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STATE OF NEVADA
Sagebrush Ecosystem Program

SAGEBRUSH ECOSYSTEM COUNCIL
STAFF REPORT
MEETING DATE: December 18, 2013

DATE: December 13, 2013

TO: Sagebrush Ecosystem Council Members

FROM: Sagebrush Ecosystem Technical Team
Telephone: 775-684-8600

THROUGH: Tim Rubald, Program Manager
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SUBJECT: Discussion and possible consideration of proposed Site Specific Consultation Based Design Features to be Included in the Revision of the State Plan/ EIS Alternative

SUMMARY

This item presents proposed Site Specific Consultation Based Design Features (hereafter Design Features) that pertain to the "minimize" policy to be included in revisions of the 2012 State Plan and State EIS Alternative. The purpose of this item is to provide greater detail and specificity on the "minimize" policy in order for the BLM to analyze the State Alternative and to provide a greater likelihood for the State Alternative to, at least in part, be selected as the preferred alternative.

PREVIOUS ACTION

July 30, 2013. The Council adopted the Sagebrush Ecosystem Strategic Detailed Timeline, which included revision of the State Plan/ EIS Alternative.

October 10, 2013. The Council directed the SETT to develop Best Management Practices (BMPs) for the "minimize" policy for Council consideration.

November 18, 2013. The Council discussed proposed Required Design Features. The Council voted to rename them "Site Specific Consultation Based Design Features" and directed the SETT to revise the list based on input from the Council.

DISCUSSION

Prior to the November 18, 2013 Council meeting, in order to develop the State's sage-grouse Design Features list, the SETT first reviewed those developed in the National Technical Team (NTT) Report and the BLM's EIS Alternative (now available to the public in Alternative D of the DEIS). The BLM's EIS Alternative included (1) the BMPs

developed in the NTT Report, some of which were modified by the BLM and (2) additional Design Features that were listed in no particular order.

The SETT used the BLM's EIS Alternative Design Features as the starting point for the State's EIS Alternative Design Features, reorganized the Design Features by BLM program area, and then modifying, adding, and deleting Design Features as needed. The Council first considered this proposal at their November 18, 2013 meeting. The Council decided to provide electronic edits and comments to the SETT.

Following the November 18, 2013 Council meeting, the SETT compiled the edits and comments submitted by the Council and the general public and modified the document in the form of track changes. The compilation of this effort is provided as Attachment 1 to this staff report.

FISCAL IMPACT

There is no fiscal impact at this time.

RECOMMENDATION

Staff recommends the Council approves the proposed Site Specific Consultation Based Design Features or make revisions to revise it, and then approve them so they can be incorporated in a timely manner.

POSSIBLE MOTION

Should the Council agree with the staff recommendations, a possible motion would be:

> "Motion to approve the proposed Site Specific Consultation Based Design Features for inclusion in the State Plan and State EIS Alternative."

Attachments:

1. Proposed State Of Nevada Site Specific Consultation Based Features (to be included as Appendix A of the Revised State Plan)
2. Council and general public comments and edits on Required Design Features document proposed at the November 18, 2013 SEC meeting.

mf: TR

Attachment 1: Proposed Site Specific Consultation Based Design Features

Appendix A: ~~Required~~*Site Specific Consultation Based* Design Features~~/ Best Management Practices~~

Site Specific Consultation Based Design Features (here after Design Features) are used to minimize impacts to GRSG and its habitat due to disturbances on a project by project and site by site basis. Design Features in the state of Nevada's plan apply to all newly proposed projects and modifications to existing projects that require re-permitting within SGMAs. Existing projects within SGMAs are not currently subject to Design Features, but become so when existing permits are up for renewal. All Design Features listed below, according to program area, are required to be considered as part of the SETT Consultation process. The state of Nevada recognizes that all Design Features may not be practical, feasible, or appropriate in all instances considering site conditions and project specifications, nor is this list completely exhaustive. Therefore, the SETT in coordination with the project proponent, will consider all of the listed Design Features on a site-specific basis. If certain Design Features are determined to not be practical, feasible, or appropriate for the specific project site, the SETT will document the reasons the Design Features were not selected. The SETT may also consider additional Design Features that may minimize impacts to GRSG and its habitat that are not specifically listed here and document the reasons for selecting the additional Design Features.

Mineral Resources

Fluid Minerals ~~RDFs~~

Roads ~~– PPMA~~

• Do not construct new roads ~~when there are existing~~*where* roads ~~that~~ *already in existence,* could be used or upgraded to meet the ~~need.~~ *needs of the project or operation.*

• Design roads to an appropriate standard, no higher than necessary, to accommodate their intended purpose *and level of use*.

• Locate roads ~~to avoid important~~*outside of key GRSG seasonal habitat, such as leks and late brood rearing habitat* areas ~~and habitats.~~.

• Coordinate road construction and use among ROW or SUA holders~~.~~*, when the option is available.*

• ~~Where possible, a~~*A*void constructing roads within riparian areas and ephemeral drainages~~.~~ *(note that such construction may require permitting under section 401 and 404 of the Clean Water Act).*

• Construct road crossings at right angles to ephemeral drainages and stream crossings.

• ~~Establish~~*Work with local governments to enforce* speed limits ~~on BLM~~ and ~~Forest Service-managed roads to reduce vehicle/wildlife collisions or~~ design roads to be driven at ~~slower~~ speeds~~.~~ *appropriate to minimize vehicle/wildlife collisions.*

• Establish trip restrictions (Lyon and Anderson 2003) or minimization through use of *remote access technology, such as* telemetry and remote well control (e.g., Supervisory Control and Data Acquisition).

