody residue = 3 inches in diameter dispersed on the site as outlined in Table 3.1." (p3-7). The Proposed Plan did not discuss the actual habitat needs of the wildlife potentially present, which would include woody residue.

"Adequate bonds or other security instruments shall be required for special use authorizations if it is determined that the use has potential for disturbance that may require rehabilitation or when needed to ensure other performance." (p3-10). The reclamation bond and its provisions were not discussed in the Proposed Plan. What we have seen is the bond is for the actual mine footprint with nothing provided to ensure that long-term damage is corrected, pollution eliminated, or habitats restored.

"Mineral resources are available for development, consistent with other resource uses. Paleontological resources are properly managed to provide for preservation and use of these resources for current and future generations. Drastically disturbed sites are reclaimed so that natural recovery to pre-disturbed conditions is most likely. Reclamation emphasizes: 1) suitable topsoil preservation; 2) use of native plant species; and 3) stabilizing lands to a topographic relief (landform) that conforms to natural surroundings. Drastically disturbed lands are reclaimed to prescribed post-disturbance land uses as soon after disturbance as is practical. On mined lands and other drastically disturbed lands, maintain or reestablish hydrologic function, integrity, quality, and other surface resource values within the capability of affected lands."
Provide for mineral resource development using state of the art practices for surface resource protection and reclamation, and with consideration of social and economic resources. Mining activities are administered to prevent the release of hazardous substances in excess of established state and/or federal standards. Reclamation is designed to eliminate or minimize wildlife, livestock, and/or human exposure to hazardous substances." (p3-11). This sums it up in a nutshell. We see no evidence in the Proposed Plan that the intent of this RFP passage has been met. In fact, the presence of such massive contamination by such a long list of dangerous pollutants is prima facie evidence this provision was ignored. Likewise, there is no restoration of the streams, springs, topography, hydrology, and other natural attributes. No science or studies from other mines or reclaimed areas was provided to show the success of reclaiming these areas, the plant communities and wildlife populations developed over time, the status of COPCs in soils, vegetation, fish, and wildlife.

"Conduct annual reviews of Best Management Practices (BMPs) and make appropriate adjustments to ensure that hazardous substance releases do not exceed state and/or federal standards." (p3-12). The Proposed Plan did not provide any summary of these reviews or any studies documenting the effectiveness of BMPs or EPMs. Apparently, at NMM given the list of contaminants expected in the ecosystem, they were not effective.

"Lessee/operator shall conduct pre-mining, concurrent, and/or post-mining water quality and aquatic habitat monitoring (both surface and groundwater) on all phosphate-mining sites where bond release has not occurred, using most current sampling procedures and protocols." (p3-12). The Proposed Plan did not present the results of sampling and analysis of all media throughout the extent of the contaminated region. Were there baseline studies? Was ongoing monitoring conducted? Was monitoring conducted for the Proposed Plan? What are the results and how do they compare?

"Reclamation vegetation shall be monitored for bio-accumulation of hazardous substances prior to release for multiple use management." (p3-13). We have seen no studies or summaries of past projects' reclamation or affected areas other than the PAS. Are mining companies collecting data on reclamation areas and soils adjacent to the mine footprint and haul roads to ascertain the concentration of COPCs in soils and vegetation? What has been done on the NorthMaybe Mine and its subunits?

"The lessee/operator shall monitor reclamation work annually and report to the Forest Service until reclamation is accepted and the bond released." (p3-13). There was no summary of this annual monitoring provided. According to the PAS, some reclamation covers remain very sparse and the PAS reported high concentrations of contaminants in soil and vegetation.

"Loss of available surface water sources for uses such as wildlife or grazing, as a consequence of mining operations shall be replaced or mitigated by the mine operator. This includes the loss of water quality sufficient to maintain post-mining uses." (p3-13). The Proposed Plan did not provide for any monitoring, mitigation or restoration of water sources for post mining water quality and habitat.

"Ground cover should be assessed prior to release of the reclamation bond to assure: 1) minimum ground cover exists to attain long-term soil productivity requirements; 2) ground cover should persist at minimum cover needs without artificial assistance (e.g. watering, fertilizers, etc.); and 3) meet or trend towards post-mining land use goals." (p3-14). Same comments as above. There is no reported data for the various mines showing the status of revegetation.

"In reclaimed areas, vegetation should include species that meet wildlife habitat needs. Wildlifestructures (slash piles, logs, rock piles) using native vegetation and materials are designed to provide cover for wildlife movements in created openings." (p3-14). There was no provision for these features in the Proposed Plan.

"Maintain the dead and down woody material guidelines for wildlife. (See Wildlife Standards and Guidelines for Dead and Down material)." (p3-19). There was no mention of how this is to be achieved in the Proposed Plan for Source Areas (all subunits and haul roads) or in areas outside the mine footprint.
'"Not more than 30 percent of any of the principal watershed and/or their sub-watersheds (6th order HUC) should be in a hydrologically disturbed condition at any one time." (p3-16). Note hydrologically disturbed applies to changes in natural canopy and surface soil characteristics that may alter natural streamflow quantities and character. It is presumed that 30% of a watershed can be dug up and destroyed by mining alone, yet other activities also hydrologically disturb watersheds. These include timber harvest or sagebrush treatment, roads and other activities which also remove canopy, and livestock grazing that denudes and compacts soils and accelerates erosion.

We have included a summary of Forest Service RFP goals and objectives in Attachment 2 for this document.

These all must be addressed in the context of this Proposed Plan and further, must be addressed by evaluating the cumulative effects of all the subunits of the North Maybe Mine and other mines in a defined cumulative effects area.

It is not made clear in the Proposed Plan whether the mineral rights for North Maybe Mine were under BLM authority or other ownership or whether BLM participated in the decision-making process that authorized the mining. BLM, however, is a Trustee. We have addressed the provisions of the Pocatello ARMP in comments referenced above for other mines. BLM and Forest Service plans must be consistent. (ARMP p19). A summation of some of the provisions from the Pocatello ARMP is provided in Attachment 1 to these comments. A few of the provisions follow.

"ME-1 reclamation plans for minerals development operations will be designed to meet applicable Idaho Standards for Rangeland Health (BLM 1997), reclamation complete when these standards have been met." The Proposed Plan made no reference to these RH standards and whether these were met or how reclamation is to be monitored.

"ME-2 Final reclamation will meet applicable standards for watersheds, riparian areas and wetlands, stream channels and floodplains, seedings, exotic plant communities, and water quality with future site management directed towards attaining standards for native plant communities and threatened and endangered plants and animals (BLM 1997).

- The lessee/operator will monitor reclamation and report to the Authorized Officer annually until reclamation is accepted as adequate.
- Mineral operations will replace or mitigate any loss of available surface water sources for uses such as wildlife or grazing.
- Plan selection for reclamation will reflect the surrounding ecosystem and post development land use.
- Site specific mitigation measures will be developed through the NEPA process and applied to ensure that operations comply with applicable laws, land use plan guidance and do not result in unnecessary degradation."

There was no mention of these attributes or how the Proposed Plan intends to address them. No mitigation or replacement of contaminated water sources for wildlife was included.

"GE-1 use inventories and surveys to document the condition and extent of resources/uses to monitor and respond to changes in conditions. Mitigate potential adverse effects." The Proposed Plan only addresses contamination, not habitat and mitigating the adverse effects on habitat.

"GE-2 consistent with multiple use and sustained yield achieve desired conditions while providing an ecologically healthy environment. Reduce impacts from management actions and maintain or improve resource conditions." The Proposed Plan leaves a polluted and degraded landscape without the attributes or contours that existed prior to mining and does not propose restoration.

"GE-3 provide proper nutrient cycling, hydrological cycling, restore or improve public lands adversely affected by major surface disturbance. Employ Idaho Standards for Rangeland Health (1997) to determine success of reclamation, rehabilitation, or restoration activities." The Proposed Plan did not report on the
conditions of prior reclamation activities on the NMM or other mines in the affected area and did not propose any restoration.

"SW-2 manage activities to maintain or contribute to the long-term improvement of surface and ground water quality; prioritize stream management and restoration by presence of sensitive species, amount of stream on BLM lands, condition, and importance for achieving multiple use objectives." Instead of improving water quality, the Proposed Plan intends to leave polluted groundwater and surface water, soils, and vegetation, and consequently, poisoned wildlife, pollinators, and other insects/invertebrates, and destroyed habitats, all to the detriment of their populations.

"FW-2 maintain connectivity among habitats, use opportunities to improve habitat connectivity and reduce fragmentation of upland and riparian habitats by land actions, habitat improvement projects, wildlife, fire ES&R and restoration projects." The Proposed Plan omits any reference to wildlife connectivity and how this mine and the proposed reclamation does not destroy connectivity, or how connectivity is to be restored.