• Do not issue ROWs or SUAs to counties on newly constructed energy development roads, unless for a temporary use consistent with all other terms and conditions included in this document.

• Restrict vehicle traffic to ~~only~~ authorized users on newly constructed routes ~~(using~~*by employing traffic control devices such as* signage, gates, *fencing* etc~~.)~~*.*

• ~~Use dust~~*Dust* abatement on roads and pads *will be based on road use, road condition, season, and other pertinent considerations*.

• Close and rehabilitate duplicate roads *by restoring original landform and establishing desired vegetation, in cooperation with landholders and where appropriate authority exists to do so*.

Operations

• Cluster disturbances~~,~~ *associated with* operations ~~(fracture stimulation, liquids gathering, etc.),~~ and facilities *as close as possible, unless site specific conditions indicate that disturbances to sagebrush habitat would be reduced if operations and facilities locations would best fit a unique special arrangement*.

~~*Operations - PPMA*~~

• Use directional and horizontal drilling to reduce surface disturbance.

• Place infrastructure in already disturbed locations.

• Apply a phased development approach with concurrent reclamation *through a coordination process among relevant parties*.

• Place liquid gathering facilities outside of priority areas. Have no tanks at well locations within priority habitat areas to minimize truck traffic*,* and perching and nesting sites for ravens and raptors.

• Pipelines *should*~~must~~ be under or immediately adjacent to the road ~~(Bui et al. 2010)~~.

• ~~Use remote monitoring remote monitoring techniques for production facilities and develop a plan to reduce the frequency of vehicle use (Lyon and Anderson 2003).~~ *Reduce motor vehicle travel during field operations through development and implementation of remote monitoring and control systems plans.*

~~• Restrict~~*To reduce predator perching, limit* the construction of ~~tall~~*vertical* facilities and fences to the minimum number and amount needed.

• Site and/or minimize linear ROWs or SUAs to reduce disturbance to ~~sagebrush~~*GRSG* habitats.

• ~~Place~~*Co-locate* new utility developments (power lines, pipelines, etc.) and transportation routes ~~in~~*with* existing utility or transportation corridors ~~(Bui et al 2010)~~ *where adequate spacing separation can be achieved in order to preserve grid reliability and ongoing maintenance capability*.

• Bury distribution power lines *of up to 35kV where ground disturbance can be minimized*. *Where technology and economic factors allow, bury higher kV power lines.*

• ~~Co-locate p~~*P*ower lines, flow lines, and small pipelines *should be co-located* under or immediately adjacent to existing roads ~~(Bui et al. 2010)~~.

• ~~Design or site p~~*P*ermanent structures*,* which create movement (e.g., pump jack) *should be designed or sited* to minimize impacts to GRSG~~.~~*.*

~~• Cover (e.g., fine mesh netting or use other effective techniques) all drilling and production pits and tanks regardless of size to reduce GRSG mortality.~~ *Preclude GRSG access to pits and tanks through use of practical techniques (e.g. covers, netting, birdballs, location, etc.).*

• Equip tanks and other above-ground facilities with structures or devices that discourage nesting *and/or perching* of raptors ~~and~~*,* corvids~~.~~*, and other predators.*

• Control the spread and effects of non-native*, invasive* plant species (Evangelista et al. 2011) (e.g., by washing vehicles and equipment, minimize unnecessary surface disturbance). *All projects within SGMAs should have a noxious weed management plan in place prior to construction and operations.*

• Use only closed-loop systems for drilling operations and no reserve pits.

• ~~Restrict pit and impoundment construction to reduce or eliminate threats from West Nile virus (Doherty 2007).~~ *Reduce the potential for creating excessive or unintended mosquito habitat and associated risk of West Nile Virus impacts to GRSG. This can be implemented through minimizing pit and pond construction and, where necessary, size of pits and ponds (Doherty 2007).*

• Remove or re-inject produced water to reduce habitat for mosquitoes that vector West Nile virus. If surface disposal of produced water continues *and West Nile virus has been identified as a concern in the project area*, use the following steps for reservoir design to limit favorable mosquito habitat *(Dohery 2007)*:

– Overbuild size of ponds for muddy and non-vegetated shorelines.

– Build steep shorelines to decrease vegetation and increase wave actions. *Ponds with steep shorelines will be equipped with NDOW approved wildlife escape ramps.*

– Avoid flooding terrestrial vegetation in flat terrain or low lying areas.

– Construct dams or impoundments that restrict down slope seepage or overflow.

– Line the channel where discharge water flows into the pond with crushed rock.

– Construct spillway with steep sides and line it with crushed rock.

– Treat waters with larvicides to reduce mosquito production where water occurs on the surface~~.~~ *if necessary.*

• Limit noise to less than 10 decibels above ambient measures ~~(20-24 dBA)~~ at sunrise at the perimeter of a lek during active lek season (Patricelli et al. 2010, Blickley et al. ~~In preparation~~*2012*).

• Require noise shields when drilling during the lek, nesting, brood-rearing, or wintering season.

• Fit *new* transmission towers with anti-perch devices (Lammers and Collopy 2007).

• ~~Require GRSG safe fences (e.g. marked fences).~~ *Design and construct fences consistent with NRCS fence standards and specifications Code 382 and, where appropriate, use fence markers (Sage Grouse Initiative 2013).*

• Locate new compressor stations outside priority habitats ~~and~~. *Otherwise* design them to reduce noise that may be directed towards priority habitat.

• ~~Clean up refuse (Bui et al. 2011).~~ *Implement site keeping practices to preclude the accumulation of debris, solid waste, putrescible wastes, and other potential anthropogenic subsidies for predators of GRSG (Bui et al 2010).*

• Locate man camps outside of priority habitats.

Reclamation ~~– PPMA and PGMA~~

• Include objectives for ensuring habitat ~~restoration~~*rehabilitation* to meet GRSG habitat needs in reclamation practices/sites (Pyke 2011). Address post reclamation management in reclamation ~~plan~~*plans* such that goals and objectives are to protect and improve GRSG habitat needs.

•Reseed all areas requiring reclamation with a seed mixture appropriate for the soils, climate, and landform of the area to ensure recovery of the ecological processes and habitat features of the potential natural vegetation, and to prevent the invasion of noxious weeds or other exotic invasive species. Long-term monitoring (minimum three years) is required to determine success.

• Maximize the area of interim *and concurrent* reclamation on long-term access roads and well pads, including reshaping, topsoiling and revegetating cut-and-fill slopes.

•Restore disturbed areas at final reclamation to the *near* pre-disturbance landforms and *the* desired plant community.

• Irrigate interim reclamation if necessary for establishing seedlings more quickly~~.~~ *and if water rights are available.*

• Utilize mulching techniques to expedite reclamation and to protect soils.

• Ensure that all authorized ground disturbing projects have vegetation reclamation standards suitable for the site type prior to construction and ensure that reclamation to appropriate GRSG standards are budgeted for in the reclamation bond.

~~*Roads – PGMA*~~

~~• Design roads to an appropriate standard no higher than necessary to accommodate their intended purpose.~~

~~• Do not construct new roads when there are existing roads that could be used or upgraded to meet the need.~~

~~• Where possible, avoid constructing roads within riparian areas and ephemeral drainages.~~

~~• Do not issue ROWs or SUAs to counties on energy development roads, unless for a temporary use consistent with all other terms and conditions included in this document.~~

~~• Establish speed limits to reduce vehicle/wildlife collisions or design roads to be driven at slower speeds.~~

~~• Coordinate road construction and use among ROW or SUA holders.~~

~~• Construct road crossings at right angles to ephemeral drainages and stream crossings.~~

~~• Use dust abatement practices on roads and pads.~~

~~• Close and reclaim duplicate roads by restoring original landform and establishing desired vegetation.~~

~~*Operations – PGMA*~~

~~• Cluster disturbances, operations (fracturing stimulation, liquids gathering, etc.), and facilities.~~

~~• Use directional and horizontal drilling to reduce surface disturbance.~~

~~• Clean up refuse (Bui et al. 2010).~~

~~• Restrict the construction of tall facilities and fences to the minimum number and amount needed.~~

~~• Cover (e.g., fine mesh netting or use other effective techniques) all drilling and production pits and tanks regardless of size to reduce GRSG mortality.~~

~~• Equip tanks and other above-ground facilities with structures or devices that discourage nesting by raptors or corvids.~~

~~• Use remote monitoring techniques for production facilities and develop a plan to reduce vehicular traffic frequency of vehicle use.~~

~~• Control the spread and effects from non-native plant species. (e.g., by washing vehicles and equipment.)~~

~~• Restrict pit and impoundment construction to reduce or eliminate augmenting threats from West Nile virus (Doherty 2007).~~

Locatable Minerals ~~BMPs~~

Roads ~~– PPMA and PGMA~~

• Design roads to an appropriate standard no higher than necessary to accommodate their intended purpose~~s~~ *and level of use*.

• Locate roads ~~to avoid important~~*outside of key GRSG seasonal habitat, such as leks and late brood rearing habitat* areas ~~and habitats~~.

• Coordinate road construction and use among ROW or SUA holders *when the option is available*.

• ~~Where possible, a~~*A*void constructing roads within riparian areas and ephemeral drainages

• Construct road crossing at right angles to ephemeral drainages and stream crossings.

• ~~Establish~~*Work with local governments to enforce* speed limits ~~on BLM and Forest Service managed roads to reduce vehicle/wildlife collisions or~~*and* design roads to be driven at ~~slower~~ speeds~~.~~ *appropriate to minimize vehicle/wildlife collisions.*

• Do not issue ROWs or SUAs to counties on *newly constructed* mining development roads, unless for a temporary use consistent with all other terms and conditions ~~including~~*included in* this document.

• Restrict vehicle traffic to ~~only~~ authorized users on newly constructed routes ~~(e. g., use signing~~*by employing traffic control devices such as signage*, gates, *fencing* etc~~.)~~*.*

• ~~Use dust~~*Dust* abatement ~~practices~~ on roads *will be based on road use, road condition, season,* and ~~pads.~~*other pertinent considerations*

• Close and ~~reclaim~~*rehabilitate* duplicate roads, by restoring original landform and establishing desired vegetation~~.~~*, in cooperation with landholders and where appropriate authority exists to do so.*

• Do not construct new roads when there are existing roads that could be used or upgraded to meet the need*s of the project or operations*.

• ~~Where possible, a~~*A*void constructing roads within riparian areas and ephemeral drainages

Operations ~~– PPMA and PGMA~~

• Cluster disturbances associated with operations and facilities as close as possible~~.~~ *unless site specific conditions indicate that disturbances to sagebrush habitat would be reduced if operations and facilities locations would best fit a unique special arrangement.*

• Minimize site disturbance though site analysis and facility planning.

• Place infrastructure in already disturbed locations where the habitat has not been restored.

• ~~Restrict~~ *To reduce predator perching, limit* the construction of ~~tall~~*vertical* facilities and fences to the minimum number and amount needed.

• Site and/or minimize linear ROWs or SUAs to reduce disturbance to ~~sagebrush~~*GRSG* habitats.

• ~~Place~~*Co-locate* new utility developments (power lines, pipelines, etc.) and transportation routes *with*~~in~~ existing utility or transportation corridors *where adequate separation can be achieved in order to preserve grid reliability and ongoing maintenance*.