These excerpts illustrate the nature of the problem. The phosphate industry is creating pollution and environmental damage that will never be corrected under the current philosophy represented by the Proposed Plan. The Fact Sheet and PAS have described numerous mines with these issues. The public does not have a clue as to the extent of the problem in SE Idaho and it is incumbent on the Trustees to provide an analysis of all the mines and the current nature and extent of this contamination and habitat loss. This should be done under a NEPA process with an EIS that addresses the full extent of not only the contamination problem, but the alterations and fragmentation of habitats and the resulting effects on special status and other species. The analysis should not be fragmented into over a dozen RI/FS and other voluminous documents for up to 18 or more mines that the public can't access or easily understand. The analysis should also show the intent of the reclamation and remedial actions, the extent of pollution to remain, the extent to which Institutional Controls are to be applied and thereby the extent of the public and private lands that will be off limits or dangerous (exceeding background and all criteria) to people and wildlife.

The State of Idaho statutes include relevant provisions. These are Title 47 Mines and Mining Chapter 15 Mined Land Reclamation and Title 39 Health and Safety Chapter 36 Water Quality. There are numerous provisions in these Statutes that must be addressed. Some of these are:

- 47-1509 (4). Manage water as necessary to meet the requirements authorized under chapter 1, title 39, Idaho Code. (This includes meeting water quality criteria, antidegradation and beneficial use intent.)
- 47-1510. VEGETATION PLANTING. (a) Except as otherwise provided in this act, an operator shall plant on affected lands, vegetation species that can be expected to result in vegetation comparable to the vegetation that was growing on the area occupied by the affected lands prior to the exploration and mining operations.
- 47-1511. RECLAMATION ACTIVITIES — TIME LIMITATIONS. (a) All reclamation activities required to be conducted under this act shall be performed in a good and workmanlike manner, with all reasonable diligence, and as to a given exploration drill hole, road, or trench, within one (1) year after abandonment thereof.
  (b) The reclamation activity as to a given mine panel shall be commenced within one (1) year after mining operations have permanently ceased as to such mine panel, provided, however, that in the event that during the course of mining operations on a given mine panel, the operator permanently ceases disposing of overburden on a given overburden pile, or permanently ceases removing minerals from a given pit, or permanently ceases using a given road or other affected land, then the reclamation activities to be conducted hereunder as to such pit, road, overburden pile, or other affected land shall be commenced within one (1) year after such termination, despite the fact that all operations as to the mine panel, which includes such pit, road, overburden pile, or other affected land, have not permanently ceased.
• 47-1512. FINANCIAL ASSURANCE — REQUISITES. (a) Prior to conducting any mining operations on a mine panel covered by an approved reclamation plan or operating a cyanidation facility covered by an approved permanent closure plan, an operator shall submit to the board financial assurance meeting the requirements of this section. (1) The initial reclamation financial assurance filed prior to conducting any mining operations on a mine panel shall be in an amount determined by the board to be the estimated reasonable costs of reclamation required in this chapter.

The Proposed Plan does not propose to meet these criteria. Nothing is revealed regarding the amount of the reclamation bond set aside for the NMM and whether any of that bond has been released or what remains and whether it is adequate for reclamation of the entire NMM. If not, the Bond should be increased to cover restoration to original contours, filling the open pit and restoring habitat that existed prior to mining.

The terms remediation and reclamation are used in the Proposed Plan, but the distinction is not made clear. The Proposed Plan made no mention of restoration. Yet the intent of the Forest Plan and ARMP includes restoration. The Forest Service should clearly distinguish these from each other and demonstrate where its Proposed Plan outcome fits in a continuum to total restoration of background conditions prior to mining. We found an example in a website that provides information on the remediation and restoration taking place in the Clarks Fork River Basin. That site provides this narrative describing the relationship between reclamation, remediation, and restoration.

Reclamation is a blanket term often used, for example, by mining engineers when they rehabilitate a disturbed site for some useful purpose. Remediation is a legally and technically specific term for treating hazardous material to reduce or eliminate harm to human or environmental health. And restoration is a legally and technically specific term for returning a disturbed site to a more-or-less natural condition.

A diagram illustrating the distinctions is also provided and reproduced below:

According to this diagram, the reclamation described in the Proposed Plan is at the bottom when compared to the other "R's" and far below baseline conditions pre-mining. We argue that the intent of the laws, regulations and land use plans are for restoration.

5. The Preferred Alternative

The Proposed Plan presents 8 alternatives from No Action to Removal and Disposal of the overburden material from the EMD. The Preferred Alternative 7 would consist of an "infiltration-limiting and direct contact-limiting engineered geosynthetic cap system applied to the North Area, excavation of sediment from the SCS and placement within the North Area prior to cap construction, access and use restrictions, informational signage, and monitored natural attenuation (MNA) of residual COPCs in groundwater." (Plan p13). This is expected to take 3 years to construct and cost $14,698,600 with the resulting decline in contamination taking place over an undefined period or space.

A "reduction in erosion and transport of COPCs to East Mill Creek is to be achieved by capping the North Area. Potential remedies for contaminants that exceed acceptable risks in East Mill Creek beyond the SCS will be evaluated after implementation of the selected EMD remedial alternative." (Plan p17). (This is a clear demonstration that this reclamation Plan is trial and error using the natural environment and wildlife as guinea pigs.)

The Remedial Action Objectives (RAOs) are to prevent direct contact, erosion, and transport of EMD materials or exposure to vegetation on the EMD to human and ecological receptors that would present an "unacceptable risk". (Plan p.8). Groundwater and surface water RAOs are to "minimize" COPC loading from surface and groundwater discharging to East Mill Creek, "minimize" infiltration and COPC loading to groundwater, "minimize" ingestion, direct contact, or food-chain exposure of EMD impacted surface water by ecological receptors. (Plan p9).

"This remedial action at the EMD represents an interim measure of the North Maybe Mine Site as a whole. As such, waivers of chemical Applicable or Relevant and Appropriate Requirements (ARARs) for groundwater and surface water will be necessary until remedial actions are undertaken and compliance points are established for the North Maybe Mine Site." (Plan p9).

Since the Proposed Plan did not provide any overall context for this action, we rely on the PAS and its description of the North Maybe Mine. The PAS also described other Nu-West mines in the area including the South Maybe Canyon, Champ, Mountain Fuel, North, South and Central Rasmussen, Georgetown Canyon, and Dry Valley. Nu-West and its associates have adversely affected the environment on a much larger scale than is revealed in the Proposed Plan.

North Maybe Mine operated from 1965 through 1967, was idle from 1968 to 1971, operated from 1972 to 1984, then sat idle again until the final ore was removed in 1993 (AECOM 2009). During the life of the Mine, approximately 15 million tons of ore and 52 MCY of waste were mined. Major drainages from North Maybe
Mine include East Mill Creek and Kendall Creek. East Mill Creek flows into Spring Creek, which ultimately flows to the Blackfoot River. Kendall Creek flows east to Diamond Creek, which joins with Lanes Creek to form the Blackfoot River. Two additional small drainages at the Mine include an ephemeral stream that flows out of the base of Big Draw Dump and a small spring at the south end of the Mine that flows into Maybe Creek. The Mine pit, which is approximately 2.5 miles long, is surrounded by 12 external waste rock dumps, with approximately 612 acres of disturbance because of mining activities (AECOM2009).

It is difficult to even know where to start on this situation. As the PAS shows, this mine has likely been sending COPCs into the environment since the early 1960's and that is added to the numerous other Nu-West mines in the area along with mines under other ownerships. This Proposed Plan addresses only one of the "subunits" at the NMM. According to the PAS there is the 2.5-mile-long open pit surrounded by 12 external rock dumps. Now, this Proposed Plan addresses only one of these features and will admittedly allow continued contamination of environmental media. There is no schedule or analysis of the pit or these remaining rock dumps, no schedule for remediation to meet the intent of the Forest Plan, ARMP, or water quality criteria. This Plan merely kicks the can down the road with an indefinite outcome.

As the Plan describes, the ARARs are to be waived for an indefinite period and then when any further remediation occurs, these will be evaluated at points of compliance (POCs). As we have pointed out earlier in these comments, those POCs are at the standard or criteria levels, not background. In addition, this will allow those criteria to be exceeded in the region upgradient of the POC which can be many miles and with MNA, this process can proceed indefinitely. We have seen estimates of hundreds of years for other mines such as Rasmussen Valley. We know from our reviews of these other mine EIS that cutthroat trout in the Blackfoot River system are declining with some streams lacking reports of their presence in recent years and with levels of selenium greatly exceeding levels that allow reproduction. It is not documented what the combined effects of the entire suite of metals, non-metals and radiological isotopes released in this Blackfoot watershed are on cutthroat trout and other species, especially when combined with the effects of the other environmentally degrading activities such as roads, livestock grazing and timber harvest.