• Bury *distributive* power lines~~.~~ *of up to 35 kV where ground disturbance can be minimized. Where technology and economic factors allow, bury higher kV power lines.*

• ~~Cover (e.g., fine mesh netting or use other effective techniques) all pits and tanks regardless of size to reduce GRSG mortality.~~ *Preclude GRSG access to pits and tanks through use of practical techniques (e.g. covers, netting, birdballs, location, etc.).*

• Equip tanks and other above ground facilities with structures or devices that discourage nesting *and/or perching* of raptors*,* ~~and~~ corvids*, and other predators*.

• Control the spread and effects of *Nevada Department of Agriculture listed noxious weeds (NAC 555.010, classes A through C, inclusive) and undesirable* non-native plant species (Gelbard and Belnap 2003, Bergquist et al. 2007)..

• *Where West Nile virus has been identified as a concern,* ~~R~~restrict ~~pit~~*pond* and impoundment construction to reduce or eliminate threats from West Nile virus (Doherty 2007).

• *Design and construct fences consistent with NRCS fence standards and specifications Code 382 and, where appropriate, use fence markers (Sage Grouse Initiative 2013)*~~Require GRSG safe fences~~ around sumps.

~~• Clean up refuse (Bui et al. 2010).~~ *Implement site keeping practices to preclude the accumulation of debris, solid waste, putrescible wastes, and other potential anthropogenic subsidies for predators of GRSG (Bui et al 2010).*

• Locate man camps outside of priority GRSG habitats.

Reclamation ~~– PPMA and PGMA~~

• Include ~~restoration~~ objectives *for ensuring* ~~to meet GRSG~~ habitat *rehabilitation to meet GRSG* ~~needs~~*habitat needs* in reclamation practices/sites *(Pyke 2011)*. *Address post reclamation management in reclamation plans such that goals and objective are to protect and improve GRSG habitat needs.*

•Reseed all areas requiring reclamation with a seed mixture appropriate for the soils, climate, and landform of the area to ensure recovery of the ecological processes and habitat features of the potential natural vegetation, and to prevent the invasion of noxious weeds or other exotic invasive species. Long-term monitoring (minimum three years) is required to determine success.

• ~~Address post reclamation management in reclamation plans such that goals and objectives are to protect GRSG habitat needs.~~*Reclamation In coordination with appropriate agencies, consider development of fuel breaks in reclamation design.*

• Maximize the area of interim *and concurrent* reclamation on ~~long-term access roads and well pads including~~*infrastructure related disturbances through* reshaping*/regrading*, topsoiling and revegetating cut and fill slopes~~, and investigating the possibility of establishing fuel breaks~~. *In coordination with appropriate agencies, consider development of fuel breaks in reclamation design.*

• Ensure that all authorized ground disturbing projects have vegetation reclamation standards suitable for the site type prior to construction and ensure that reclamation to appropriate GRSG standards are budgeted for in the reclamation bond.

• Reseed all areas requiring reclamation with a seed mixture appropriate for the soils, climate, and landform of the area to ensure recovery of the ecological processes and habitat features of the potential natural vegetation, and to prevent the invasion of noxious weeds or other exotic invasive species. Long-term monitoring (minimum three years) is required to determine success.

• Restore disturbed areas at final reclamation to *near* pre-disturbance landform and *the* desired plant community.

• Irrigate interim reclamation as necessary during dry periods *when valid water rights exist*.

• Utilize mulching techniques to expedite reclamation.

Fuels and Fire Management and Post-Fire Rehabilitation

• Fire and fuels operations should focus on protecting and enhancing occupied GRSG habitats. This includes taking into account the feasibility and cost of future rehabilitation efforts during *Wildland Fire Decision Support Tree*~~WFDSS~~ planning and general fire operations in all occupied GRSG habitats

Fuels Management

• ~~Where applicable, d~~*D*esign fuels treatment objective to protect existing sagebrush ecosystems, modify fire behavior, restore ~~native plants~~*ecological function*, and create landscape patterns which most benefit GRSG habitat.

• Provide training to fuels treatment personnel on GRSG biology, habitat requirements, and identification of areas used locally.

• Use burning prescriptions that minimize undesirable effects on vegetation or soils (e.g., minimize mortality of desirable perennial plant species and reduce risk of annual grass invasion).

• Ensure proposed sagebrush treatments are planned with full interdisciplinary input pursuant to NEPA and coordination with NDOW and SETT, and that treatment acreage is conservative in the context of surrounding GRSG seasonal habitats and landscape.

• ~~Where appropriate, ensure~~*Ensure* that treatments are configured in a manner that promotes use by GRSG.

• ~~Where applicable, i~~*I*ncorporate roads and natural fuel breaks into fuel break design~~.~~

• ~~Where appropriate and allowable, u~~*U*tilize *supervised* livestock grazing as a tool to reduce fuels and control non-native species.

• Power-wash all vehicles and equipment involved in fuels management activities prior to entering the area to minimize the introduction of undesirable and/or invasive plant species.

• Design vegetation treatments in areas of high fire frequency*,* which facilitate firefighter safety, reduce the potential acres burned, and reduce the fire risk to GRSG habitat. Additionally, develop maps for GRSG habitat*,* which spatially display existing fuels treatments that can be used to assist suppression activities.