"The selected remedy is expected to reduce selenium loads downstream of the North Slope toe to less than 5 pounds per day." (Plan p9). We calculated what this means relative to the chronic threshold for selenium as presented in the PAS. This threshold for aquatic life is 0.005 mg/l. We calculated the streamflow necessary to dilute 5 lbs/day to the threshold. Five pounds per day of selenium would contaminate 185 cubic feet per second to that threshold. That is equivalent to a stream of the order of the Blackfoot River.

Protections include Institutional Controls which basically prohibits access over an area considered to be contaminated to some modeled risk level. For this Proposed Plan that is unknown. For the entire NMM the extent of contamination is unknown, therefore a wide area of water, soil, vegetation, and wildlife contamination could exist. Then combine this with the other mines. Is the entirety of SE Idaho to become off-limits as mine after mine continues to be approved in the face of this overwhelming evidence of contamination and failures of BMPs and EPMs, and even remediation, to control the contamination?

Then we come to the issue of stability of the Proposed Remedy. As described in the Plan, erosion is to be minimized. The Plan (p10) notes that sloughing of the waste material into the open pit can occur. Even if moved away from the open pit, the EMD remains in a hilltop or ridge position and as we have pointed out in our referenced comments above, SE Idaho is in a seismically active area. This has not been analyzed and the Plan (p10) indicates that "it may be necessary to move overburden away from the rim of the open pit to address highwall stability issues. Collection of additional geotechnical stability data in support of the remedial design maybe necessary and would be undertaken in conjunction with pre-design data.
collection activities. Details for any potential reconfigured rim and associated grading and/or removal of overburden, as well as any necessary road reconstruction or repair, will be developed in the remedial design." This implies many years and a speculated scenario that might or might not occur at just one of 13 subunits at NMM. In the meantime, COPCs will continue to be released and habitat lost.

Monitored Natural Attenuation is another problem. Despite the Tribes’ dedication to no contamination as suggested in the PAS, and the CTNF RFP objectives cited, we have ongoing contamination with no end in sight. As we write these comments other mines such as Husky 1 North Dry Ridge are undergoing environmental analysis as if all this past contamination is somehow not expected or never occurred and once again, promises of BMPs, EPMs and flawed models will be used to explain away the problems.

EPA published guidance on MNA in April 1999, “Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites”. A look at that guidance document is instructive. In the Purpose, EPA states, “EPA remains fully committed to its goals of protecting human health and the environment by remediating contaminated soils, restoring contaminated groundwaters to their beneficial uses, preventing migration of contaminant plumes, and protecting groundwaters and other environmental resources.” EPA goes on to qualify the use of MNA as to whether it is the most “appropriate” technology; will meet site remediation objectives within a timeframe that, “is reasonable compared to that offered by other methods”; incorporate “contingency measures” into the remedy; and “EPA expects that source control and long-term performance monitoring will be fundamental components of any MNA remedy.”

In the Background section, EPA states, “When relying on natural attenuation processes for site remediation, EPA prefers those processes that degrade or destroy contaminants. Also, EPA generally expects that MNA will only be appropriate for sites that have a low potential for contaminant migration.” In the first statement, we have seen that a cover and limiting infiltration is the principal mechanism at work to control and retain pollutants in the Source Area indefinitely, but it will continue to allow contaminant migration - recall the 5 pounds of selenium per day. The contaminants will not be destroyed. Regarding the second statement, NMM has extreme topographic relief with its Source Areas on top of the ridge. The potential for migration to Non-Source Areas is great and as we have seen, continues despite any (not known) remedial or control measures taken to date.

The Directive discusses MNA applied to inorganics as well. Since the Proposed Plan Preferred Alternative is to leave the current contamination in place where it will gradually leak outward and downward across the region, it is important to see what EPA has to say. “Changes in a contaminant’s concentration, pH, redox potential, and chemical speciation may reduce a contaminant’s stability at a site and release it into the environment. Determining the existence, and demonstrating the irreversibility, of these mechanisms is important to show that a MNA remedy is sufficiently protective.” EPA further summarizes by saying, “Therefore, natural attenuation of inorganic contaminants is most applicable to sites where immobilization or radioactive decay is demonstrated to be in effect and the process/mechanism is irreversible.

If the Forest Service and Nu-West determine to leave in place the COPCs they have the burden of showing that the COPCs currently at and surrounding the site will remain there and not, through physical, chemical, or biological means, migrate further, change states, or become accessible for human or animal consumption or exposure. On this steep slope, which has stability and seismic risks, where animals or insects, or plant roots can access the contaminated material there can be no assurance the Preferred Alternative will provide long term protection and as we point out, it is a leaky system by design.

Based on the magnitude of the problem, i.e. the legacy these phosphate mines are leaving, the only appropriate alternative is to remove the contaminated materials in efforts similar to that which occurred in other places, such as the Atlas Uranium Mill in Moab, Utah. While expensive, it must be balanced against the centuries long or longer time until MNA documents contamination has returned to background levels, not just ARARs which can exceed toxic and chronic thresholds for people, fish and
other wildlife, vegetation, insects, and microorganisms. Much of this is not addressed in the Proposed Plan.

Why has this happened? The NMM has been around since the early 1960's, but as the PAS describes has gone thru several active phases up until 1993 when the final ore was removed. Environmental laws such as the Federal Water Pollution Control Act (1948 and 1972), Clean Water Act (1972), Multiple Use and Sustained Yield Act (1960), National Forest Management Act (1976), Federal Land Policy and Management Act (1976), Comprehensive Environmental Response, Compensation, and Liability Act (1980) have been in place during this process.

Either the Acts themselves are inadequate, or the agencies tasked with implementing these laws have failed to implement their intent such as in the case of the SE Idaho phosphate industry.

Costs of remediation of NMM are raised as a concern, but there is no analysis of the costs of lost ecosystem values, polluted water, wildlife, and human health effects. It is especially troubling that the CTNF and BLM continue to approve these mines in an area deemed a Superfund Site subject to Natural Resource Damages from past and/or ongoing mining pollution. In past comments we have questioned whether the economic benefit outweighs the environmental costs of mining phosphate in this region. According to the recent Smoky Canyon DEIS, this region produces 15% of the phosphate rock in the US while Florida and North Carolina produce 85%. There is no evaluation of the value of the Public Lands to present and future generations for its inherent benefits of water supply, fish and wildlife and recreation. The American People are left with a permanent burden of water pollution, degraded water supplies, polluted and destroyed fish and wildlife habitat, reduced productivity of ecosystems, and reduced or eliminated species.

Groundwater impacts are minimally described at best. Models used depend on numerous parameters, each of which has a wide range of variability. Cover systems and reclamation are described, but no test plot data for revegetation, lysimeter tests for leachates have been provided, or perhaps they have not been conducted. We conclude that these mining projects are an experiment but with universal outcomes of destroyed habitat and polluted environments.

That the Smoky Canyon mine became a Superfund Site discredits the permitting and analysis process. What models and BMPs were used? What did they predict? What was or were the outcomes? How can the public be assured that Dairy Syncline, Caldwell, Husky 1 North Dry Ridge, or other mines undergoing NEPA review or recently permitted will not suffer the same or similar outcome, leaving the public burdened with cleanup, restoration, and loss of public resources for many generations, effectively permanently? Reclamation Bonds appear to be only for reclamation.

When does it expire? What tools or resources are available to correct ongoing pollution and habitat loss extending past the Mine life or past the Bonding period?
July 28, 2021

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Attachment 7 – Dr. John Carter’s Declaration

Caribou-Targhee National Forest Prescribed Fire Restoration Project

Declaration of Dr. John G. Carter

December 28, 2020

I, John G. Carter, declare as follows:

BACKGROUND AND STANDING

1. I am a member of Alliance for the Wild Rockies (AWR) and I am also the Founder and currently a Board Chair and Ecologist for the Yellowstone to Uintas Connection (Y2U).

2. The following facts are personally known to me, and if called as a witness I would and could truthfully testify to these facts.