• For implementing specific GRSG habitat ~~restoration~~*rehabilitation* projects in annual grasslands, first give priority to sites which are adjacent to or surrounded by PPMA or that reestablish continuity between priority habitats. Annual grasslands are a second priority for ~~restoration~~*rehabilitation* when the sites are not adjacent to PPMA, but within two miles of PPMA. The third priority for annual grassland habitat restoration projects are sites beyond two miles of PPMA. The intent is to focus restoration outward from existing, intact habitat*. Within these criteria, projects should be prioritized based on probability of success based on current condition, ecological site and state-and-transition modeling if available*.

• As funding and logistics permit, ~~restore~~*rehabilitate* annual grasslands to a species composition characterized by perennial grasses, forbs, and shrubs ~~or one~~*with the goal* of ~~that referenced in land use planning documentation.~~*establishing a functional ecological site based on state-and-transition modeling and ecological site descriptions.*.

• Emphasize the use of native plant species, recognizing that non-native species may be necessary depending on the availability of native seed and prevailing site conditions~~.~~

• ~~Remove standing and~~ *Based on ecological site descriptions, remove* encroaching ~~*P*~~*pinyon and* ~~*J*~~*juniper* trees *from areas* within at least ~~110 yards~~*3 kilometers (1.86 miles)* of occupied GRSG leks *(Connelly et al. 2000)* and *from* other *limiting* habitats *at least 850 meters* (e.g., nesting, wintering and brood rearing) to reduce the availability of perch sites for avian predators, as resources permit *(Connelly et al 2000, Casazza et al. 2011)*.

• Protect wildland areas from wildfire originating on private lands, infrastructure corridors, and recreational areas.

• Reduce the risk of vehicle- or human-caused wildfires and the spread of invasive species by installing *and maintaining* fuel breaks and/or planting perennial vegetation (e.g., green-strips) paralleling road rights-of-way. Strategically place and maintain pre-treated strips/areas (e.g., mowing, herbicide application, *targeted grazing,* etc.) to aid in controlling wildfire, should wildfire occur near ~~PPMA~~*SGMA* or important restoration areas (such as where investments in restoration have already been made).

• All fuels management projects should include short and long term monitoring to ensure success and provide for adaptive management. Multiple revegetation entries may be required to ensure success.

Fire Management

• Compile *state and local government/*District/Forest level information into state-wide GRSG tool boxes. Tool boxes will contain maps, listing of *state and local* resource advisors, contact information, local guidance, and other relevant information for each *state and local government/*District/Forest, which will be aggregated into a state-wide document.

• Provide localized maps to dispatch offices and extended attack incident commanders for use in prioritizing wildfire suppression resources and designing suppression tactics.

• Assign a *state and/or local* resource advisor with GRSG expertise, or who has access to GRSG expertise, to all extended attack fires in or near GRSG habitat. Prior to the fire season, provide training to GRSG resource advisors on wildfire suppression organization, objectives, tactics, and procedures to develop a cadre of qualified individuals. Involve state wildlife agency expertise in fire operations through:

– instructing resource advisors during preseason trainings;

– qualification as resource advisors;

– coordination with resource advisors during fire incidents;

– contributing to incident planning with information such as habitat features or other key data useful in fire decision making.

• On critical fire weather days, pre-position additional *local, state, and federal* fire suppression resources to optimize a quick and efficient response in GRSG habitat areas.

• Encourage local resources (volunteer fire departments and country equipment) to respond to initial attack efforts and further encourage these agencies to obtain required ICS training to be able to run incidents for longer periods when needed during critical fire periods.

• During periods of multiple fires, ensure line officers*, in consultation with state and local resource advisors* are involved in setting priorities.

• To the extent possible, locate wildfire suppression facilities (i.e., base camps, spike camps, drop points, staging areas, heli-bases, etc.) in areas where physical disturbance to GRSG habitat can be minimized. These include disturbed areas, grasslands, near roads/trails or in other areas where there is existing disturbance or minimal sagebrush cover.

• Power-wash all firefighting vehicles, to the extent possible, including engines, water tenders, personnel vehicles, and all-terrain vehicles (ATV) prior to deploying in or near GRSG habitat areas to minimize noxious weed spread. Minimize unnecessary cross-country vehicle travel during fire operations in GRSG habitat.

• Minimize burnout operations in key GRSG habitat areas by constructing direct fire line whenever safe and practical to do so.

• Utilize retardant, mechanized equipment, and other available resources to minimize burned acreage during initial attack.

• As safety allows, conduct mop-up where the black adjoins unburned islands, dog legs, or other habitat features to minimize sagebrush loss.

• Adequately document fire operation activities in GRSG habitat for potential follow-up coordination activities.

• Coordinate and utilize local fire suppression resources to the maximum extent possible.

• Eliminate "burning out" islands and fingers of unburned GRSG habitat, unless lives and property are at risk.

Post-Fire Rehabilitation

• Emphasis should be on fall revegetation to ensure greatest likelihood of success.

• All post-fire rehabilitation projects should include short- and long-term monitoring to ensure success and provide for adaptive management. Multiple revegetation entries may be required to ensure success. Emphasize the use of native plant species in post-fire rehabilitation, recognizing that non-native species may be necessary depending on the availability of native seed and prevailing site conditions. Selected species maintain site ecological function based on pre-burn conditions and anticipated threat of invasive and noxious weed establishment. Use ecological site descriptions and state-and-transition models if available.