3. I lived in Paris, ID, on a property called Keisha’s Preserve adjacent to the Caribou-Targhee National Forest until 2020 and this is still my registered place of residence. I began living at the Preserve full time in 2011, although I began acquiring the property in 1993 to set it aside for wildlife, including greater sage grouse, deer, elk and other animals. Today, the Preserve is nearing 1,000 acres with over 800 acres set aside in conservation easements to preserve habitat. The Preserve acquired property in Wyoming adjacent to the Bridger-Teton National Forest in 2019. The property is in grizzly bear and lynx habitat and it is our intent to set it aside in a conservation easement to protect the habitat. I currently am living here as caretaker for the Wyoming property, monitoring wildlife habitat and recovery from the Roosevelt Fire of 2018, which burned 60,000 acres in the Bridger-Teton NF and adjacent areas.

4. I am a professional scientific consultant, specializing in the ecology of the Interior West. I have substantial experience and expertise over the past 40 years in monitoring, assessing and providing plans for recovery or correction of environmental problems for the oil, gas and mining
industries, for government entities and for industrial operations. My focus areas have been aquatic ecosystems and sagebrush-steppe. Livestock grazing of these ecosystems is the principal factor degrading these values for wildlife and fisheries habitat, their populations and for water quality. As a result, much of my work has been assessing and monitoring livestock grazing management systems and grazing impacts upon ecological values, including uplands, riparian, forests, aquatic systems and wildlife. The testimony in this declaration is about that experience and my knowledge of the Caribou-Targhee NF.

5. I obtained a Bachelor of Mechanical Engineering from the Georgia Institute of Technology in 1966 and a Master of Business Administration from Georgia State University in 1972. For many years in the late 1960’s and early 1970’s, I worked as a professional engineer in the South.

6. In 1980, I received my PhD in Ecology from Utah State University. I also served as a Teaching and Research Assistant in Biology, Botany, Plant Taxonomy, and Plant Physiology at Utah State from 1976-80. Since receiving my PhD, I have published numerous articles and studies.

7. Since 1980, I have worked as a professional consultant in the areas of ecology and biology in Colorado, Utah, Idaho, and Wyoming. During that time, I served as an environmental consultant for industry, government, nonprofit organizations, and private citizens. I have provided scientific expertise and expert testimony regarding human-induced impacts to watersheds, water quality, ecosystem structure and function, fisheries and wildlife, and in design and implementation of corrective or restoration actions. My clients have included the Colorado Attorney General, Denver Water Board, National Park Service, Forest Service, PacifiCorp, Bonneville Pacific Power, Kennecott Corporation, Sun Oil, Phillips Petroleum, Sohio, Union Oil, Envirocare of Utah, Browning Arms, and Nucor Corporation. I terminated my consulting company in 2018. Some of this work was conducted in the Caribou-Targhee NF and adjacent lands.
8. I have devoted substantial time in collecting, studying, and assessing scientific literature and data relating to livestock grazing management and its effects on plants, soils, watersheds, forests, streams, fisheries and wildlife. I have extensively reviewed grazing management systems to assess their effectiveness; and I have used range science to design or propose changes in grazing management. I also conducted numerous surveys and studies of my own, addressing various aspects of range management and the ecological impacts of grazing. I have published papers relating to my own work; and provided extensive scientific information and data to the Forest Service, BLM and other agencies or environmental organizations in the form of reports, comments, data, and analysis relating to livestock grazing management and grazing impacts.

9. In 1996, I founded the nonprofit Willow Creek Ecology, Inc. (WCE) and served as its President for several years. WCE was dedicated to the conservation and preservation of wildlife and wildlife habitat and the protection of public health and the environment in the Intermountain West, including the National Forests and public lands in Utah and Idaho. WCE worked to achieve its goals using scientific approaches.

10. In May 2001, WCE joined with Western Watersheds Project (WWP). From 2001 to 2010, I served as the Utah Director for WWP and served on WWP’s Board of Directors. I left active employment with WWP in 2010.

11. In 2012, I founded the Yellowstone to Uintas Connection, a 501c3 non-profit corporation to address the Regionally Significant Wildlife Corridor (Corridor) that connects the Yellowstone ecosystem to the Uinta Wilderness and Southern Rockies through the Bear River Range and SE Idaho. Specifically, permitting of a 2500-acre phosphate mining project adjacent to Kiesha’s Preserve raised my awareness of the role of phosphate mining in fragmenting this Corridor and provided the impetus to establish the Yellowstone to Uintas Connection organization.

12. The 1.7-million-acre Project Area for the Caribou-Targhee Prescribed Fire Restoration Projects (Proposed Projects) is also in that Corridor. Forest Service actions including livestock grazing, timber projects, roads and mining adjacent to Kiesha's Preserve and in the Corridor
directly and indirectly affect our efforts to protect wildlife habitats and populations. I am personally injured by these activities.

13. During the 1970's, while in Graduate School at Utah State University, I explored the mountains, forests and deserts of Utah, Idaho, and Wyoming. I camped, climbed, backpacked, skied, fished, hunted, and, in those days, enjoyed the quiet. In the 70's you could ski the mountains all day and never see or hear a snowmobile, and you could hear the birds, see the wildlife, and enjoy the tranquility of nature. Those days are gone to the detriment of wildlife and my own peace of mind. This is the fault of the Forest Service and Bureau of Land Management and their mismanagement of these public assets, the lack of ethics, honesty and accountability that allows a project such as this proposed action to proceed with no justification or accountability to the public and no objective science-based analysis of the impacts of the project and other permitted activities on fish and wildlife habitat.

14. As I learned about ecology and explored these remote public lands, the presence of livestock was damaging to my enjoyment. The manure, the flies, the grazed vegetation and bare stream banks did not have that natural or pristine feel and look one would get in the un-grazed wilderness or in the National Parks I visited.

15. In my experience as an ecologist and while advocating for wildlife and watershed protection, I have spent the years since the mid-1980's working to correct the damage by livestock to our public lands. While I studied ecology, I had broad experience in working for industry and government to address environmental problems and restore ecosystems from the damage suffered.

16. In working for industry, I was accustomed to a data-based approach in which we would collect the data necessary to compare environmental variables to regulated standards and potential conditions and design solutions. I had wide experience as an expert witness for both industry and government in addressing these issues. Yet, when I collected data to present to the Forest Service to have them address degradation by livestock, I was told I did not "know the difference between
use and abuse", the agency made no changes and continued with grazing unchanged. In 30 years of this effort neither BLM nor the Forest Service have made changes to correct the damage. Instead, they ignore the principles of range science and ecology. The reason for this is clear. If they used the principles of range science and ecology, livestock could not economically be grazed on public lands because stocking rates would be reduced ten-fold. I recall asking this question to Dr. Philip Urness, a well-known Range Scientist and Professor at Utah State University many years ago before his death. I asked if there was a way to graze livestock, protect ecosystem values and do so economically. He struggled for moment, but then he replied "No".

17. This situation caused me to begin establishing non-profit organizations to address this issue on public lands and in our National Forests. Since the mid-1990's I have worked throughout Utah, Idaho, Wyoming and parts of Colorado to survey grazing allotments and provide comments to BLM and the Forest Service. This work was performed in my role as President of Willow Creek Ecology, a 501c3 non-profit I established and managed, followed by almost ten years as Utah Director and Board member for Western Watersheds Project, as Director and Ecologist for the Yellowstone to Uintas Connection, which I established in 2012. In this period of 25 years, I have never seen an agency EA or EIS to renew grazing permits, implement timber projects, aspen "restoration" projects, prescribed fire projects, mining projects and others that acknowledged the full extent (or any) of the damage by livestock or incorporated well known and basic range science and ecological principles to correct that damage.

18. Because of this situation of obfuscation around the damage by livestock and what I now call "the abandonment of range science", in the late 1980's I had begun collecting data and studying the range literature in addition to the wildlife and ecological literature with a focus on livestock grazing impacts and grazing systems and methods to manage properly in order to restore native plant communities and riparian areas.

19. Over these decades, I have commented on and appealed many grazing decisions, timber projects, aspen restoration projects, mining and pipeline projects on BLM and Forest Service
managed land. I have published papers about this subject to address these agency failings. I do this in the hope that one day when facts and science matter again, these may be of help. In recent years, due to the failures of these agencies and the publication of articles and books that address ethical issues and regulatory capture of the agencies by the industries they are supposed to regulate, I have begun incorporating articles, books and discussions of ethics and public trust into my comments and providing copies of these and the scientific literature to the agencies.

20. In my role as ecologist for Yellowstone to Uintas Connection, I have reviewed the Scoping Documents for the Caribou-Targhee Prescribed Fire Restoration Projects (Proposed Projects). I provided analysis and content to our organization for the two sets of comments (Comments) we have submitted. These were dated November 24, 2020.