- *Reseed all burned areas requiring rehabilitation with a seed mixture appropriate for the soils, climate, and landform of the area to ensure recovery of the ecological processes and habitat features of the potential natural vegetation, and to prevent the invasion of noxious weeds or other exotic invasive species. Long-term monitoring (minimum three years) is required to determine success.*

- *Power-wash all vehicles and equipment prior to entering GRSG habitat rehabilitation areas to minimize noxious weed spread. Minimize unnecessary cross-country vehicle travel during rehabilitation operations in GRSG habitat.*

- *Consider Integrated Pest Management (IPM) practices to ensure greater initial control of invasive and noxious plant species.*

- *GRSG seasonal habitat requirements must be considered when selecting revegetation materials in all burned potential and current GRSG habitat.*

- *Prioritize shrub island plantings in large burn areas which may lack sufficient shrub seed sources, in order to ensure the reestablishment of the shrub component.*

Lands and Realty

Leases and Permits

• ~~Only allow p~~*P*ermits and leases *must include stipulations to minimize impacts to GRSG and GRSG habitat based upon the specific activity and ensure no net loss of GRSG habitat* ~~that have neutral or beneficial effects sage-grouse and their habitat in sage-grouse habitat management areas~~.

Right-of-Ways (ROWs)

• Work with existing rights-of-way holders ~~in an attempt to install~~*to encourage installation of* perch guards on all poles where existing utility poles are located within *5 km (*3.2 miles*)* of known leks~~, where necessary. Stipulate these requirements at grant renewal.~~ *(Coates et al. 201*3*).*

• Use existing utility corridors and consolidate rights-of-way to reduce habitat loss, degradation, and fragmentation. ~~Whenever possible, install~~*Install* new power lines within existing utility corridors.

• Where GRSG conservation opportunities exist, BLM field offices and Forests should work in cooperation with rights-of-way holders to conduct maintenance and operation activities, authorized under an approved ROW grant, to avoid and minimize effect on GRSG habitat.

• When renewing or amending ROWs, assess the impacts of ongoing use of the ROW to GRSG habitat and *incorporate stipulations, which* minimize such impacts to the extent allowed by law.

~~• Work with applicants to minimize habitat loss, fragmentation, and direct and indirect effects to GRSG and its habitat.~~

• Conduct pre-application meetings with the BLM or Forest Service and SETT for all new ROW proposals consistent with the ROW regulations (43 CFR 2804.10) and consistent with current renewable energy ROW policy guidance (WO-IM-2011-061, issued February, 2011). Assess the impact of the proposed ROW on GRSG and its habitat, and implement the following: Ensure that reasonable alternatives for siting the ROW outside of GRSG habitat or within a BLM designated utility corridor are considered and analyzed in the NEPA document; and identify technically feasible best management practices, conditions, (e.g., siting, burying power lines) that may be implemented in order to eliminate or minimize impacts.

• Maximize the area of interim reclamation on long-term access roads and well pads including reshaping, topsoiling and revegetating cut and fill slopes.

• Authorize ROWs *for wind energy development projects* by applying appropriate ~~BMPs~~ *Design Features*(BLM Wind Energy Development EIS, June 2005), land use restrictions, stipulations, and mitigation measures. ~~The BLM will document the reasons for its determination and require the ROW holder to implement these measures to minimize impacts to sage grouse habitat.~~

• ~~Evaluate and take advantage of opportunities to remove, bury, or modify existing power lines within priority sage-grouse habitat areas.~~ *Bury distribution power lines of up to 35kV where ground disturbance can be minimized. Where technology and economic factors allow, bury higher kV power lines.*

• Where existing leases or rights-of-way (ROWs) have had some level of development (road, fence, well, etc.) and are no longer in use, reclaim the site by removing these features*, without interfering with valid pre-existing rights,* and restoring the habitat.

• Within designated ROW corridors encumbered by existing ROW authorizations: new ROWs should be co-located to the extent practical and feasible with the entire footprint of the proposed project *adjacent to or* within the existing disturbance associated with the authorized ROWs *taking into account operational requirements and safety*.

• Subject to valid, existing rights, where new ROWs associated with valid existing rights are required, co-locate new ROWs within existing ROWs or where it best minimizes sage-grouse impacts. Use existing roads, or realignments as described above, to access valid existing rights that are not yet developed. If valid existing rights cannot be accessed via existing roads, then build any new road constructed to the ~~absolute~~ minimum standard necessary.

• Upon project completion, roads used for commercial access on public lands would be reclaimed, unless, based on site-specific analysis, the route provides specific benefits for public access and does not contribute to resource conflicts.

• ~~Bury or reroute~~*Construct new* power lines outside of sage-grouse habitat wherever possible. If power lines cannot be sited outside of sage-grouse habitat, site power lines in the least suitable habitat possible *or bury power lines*,

• Remove power lines that traverse important sage-grouse habitats when facilities being serviced are no longer in use or when projects are completed.

• Install anti-perching and anti-nesting measures on *new* tall structures, such as power lines*, commensurate with the design of the structures*.

Travel and Transportation

• ~~Establish~~*Work with local government to enforce* speed limits ~~on BLM~~ and ~~Forest Service-administered roads to reduce vehicle/wildlife collisions or~~ design roads to be driven at ~~slower~~ speeds~~.~~ *appropriate to minimize vehicle/wildlife collisions.*

• Conduct ~~restoration~~*rehabilitation* of roads, primitive roads, and trails not designated in travel management plans *where such plans exist and have been approved for implementation*. This also includes primitive route/roads that were not designated in wilderness study areas and within lands managed for wilderness characteristics that have been selected for protection*, with due consideration given to any historical significance of existing trails*.

• When reseeding roads, primitive roads, and trails, use appropriate seed mixes and consider the use of transplanted sagebrush in order to meet sage-grouse habitat restoration objectives. Where ~~existing~~*invasive* annual grasses are present, pre-emergent herbicides ~~should~~*may* be used to enhance the effectiveness of any seeding and to also establish islands of desirable species for dispersion.

• Use existing roads, or realignments to access valid existing rights that are not yet developed. If valid existing rights cannot be accessed via existing roads, then any new roads would be constructed to the ~~absolute~~ minimum standard necessary *to support the intended use*.