THE YELLOWSTONE TO UINTAS CONNECTION/CORRIDOR

21. The Yellowstone to Uintas Connection was named for the high elevation Regionally Significant Wildlife Corridor that connects the Greater Yellowstone Ecosystem to the Uinta Mountains in Utah. Further, this Corridor connects the northern and southern Rockies. This is shown in Figure 1 with the Caribou-Targhee NF (CTNF),

120 From the Uinta Wasatch Cache NF Website for Planning at: https://www.fs.usda.gov/detailfull/uwcnf/landmanagement/planning/?cid=stelprdb5076923&width=full "Uinta Wasatch Cache National Forest Map of the Regionally Significant Wildlife Corridor (.pdf - 796 Kb - November 2003) - the Map shows the north-south linkage between large landscapes connecting forests from the northern Rocky Mountains in Canada to the southern Rocky Mountains of the United States referenced in the Revised Forest Plan page 4-70, 4-120, and 4-143."
Uinta-Wasatch-Cache and Ashley NFs (UWCNF) and their position in this Corridor. As can be seen, these Forests lie almost entirely within the Corridor.

22. We work to restore the habitat structure and function of that corridor. These Proposed Projects are in that Corridor. Canada lynx, Wolverine, Grizzly Bears, Wolves and other wildlife species historically used that Corridor and are impacted by its degradation and the loss of population connections. We work to restore native cutthroat trout populations such as Bonneville, Yellowstone and Colorado River cutthroat trout. Sage grouse are another focal species for our work. These and other species needing this Corridor are further threatened by these Proposed Projects and the other cumulative actions that are proposed or ongoing while livestock grazing continues without being addressed. The scoping documents for these Proposed Projects do not express the intent to analyze cumulative effects, habitat fragmentation and capability, and livestock impacts or other agency actions on the forest issues identified.

23. An example of Forest Service deflection around cumulative impacts is provided in recent projects we have commented upon and objected to. As an example, the Draft Environmental Impact Statement for the Proposed Dairy Syncline Mine and Reclamation Plan was produced by joint lead agencies, BLM and the Forest Service in November 2018. When it came to identifying impacts to Canada lynx, wolverine and wolves, the Dairy Syncline DEIS\textsuperscript{121} makes the statement: "The year-round noise

and human activity associated with the construction and active mining phases of the Proposed Action would likely influence Canada lynx to travel around the periphery of the disturbed area rather than directly through it." This is a typical statement applied to these carnivores in project after project the Caribou-Targhee NF has proposed and approved. Yet, they never describe the habitat quality or capability occurring in the areas surrounding the particular project the animals would "travel around". I mapped the phosphate mines in the SE Idaho portion of the Corridor (Figure 2) to show that if a lynx, wolf or wolverine, or other animal attempted to travel around the "periphery" of the project, they would merely encounter another project. In addition, I mapped the roads in this area and that map shows the lack of any un-roaded or low road density corridor to allow these wildlife migrations (Figure 3).

24. In our Comments on these Proposed Projects, we covered topics related to this Corridor, Lynx and Wolverine as well as Climate Change, all of which necessitate connecting habitats. Our comments pointed out that the Forest Service, in its National Roadmap for Responding to Climate Change, emphasizes connecting habitats, restoring corridors for fish and wildlife, decreasing fragmentation, and removing impediments to species migration. Other factors in the Roadmap had to do with promoting carbon sequestration, assessing vulnerability of species and ecosystems to climate change, and restoring resilience. The Proposed Projects do not address or define this Corridor and when they mention terms such as "increasing resiliency" or "restore ecological function", there are no definitions of what these
terms mean. There is no description of ecosystem structure and function, how these will be measured on the ground in terms of plant communities and their current condition versus potential, or habitat capability for various species of wildlife, nor how conditions following the Proposed Projects will relate to community potential or habitat capability. I have inserted Table 1 from Holechek et al 2004122 that describes plant community condition classes and their corresponding relationships to ecological potential, which are determined by quantitative assessment of plant community characteristics. These characteristics include species and their annual production and comparison to NRCS Ecological Site Descriptions via a similarity analysis. For example, "mid-seral" is comparable to a plant community that is at 25 - 50% of potential composition and production, also known as "fair" condition. The point is this characteristic can be measured quantitatively. The Forest Service Proposed Projects do not provide this type of quantitative information to characterize their "departures" from historical conditions.

<table>
<thead>
<tr>
<th>Seral Status</th>
<th>Climax</th>
<th>Late Seral</th>
<th>Mid Seral</th>
<th>Early Seral</th>
</tr>
</thead>
<tbody>
<tr>
<td>Condition</td>
<td>Excellent</td>
<td>Good</td>
<td>Fair</td>
<td>Poor</td>
</tr>
<tr>
<td>Climax Percent Remaining</td>
<td>76 - 100%</td>
<td>51 - 75%</td>
<td>26 - 50%</td>
<td>0 - 25%</td>
</tr>
</tbody>
</table>

**CANADA LYNX AND CONNECTIVITY**

25. Our Comments also referenced both the Wasatch Cache (WCNF RFP) and Caribou Revised Forest Plans (CNF RFP) in relation to corridors. As described above, the UWCNF produced the map of this Regionally Significant Corridor.123 (TD).124 In addition, the Wasatch-Cache, Ashley and Uinta National Forests produced a map of lynx primary, secondary and

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123 [https://www.fs.usda.gov/detailfull/uwcnf/landmanagement/planning/?cid=stelprdb5076923&width=full](https://www.fs.usda.gov/detailfull/uwcnf/landmanagement/planning/?cid=stelprdb5076923&width=full)
124 TD indicates the reference is provided with this declaration on the accompanying thumb drive.
peripheral habitat along with Lynx Analysis Units, showing the entirety of the Uinta Mountain Range in Utah consists of LAUs. The FEIS for the WCNF RFP provided a process for assessing connectivity, including:

a. Assess historic patterns in vegetation and relative connectivity
b. Assess current patterns in vegetation and relative connectivity, including the impacts of human disturbance or physical barriers
c. Compare historic and current patterns of relative connectivity to determine if animal movement opportunities have been significantly interrupted.
d. Consider ecologically based measures to restore historic animal movement, referring to Table 1 provided therein.

The FEIS for the 2003 CNF RFP has a similar set of steps to assess connectivity. It contains a map of lynx linkage and peripheral habitat. However, the CNF appears to lack Lynx Analysis Units although lynx have historically occurred here as shown in Figure 3 of our Comments and in Figure 1-1 (TD) from the FEIS for the Northern Rockies Lynx Management Direction. The Targhee NF delineated LAUs in 2001 and reduced those through modeling, producing the 2014 LAU map which is Figure 2.2 in the 2015 Targhee National Forest Lynx Analysis Units FEIS. The areas removed through modeling appear as linkage areas in the 2005 map (Figure 1.2) in the FEIS. These do not show in the 2014 map, so it is unclear from that if the Targhee Zone includes specific linkage areas. That Figure does show presumed primary and secondary vegetation, which will be altered by the Proposed Project. The Targhee National Forest Lynx Analysis Units DEIS (p56) stated that:

Although the NRLMD roughly identified linkage areas on the Targhee NF, there is very limited information at the forest level to determine where specific linkage areas should be identified for the Targhee NF. Until more information becomes available regarding where linkage areas should be located on the Targhee NF the C-TNF will manage all lands on the Targhee NF that do not fall within lynx habitat (primary and secondary vegetation within an LAU) as linkage areas. Therefore all lands on the Targhee NF that are not identified as lynx habitat will be subject to the linkage objectives, standards, and guidelines found in the NRLMD ROD, thus providing the best management possible to

126 USDA Forest Service. 2007. Final Environmental Impact Statement Northern Rockies Lynx Management Direction National Forests in Montana, and parts of Idaho, Wyoming and Utah. Figure 1-1.
promote the recovery of Canada lynx.

This language was changed in the FEIS to state:

the NRLMD specifies which standards and guidelines apply to lynx habitat (primary and secondary vegetation within LAUs) and linkage areas (all Targhee NF acres not considered lynx habitat) within the occupied area.

It would seem, therefore, that even though the Caribou NF was not considered occupied, but contained linkage habitat, the same statement should apply here as well. In the end, however, I have not seen any analysis of lynx linkage areas, their habitat characteristics, fragmentation, and capability for lynx movement in any project NEPA I have reviewed for the Caribou Targhee NF. It appears from the statements above that the CTNF is waiting on some entity to provide that "information" while there is sufficient knowledge of lynx and other species to construct a definitive set of characteristics this linkage or corridor should contain.

26. The Targhee Zone Prescribed Fire Scoping Document Figure 1 shows the areas proposed for the Proposed Project overlap the lynx LAUs and Linkage areas within the Targhee Zone.

The only mention of lynx in the Scoping documents for the Caribou Targhee Proposed Projects is that they would be consistent with applicable Northern Rockies Lynx Management Direction. However, the Northern Rockies Lynx Management Direction ROD (2007 Attachment 1 p1) states: "The following management direction applies to all National Forest System lands that are known to be occupied by Canada lynx." The list of Forests that are occupied includes the Targhee, but does not include the Caribou, or Uinta-Wasatch-Cache, while the Ashley is listed as not occupied. The final caveat is stated on the same page as: "Until such time as these National Forest System Lands become occupied, they should consider the following management direction, but are not required to follow it." What a deflection of responsibility. Unless the Forest Service does something to restore lynx habitat, the wait will be futile.
27. Lynx historically occupied and used these areas and the linkages as demonstrated in the preceding paragraphs. Yet they are considered not occupied here. The reasons for any lack of occupancy should be analyzed and the important linkages restored as the NRLMD ROD specifies. For example, Lewis and Wenger (1998) (TD) reported numerous observations of lynx in Idaho and Utah in significant numbers and in areas the NRLMD excludes.\footnote{Lewis, L. and Wenger, C.R. (1998) Idaho’s Canada Lynx: Pieces of the Puzzle. Idaho Bureau of Land Management Technical Bulletin No. 98-15. \url{https://doi.org/10.5962/bhl.title.63223}} Harold Wadley, a Forest District Ranger and Forester in the 1950's in the Stanley, Idaho area "found them in large enough numbers that allowed him to pursue them with hound dogs." In his tenure with the Forest Service in Utah, in 1957 and 1958 he "treed 20 Canada lynx in those two years" and estimated there were 15 lynx in a section of the north slope of the Uintas between the West Fork of the Bear River and the Little East Fork of the Black Fork River, indicating a resident population. This is consistent with the historical map and presence of lynx from the Colorado reintroductions as shown in our Comments.

28. Attachment 1 to The Northern Rockies Lynx Management Direction ROD includes Goals, Objectives, Standards, and Guidelines.\footnote{USDA. 2007. Northern Rockies Lynx Management Direction Record of Decision.} These express the intent to conserve Canada lynx, maintain or restore lynx habitat connectivity in and between LAUs and in linkage areas and have objectives to manage vegetation to support lynx and snowshoe hares. The Livestock Management objectives and guidelines are generic and lack any specificity or recognition of the severity of livestock impacts to all ecosystem components. The FWS dismissed roads as a threat (ROD p3) and while the ROD discusses the effects of roads and provides guidelines, there are no standards for road density to protect lynx and other species. In all cases I have seen none of this addressed or implemented in projects in the CTNF I have reviewed. The ROD contains numerous statements about natural succession, mosaic of habitats, ecological conditions, restoration, poorly developed understories and others I won't list. As I discussed above these
terms lack definition and meaning in terms of habitat structure and function, or habitat capability as needed for lynx. Dr. Sara Johnson of Native Ecosystems Council has reviewed characteristics of lynx habitat and provided a summary of those characteristics. The essence of the review is in its quantitative expression of habitat characteristics, comparison of project outcomes with needed characteristics, and definitions of lynx habitat from the US Fish and Wildlife Service. I have quoted this latter section below:

**Definitions of Lynx Habitat as per the U.S. Fish and Wildlife Service:**

These definitions are not consistent with the current best science or with the Lynx Amendment. These definitions cannot be used to measure current or projected levels of lynx habitat within LAUs due to vegetation treatments. These definitions define Primary Constituent Elements (PCE) within a boreal forest landscape supporting a mosaic of differing successional forest stages and containing:

a. PCE a – presence of snowshoe hares and their preferred habitat conditions, which include dense understories of young trees, shrubs or overhanging boughs that protrude above the snow, and mature multistoried stands with conifer boughs touching the snow surface.

b. PCE b – Winter conditions that provide and maintain deep, fluffy snows for extended periods of time.

c. PCE c – Sites for denning that have abundant coarse woody debris such as downed trees and root wads.

d. PCE d – Matrix habitat (e.g., hardwood forest, dry forest, non-forest, or other habitat types that do not support snowshoe hares) that occurs between patches of boreal forest in close juxtaposition (at the scale of a lynx home range) such that lynx are likely to travel through such habitat while accessing patches of boreal forest within a home range.

**CARIBOU TARGHEE PROPOSED PRESCRIBED FIRE PROJECTS**

29. The Prescribed Fire Scoping documents describe the use of LANDFIRE data sets to evaluate vegetation condition classes and identify major departures from the natural (pre-

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settlement or historical) fire regime. Modeled vegetation classes were used to depict these departures from "simulated" historical vegetation reference conditions. I have reviewed the referenced LANDFIRE website to ascertain what quantitative criteria were used to determine fire return intervals, historic vegetation types and the determination of departure from those conditions. For example, I quote the following from the website133:

- LANDFIRE (LF) existing vegetation layers describe the following elements: Existing Vegetation Type (EVT), Existing Vegetation Canopy Cover (EVC), and Existing Vegetation Height (EVH). These layers are created using predictive landscape models based on extensive field-referenced data, satellite imagery and biophysical gradient layers using classification and regression trees. LF potential vegetation layers describe the following elements: Bio-Physical Settings (BPS) and Environmental Site Potential (ESP). These layers are created using predictive landscape models based on extensive field-referenced data and biophysical gradient layers using classification and regression trees.
- LANDFIRE's (LF) Biophysical Settings (BPS) represents the vegetation system that may have been dominant on the landscape prior to Euro-American settlement and is based on both the current biophysical environment and an approximation of the historical disturbance regime.
- The Fire Regime Groups (FRG_NEW) were intended to characterize the presumed historical fire regimes within landscapes based on interactions between vegetation dynamics, fire spread, fire effects, and spatial context. FRG definitions have been altered from previous applications to best approximate the definitions outlined in the Interagency Fire Regime Condition Class Guidebook. (emphasis added).

It is clear from these descriptions that the conditions provided in the Scoping documents are little more than conjecture and have little to do with on the ground conditions. After all, one can't see the understory from a satellite. While modeling can provide insights leading to further detailed on the ground verification of the validity of such models, the current Prescribed Fire Proposals lack the necessary literature, field studies and analysis to verify what is claimed to support the projects and inform the public, forgetting definitive characteristics of lynx habitat resulting from past Forest Management.

30. Inspection of the Figures of Current Vegetation Classes for the Proposed projects, for example the Targhee Zone (Figure 2) map, shows almost none of the area in a High Departure

133 https://www.landfire.gov/index.php
with most being in Low or Moderate Departure. In the Caribou Zone (Figure 2) map, there is a large portion of Low Departure in the Caribou, Preuss and Webster Sections with High and Moderate Departure dominating in the Bear River Range. Overall, High Departure is still a small fraction. In later paragraphs I will present some of the conditions we find in the Bear River Range from a survey I lead. If one accepted the models as accurate, it appears other than the Bear River Range, in both the Targhee and Caribou Zones, most areas based on the model outputs seem to have minimal areas of concern. If these models were compared to the soil surveys, potential plant communities and NRCS Ecological Site Descriptions with current on the ground surveys, then perhaps the Forest Service could define areas in need of restoration. But, without analyzing these, the effects of past management, the known fire return intervals for juniper, sagebrush, subalpine fir, Douglas fir, aspen, and other communities, the Scoping documents do not inform the public and in my opinion do not provide a basis for these landscape scale projects. I will point out later that these ecosystems are dysfunctional, but the modeling for the Proposed Projects does not represent that dysfunctionality.

CONDITION SURVEYS IN THE CARIBOU TARGHEE NF

31. As mentioned above, I have conducted surveys to determine conditions in the Caribou Zone, in particular, the Bear River Range in Idaho. The Bear River Range survey was completed in 2001 with a report (Report) issued in 2002.134 (TD). Since that time I have continued to monitor these areas along with other areas in the Caribou and Targhee Zones. I find there has been no progress in addressing the conditions we described from the 2001 survey. In addition, when we measure use by livestock it is typically above sustainable levels and livestock are the base of the pyramid of damaging actions the Forest Service allows to continue. The photos in Figures 4 - 8 below were taken during that survey. They show examples of the (a) impact of

livestock grazing and water developments on vegetation, soils and aspen understory and
recruitment, (b) conifer understory, and (c) riparian areas. Photo links are provided in the
referenced report for all locations surveyed.