• ~~Allow no~~*Work with local governments to minimize* upgrading of existing routes that would change route category (road, primitive road, or trail) or capacity unless the upgrading would have minimal impact on sage-grouse habitat, is necessary for motorist safety, or eliminates the need to construct a new road*,*~~.~~ *while providing for the intended use.*

~~• Identify, map, quantify, and evaluate impacts of existing roads, including 2-tracks, in relation to known lek locations and sage-grouse winter ranges.~~

~~• Consider the use of speed bumps where appropriate to reduce vehicle speeds near leks, such during oil and gas development.~~

• Manage on-road travel and OHV use in key grouse areas to avoid disturbance during critical times such as winter and nesting periods.

• Consider road removal, realignment, or seasonal closures where appropriate to avoid degradation of habitat~~.~~ *and /or to avoid disturbance during critical periods of the sage-grouse life cycle*

~~• Reclaim closed roads with plant species beneficial to sage-grouse.~~

Recreation

• ~~Only allow special~~*Special* recreation permits ~~that~~*must* have ~~neutral or beneficial effects~~*stipulations* to ~~sage-grouse~~*minimize impacts to GRSG* and ~~their~~*GRSG* habitat ~~in sage-grouse~~*based upon the specific activity and ensures no net unmitigated loss of GRSG* habitat ~~management areas~~.

• Issue special recreation permits with appropriate distance and timing restrictions to minimize impacts to seasonal sage-grouse habitat.

• *Develop trail mapping, and educational campaigns to reduce recreational impacts on GRSG, including effects of cross country travel.*

Energy Development and Infrastructure

• Adopt standards outlined in *Nevada Energy and Infrastructure Development Standards to Conserve Greater Sage-grouse Populations and Their Habitats,* April 2010, pgs. 25-29.

~~*Riparian Areas and Wetlands*~~

~~• At a minimum, all riparian areas and wet meadow brood rearing habitat should meet proper functioning condition (PFC). Where PFC is met, strive to attain reference state vegetation relative to the ecological site description.~~

Wild Horses and Burros

• Prioritize gathers in sage-grouse habitat, unless removals are necessary in other areas to prevent catastrophic environmental issues.

• As soon as the population is estimated to exceed high AML, gather to low AML and implement fertility control.

• Within sage-grouse habitat, develop or amend herd management area (HMAs) plans to incorporate sage-grouse habitat objectives and management considerations for all HMAs. For all HMAs within sage-grouse habitat, prioritize the evaluation of all appropriate management levels based on indicators that address structure/condition/composition of vegetation and measurements specific to achieving sage-grouse habitat objectives.

• When conducting NEPA analysis for wild horse and burro management activities, water developments or other rangeland improvements for wild horses in sage-grouse habitat, address the direct and indirect effects to sage-grouse populations and habitat. Implement any water developments or rangeland improvements using the criteria ~~identified~~ for ~~domestic livestock identified~~*wild horses and burros year around use and consistent with necessary rights and right of ways* in sage-grouse habitats.

Livestock Grazing and Range Management

• ~~Adopt~~*Where applicable and as part of a ranch management plan, use* the Natural Resource Conservation Service (NRCS) Conservation Practice Standards and Specification listed below. In addition, ~~adopt~~*use* the recommendations additions to the standards developed by NRCS and NDOW as part of NRCS' Sage-grouse Initiative *and further expanded by the state of Nevada in this document:*

- Code 645: Upland Wildlife Habitat Management
- Code 528: Prescribed Grazing
  - Emphasize rest periods when appropriate as part of the grazing management plan and restoration.
- Code 614: Water Facilities
  - Avoid placement where *existing* sagebrush cover will be reduced near a lek, in nesting habitat, or winter habitat whenever possible. NDOW recommends structures be at least 1 mile from a lek.
- Code 574: Spring Development
  - *Springs may be developed as long as valid water claims or rights exist and development shows a net benefit to overall habitat management within a SGMA.*
- Code 533: Pumping Plant
  - NDOW recommends the structure should not be placed within 3 miles of a lek to avoid disturbance to nesting sage-grouse.
- Code 642: Water Well
  - *Well placement should encourage dispersion of livestock and provide for a neutral or no net negative impact to habitat within a SGMA. Further water developments will decrease concentrated livestock and wildlife use and further protect sagebrush habitats.*
- Code 516: Livestock Pipeline
  - *Pipelines shall be replaced as needed to provide for better dispersion of livestock.*
  - *Pipelines shall be replaced along existing pipelines, roadways, or fences.*
  - *Replacement and maintenance of pipelines shall use the least invasive techniques and extensive work requiring heavy equipment shall be done in a manner consistent with season of use by the GRSG (i.e. replacing improvements in GRSG winter habitat during the summer and replacing improvements in breeding and nesting habitat during the fall)*
  - *Replacement of improvements shall be allowed in order to not jeopardize existing and valid claims and rights.*
- Code 410: Grade Stabilization Structure
  - If possible, avoid the installation of these structures during the late summer brood rearing period. NDOW recommends structure placement in mid-September through late November.
- Code 382: Fence
  - If possible, fencing should not be constructed near a lek and should be avoided in winter habitats near ridges. To make a fence more visible, use white tipped metal fence posts,

securing flagging or reflectors to the top fence wires, or slide sections of PVC pipe over the top wire~~.~~ *(Stevenson and Reece 2012).*

• ~~Remove~~*Relocate* or modify existing water developments *(including locating troughs to further disperse livestock)* that are having a net negative impact on GRSG habitats.