32. In preparing this survey, we relied on Forest Service monitoring reports, the Draft EIS for
the Revised Caribou Forest Plan and literature characterizing livestock impacts on upland and
riparian habitats. In the late 1990's, the Forest Service had prepared Regional and Sub-Regional
Reports characterizing departures from potential for aspen, conifer, tall forb,
sagebrush/grasslands, riparian and wetland areas. They found livestock grazing and past timber
harvest in conifer forest to be a fundamental issue leading to loss of PFC in these communities.136
Table 2 of our Report (p18) describes the structure and compositional characteristics of these
habitats needed for PFC.

33. We assessed 86 locations for PFC in the Bear River Range including uplands, riparian
areas, open basins/meadows, and aspen and conifer stands. These were within one mile of water
sources in areas considered "capable" for livestock based on slope and distance to water.
Mapping analysis predetermined the locations at which we surveyed each habitat type present.
We compared observable conditions to the Caribou RFP Draft EIS PFC guidelines. Table 2
below is reproduced from the Report and shows the number of locations of each habitat type
assessed. A total of 310 individual habitats were assessed. As shown, a small percentage met the
Forest Service guidelines for PFC.

136 USDA. 1996. Intermountain Regional Assessment: Properly Functioning Condition. USDA Forest Service,
Region IV, Ogden, Utah.
137 USDA. 1998b. Draft Sub-regional Assessment of Properly Functioning Condition for Areas Encompassing the
National Forests of Northern Utah. USDA Forest Service, Region IV, Ogden, Utah
Figure 4. Sheep watering and bedding area showing complete loss of understory, loss of aspen recruitment and high-lined aspen. The soil is completely exposed. Sheep are bedded in a different location each day throughout the season, leading to widespread damage that is not documented by the Forest Service.
Figure 5. Aspen stand in valley bottom. Cattle have denuded the area, browsed suckers and essentially created a single aged stand that will die out unless livestock are excluded and recruitment allowed to occur.
Figure 6. Grazed conifer stand with little herbaceous vegetation present

Figure 7. Grazed riparian area with barren banks, little vegetation left in riparian zone
Table 2. Results of Bear River Range PFC Assessments

<table>
<thead>
<tr>
<th>Habitat type</th>
<th>Number of locations</th>
<th>Number in PFC</th>
<th>Percent in PFC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aspen forest</td>
<td>71</td>
<td>17</td>
<td>24%</td>
</tr>
<tr>
<td>Conifer forest</td>
<td>68</td>
<td>14</td>
<td>21%</td>
</tr>
<tr>
<td>Forb meadow</td>
<td>44</td>
<td>2</td>
<td>4.5%</td>
</tr>
<tr>
<td>Sage – grass</td>
<td>73</td>
<td>8</td>
<td>11%</td>
</tr>
<tr>
<td>Riparian</td>
<td>54</td>
<td>12</td>
<td>22%</td>
</tr>
</tbody>
</table>

Figure 8. Sediment-laden stream substrate
34. We measured ground and canopy cover along transects at 55 locations in sagebrush-grassland and tall forb habitats. Tables 3 and 4 below are reproduced from that report. Bare soil averages above 50% show ground cover is well below potential. These averages included some ungrazed areas such as exclosures, which if excluded, would have resulted in even lower soil cover values. The Sub-Regional Assessment by the Forest Service indicated ground cover potential ranges between 80 - 95%. I note in our surveys of un-grazed areas in the Bear River Range and on Kiesha's Preserve, potential ground cover is near 100% in sagebrush and all other habitats. See our Kiesha's Preserve website for photographs of these ungrazed conditions.

<table>
<thead>
<tr>
<th>Table 3. Cover Data for 45 Sagebrush Locations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cover type</strong></td>
</tr>
<tr>
<td>Bare Ground</td>
</tr>
<tr>
<td>Litter</td>
</tr>
<tr>
<td>Grass</td>
</tr>
<tr>
<td>Forb</td>
</tr>
<tr>
<td>Shrub</td>
</tr>
<tr>
<td>Rock</td>
</tr>
<tr>
<td>Crust/moss</td>
</tr>
<tr>
<td>Shrub Canopy</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 4. Cover Data for 10 Locations in Tall Forb</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cover type</strong></td>
</tr>
<tr>
<td>Bare Ground</td>
</tr>
<tr>
<td>Litter</td>
</tr>
<tr>
<td>Grass</td>
</tr>
<tr>
<td>Forb</td>
</tr>
<tr>
<td>Shrub</td>
</tr>
<tr>
<td>Rock</td>
</tr>
<tr>
<td>Crust/moss</td>
</tr>
</tbody>
</table>

35. Data collected in this 2001 study as well as other surveys I have conducted in the area demonstrate that all Forest habitats grazed by livestock are well below potential. Compared to the Draft Caribou RFP EIS and other PFC manuals for Riparian Areas the best I could say is they
are functioning at risk with many in non-functioning condition. The satellite imagery based LANDFIRE assessments can't capture the conditions found in this study and should not be used as a basis for the widespread use of Prescribed Fire as Proposed. Even though the LANDFIRE analysis depicts departures from PFC, it cannot be considered dependable for site specific analysis for the purpose of these Proposed Projects. The Forest Service should quantitatively evaluate these conditions on the ground and address causative factors, principally livestock grazing, past timber harvest, roads and mines that lie at the heart of the dysfunctional habitat for fish and wildlife in these Forests. Then it should make major changes to management to correct this dysfunction and restore these habitats, including the Corridor.

36. In another study in the Bear River Range in northern Utah during the same time period and with similar levels of livestock grazing, I and my co-authors found that livestock grazing had reduced soil cover, reduced soil carbon and nitrogen, depleted the litter layer in conifer forest and disrupted the mycorrhizal fungi layer at the litter/soil interface where nutrient cycling is enabled.\(^\text{138}\) (TD). Figures 9 - 11 illustrate some of the conditions reported. There was also a relationship between these parameters and distance to water. This showed soil cover and grass production increased with increasing distance from water. Soil organic matter and nitrogen

increased as soil cover increased. These reflect decreasing livestock use as one moves farther from water as predicted by range science. See previous Holechek et al 2004 citation.

These data further indicate the loss of productivity and soil nutrients caused by livestock grazing with the removal of soil cover leading to accelerated erosion thus affecting overall Forest ecological condition and production.

37. In other studies in Idaho, Wyoming and Utah, while I was employed by Western Watersheds Project, we collected data for sediment levels in cutthroat and bull trout spawning habitats to compare to criteria developed by the Idaho Fisheries Cooperative Research Unit. I prepared a PowerPoint presentation of these results for presentation to Federal Agencies and at a

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Utah State University symposium in 2007.\textsuperscript{140} (TD). We used a substrate core sampler to collect samples and a sieve analysis to evaluate sediment size fractions for comparison to the Irving and Bjornn empirical data and State Criteria. The percent fines vs survival of salmonid eggs to emergence is shown in the following chart from that presentation. (Figure 12). As the percent fines in the spawning habitat increase, spawning success decreases. Fines are generated from sediment in runoff from roads and watersheds. Livestock are a major contributor as they reduce soil cover and damage stream banks.

38. Figures 13 and 14 show the results for Bonneville cutthroat trout spawning habitats and predicted emergence which occur in the Caribou NF in the Bear River Range and other areas. Note that none of the locations met the Idaho DEQ Standard while survival to emergence was extremely low.

\textsuperscript{140} Cater, J. and J. Ratner. 2007. Watersheds and native trout spawning habitat condition. Download at:
Figure 13. Sediment Fines in Bonneville Cutthroat Trout Streams

Figure 14. Predicted Survival to Emergence for Bonneville Cutthroat Trout
CAPABILITY DETERMINATION FOR LIVESTOCK

39. After producing our 2002 Bear River Range Report I began to analyze the status of watersheds and comparisons to Caribou National Forest capability criteria for livestock grazing as it was clear there was insufficient forage in "capable" areas to support the numbers of livestock being grazed. This mountainous terrain in the Bear River Range is typified by peaks and ridges with intervening narrow canyons and steep slopes along with some large open basins at higher elevations. My co-authors and I completed a GIS analysis to look at the capability of the Bear River Range as well as the importance of these watersheds to nearby communities for their water supplies. This is provided in a Power Point presentation we gave at a conference in Keystone, Colorado in 2006.141 (TD).

40. The capability criteria provided in the Caribou National Forest Revised Forest Plan are summarized below.142

- Less than 30% slope for cattle, less than 45% for sheep
- Greater than 200 pounds/acre forage production
- No unstable or highly erodible soils
- Greater than 60% ground cover
- Less than one mile from water
- Accessible with no dense timber, rock or other physical barriers.

We mapped these characteristics with GIS. The Caribou NF did not consider soil erosion hazard when determining capable acres for livestock so we referred to the Soil Survey for the Caribou National Forest143 and, using the erosion indices therein, removed soils with high erosion hazard from the available capable acres. Figures 14 and 15 demonstrate the difference. The results of the analysis are shown in

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Table 5. This shows that the Forest Service is permitting livestock grazing on nearly double the acres it should based on its own criteria, which it failed to use in its own Forest Plan.

**Table 5. Bear River Range Capable Acres With and Without Consideration of Soil Erosion Hazard**

<table>
<thead>
<tr>
<th>Livestock Type</th>
<th>Total Acres</th>
<th>Capable Acres w/o Soil Erosion Hazard</th>
<th>Capable Acres w/ Soil Erosion Hazard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cattle</td>
<td>264,157</td>
<td>117,727 (44.5%)</td>
<td>63,761 (24.1%)</td>
</tr>
<tr>
<td>Sheep</td>
<td>264,157</td>
<td>176,038 (66.6%)</td>
<td>88,664 (33.5%)</td>
</tr>
</tbody>
</table>
Figure 14. Capable Lands Using Forest Service Methodology

Did not exclude high erosion hazard soils
Figure 15. Capable Lands Excluding Areas with Highly Erodible Soils
CORRECTING THE DAMAGE

41. As the AWR Comments on these Prescribed Fire Proposals point out, there is no evidence that fire suppression has caused a departure from historic fire return intervals and that proposed fuel reductions would "not represent a restoration treatment, but rather a departure from the natural range of variability in stand structure." (AWR p38). The CTNF has based its determination on models that "may" represent pre-settlement vegetation and an "approximation" of the historical disturbance regime. Fire Regime Groups were "intended to characterize the presumed historical fire regimes within landscapes". AWR points out the long fire return intervals that can be several hundred years in these forest types and that "variation in climate, rather than in fuels appears to exert the largest influence on the size, timing and severity of fires in subalpine forests". (AWR p38). A current article by a noted scientist who has written extensively on fire, fuels and forest management clearly illustrates this with examples.¹⁴⁴ (TD). Given this situation, it appears that fuels and management should only focus on protecting structures using Defensible Space and Firewise construction.

42. The CTNF should conduct an analysis that documents the current extent of old growth forests, the extent of past timber harvest and effects on current stand conditions, compared to old growth conditions. In doing this analysis the CTNF should also analyze road density and compare the current extent of roads of all types whether open or closed, user created or decommissioned, to the needs of each species. The CTNF should analyze the location and extent of security habitat for elk and other species using its criteria of greater than 0.5 miles from the nearest road and of a size greater than 250 acres. Road densities should be reduced to meet ecological science-based criteria for these species and as part of a habitat capability analysis.

43. The CTNF should delineate the Corridor and its capability for supporting populations of species such as lynx, wolverine, grizzly bears and other sensitive or management indicator species. This should be a quantitative analysis involving stand structure, cover, understory plant communities and their characteristics of structure, species and departure from potential. Causes of departures are likely past timber harvest and livestock grazing or both in combination. Fragmentation by roads, timber harvest, mines, pipelines, transmission lines and noise from off road vehicles such as ATVs/OHVs, snowmobiles should be analyzed. It is noted that the Caribou National Forest has minimal areas that are free of snowmobiles in winter. Incorporating the connectivity analysis from the FEIS for the Caribou RFP would be integral to this analysis.

44. Livestock grazing, which the Forest Service identified as a major factor leading to departure from proper functioning condition is the third element that requires major change. As pointed out in the previous paragraphs, the CTNF has misapplied its own capability criteria leading to overstocking by pretending there are more productive, capable acres available for livestock than actually exist. The first corrective measure is to recalculate the capable acres as a basis for recalculating the stocking rate for sheep and cattle. Once this has been done, field verification of the current production of desirable forage species within those capable acres should be determined and that production used in the calculation of a stocking rate.

45. I have reviewed the current rates of forage consumption for domestic sheep and cattle and found they are consuming about double the forage the Forest Service estimates. In 2016, I prepared a review of this subject which used current weights of cattle and domestic sheep and a forage consumption rate of 3% of body weight which NRCS supports to arrive at 1,532 lbs/cow-calf pair and 1,976 lbs/five sheep and lambs, compared to the 780 lbs/month used by the Forest Service.\textsuperscript{145} (TD). When I have determined capable acres using Forest Service criteria combined with current forage production for the area in question and using current consumption rates of...

\textsuperscript{145} Carter, J. 2016. Updating the Animal Unit Month.
livestock, I have found current stocking rates grossly outpacing capacity. In a BLM allotment in Utah this calculation revealed grazing capacity was 18% of that allocated by BLM.\textsuperscript{146} (TD). In another example, involving domestic sheep grazing in the Uinta Wilderness in Utah, a detailed analysis lead to the conclusion that current grazing allocation overstated current capacity by over 90%.\textsuperscript{147} (TD).

46. Once forage capacity is determined, however, the stocking rate is still not determined. A utilization rate, that is, the percent of desirable forage that can be allocated to livestock while leaving residual vegetation for wildlife and watershed protection must be used. I have reviewed this subject and that review of the best available range science leads to the conclusion that a 25 - 30% rate (including losses by trampling) is the proper rate.\textsuperscript{148} (TD). In addition, the manager must take into account the amount of rest (years) before grazing an area again so that the native plant species may recover their vigor and productivity. This can be several years depending on the current state of vigor of the most sensitive species such as Bluebunch wheatgrass, for example. Monitoring of species recovery following grazing is the means of determining when grazing may occur again. In riparian areas, Forest Service scientists have recommended that up to 15 years may be needed to initiate recovery.\textsuperscript{149} This study concluded that, managers should place more emphasis on proper stocking intensity and less on grazing system implementation. The concentrated use of grazing pastures is not compensated for during rest years if grazing use is heavy. In summary, although grazing systems have great intuitive appeal, they are apparently of less consequence than once thought. In fact as long as good management is practiced so that there is control of livestock distribution and grazing intensity, the specific grazing system employed may not be significant.


\textsuperscript{148} Carter, J. 2013. Utilization, Rest and Grazing Systems - A Review.

47. The Forest Service is constantly engaged in "changing management", a shell game which consists of not reducing stocking rates, but instead, adding more water developments and implementing "deferred rotation" grazing, while kicking the can down the road and ecosystems are destroyed. As shown for the Bear River Range above, there are numerous water developments, yet conditions were found to be degraded well below potential or PFC, for that matter. The myth that somehow upland water developments would "draw" cattle away from riparian areas and lessen use is just that, a myth. I had the opportunity to document the before and after condition on a BLM allotment in Utah which implemented deferred rotation and upland water troughs. 150 (TD). As predicted, my co-authors and I found that riparian use and bank alteration remained extremely heavy and unchanged in the years following the change. The result was that there was continued degradation of the riparian areas.

48. Water developments cause livestock concentrations in aspen, sagebrush, tall forb and other sensitive plant communities and should be removed from those locations. As shown in the Bear River Range Report referenced above, we found aspen communities to lack recruitment, lack a diverse herbaceous understory and lack an even distribution of age classes due to their proximity to water sources. In my review of aspen literature, I found browsing by livestock to be the dominant factor in loss of aspen recruitment.151 (TD). The most comprehensive research I reviewed was a study by Charles Kay performed for BLM in Nevada.152 (TD). Kay studied hundreds of clones and concluded that aspen stand deterioration was not the result of wildlife browsing or fire exclusion but the result of browsing by livestock.

49. What is needed now is a rethinking of the Forest Service approach to management and the preparation of a detailed analysis of the factors leading to the current state of dysfunction of our plant communities, forests, streams, springs and wetlands and accounting of the role of past and ongoing Forest Service management leading to that dysfunction. Livestock are invasive species bringing this damage along with water pollution and disease into our Forests and public lands. It is time to address this problem by a massive reduction in grazing by incorporating the science I have presented here including reduction in numbers and seasons, long term rest for recovery of plants, forests, soils and water sources and prioritizing watersheds over livestock. A consequence of this approach would be the needed restoration and protection of watersheds, streams, springs, habitats for many wildlife species and the forest health the Forest Service constantly invokes as it attempts to perpetuate failed management.

50. I have reviewed the CNF RFP and outlined the numerous provisions expressing an intent to analyze, describe and correct the many aspects of Forest Management and protect species and ecosystems. A good start to the process outlined here would be a comprehensive review of those provisions, conducting the needed quantitative assessments and complying with the full intent of the Forest Plan, and further incorporating the elements I have described above.

I declare under penalty of perjury that the foregoing is true and correct. Executed this 28th day of December 2020.

John G. Carter
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