~~• Remove, relocate, or modify livestock ponds built~~ *Any changes to existing water developments must be conducted* in ~~perennial channels that are having~~*accordance with State Water Law and in close consultation with the water right owner in order to avoid* a ~~net negative impact on riparian habitat, either directly or indirectly. Development~~*"taking"* of ~~new livestock ponds should be designed to have neutral or positive impacts to GRSG habitat.~~*private property water rights.*

• All troughs should be outfitted with the appropriate type and number of wildlife escape ramps.

• All field and district offices should apply BLM IM 2013-094 or similar methodology until superseded related to drought management planning.

~~• Use aircraft to check livestock in areas where consistent trespass has been noted and access/manpower is difficult to obtain.~~

Surface Disturbing Activities - General

• During the period specified, manage discretionary surface disturbing activities and uses to prevent disturbance to GRSG during life cycle periods. Seasonal protection is identified for the following:

-Seasonal protection within ~~four (~~4*three (3*) miles of active GRSG leks from March 1 through June 15~~;~~ *during lekking hours of 1-hour before sunrise until 10:00 am*
-Seasonal protection of GRSG *suitable* wintering areas from November 1 through March 31~~;~~*;*
-Seasonal protection of GRSG *suitable* brood-rearing habitat from May 15 to August 15~~.~~*.*

~~• For any surface disturbing activities proposed in sagebrush shrublands, the Proponent will conduct clearance surveys for GRSG breeding activity during the GRSG's breeding season before initiating the activities. The surveys must encompass all sagebrush shrublands within 3.0 miles of the proposed activities. Three surveys would be conducted every season during pre-planning operations. In areas found to have probable GRSG activity, surveys should continue during project operations. These surveys should be conducted as part of a monitoring program to inform an adaptive management framework for required design features and operations.~~

~~• Ensure that all authorized ground disturbing projects have vegetation reclamation standards suitable for the site type prior to construction and ensure that reclamation to appropriate GRSG standards are budgeted for.~~

• Implement appropriate time-of-day and/or time-of year restrictions for future construction and/or maintenance activities in known GRSG habitat ~~to avoid adverse impacts.~~

• Reseed all areas requiring reclamation with a seed mixture appropriate for the soils, climate, and landform of the area to ensure recovery of the ecological processes and habitat *features of the potential natural vegetation, and to prevent the invasion of noxious weeds or other exotic invasive species.* Long-term monitoring *(minimum three years)* is required to determine success.

• Maximize the area of interim reclamation on long-term ~~access roads and well pads~~*surface disturbing activities to* including reshaping, topsoiling and revegetating ~~cut and fill slopes.~~*areas no longer being disturbed within the overall project foot print.*

Miscellaneous

• On BLM and Forest Service-administered Wilderness and Wilderness Study Areas (WSAs), mechanized equipment may be used to protect *or rehabilitate* areas of high resource concerns or values; however, the use of mechanized equipment will be evaluated against potential long-term resource damage.

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Acronym List:

GRSG: Greater Sage-grouse

~~PGMA: Preliminary General Management Area~~

PPMA: Preliminary Priority Management Area

NAC: Nevada Administrative Code

~~RDF: Required Design Feature~~

ROW: Right-of-way

SGMA: Sage-Grouse Management Area

SUA: Special Use Authorization

~~WFDSS: Wildland Fire Decision Support Tree~~

Attachment 2: Council and General Public Comments and Edits on Required Design Features

Note: the measures below are pretty specific to sage grouse. They are "one sided, single minded, and focused, on sage grouse; and do not take into account other factors in the environment (or protection of other species).

It seems appropriate to include an explanatory statement to provide intended – and agreed to – implementation of the Features and Practices. It also seems that this entire section should be edited for consistency in tense, tone, level of detail, and to avoid restatement of similar practices.

General Comments: We agree with the Council's determination that the State's sage-grouse conservation objectives can be achieved by providing, in conjunction with other elements of the State's plan including mitigation, flexible site-specific Best Management Practices ("BMPs") that will be evaluated as part of the project consultation process with the Sagebrush Ecosystem Technical Team ("SETT").

We think it would be helpful to provide a standard for the imposition of such BMPs. For instance, Section 3.1.2 could be revised to clarify that the BMPs are presumptive recommendations to be evaluated on a case-by-case basis rather than prescriptive, inflexible requirements: "Impacts will be minimized, to the extent reasonably practicable and otherwise appropriate, by modifying proposed actions and/ or developing permit conditions to include measures that lessen the adverse effects to sage-grouse and their habitat. This will be accomplished through the consideration of site-specific ~~Design Features (DFs) or~~ Best Management Practices (BMPs)[.]" Barrick prefers the use of the term BMP to Design Feature, because BMP, in its common usage, suggests adaptable guidance that takes into consideration site-specific circumstances.

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Section 3.0 of the plan should recognize the right of reasonable access and infrastructure development for purposes of prospecting, locating, and mining. The BMPs provide that mining projects must locate roads to avoid important sage-grouse habitat and must locate new utilities within existing corridors. The prescriptions, however, do not provide for consideration of whether avoiding habitat would be unreasonable or uneconomical for the development of a mining project. The incorporation of a "reasonably practicable and otherwise appropriate" standard would alleviate this problem.

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In general, the locatable minerals BMPs do not seem to have received the same thought and consideration as the travel and transportation BMPs. The travel and transportation BMPs contain language that allows for flexibility and other resource considerations to inform a solution, and are not as prescriptive as those under locatable minerals. Many of the specific comments below are designed to bring the locatable minerals BMPs up to the quality of those under travel and transportation.

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If BMPs are in conflict with other federally or state required permit conditions or requirements how will the SETT resolve those differences with the owner/operator and federalland management agencies?

Appendix A: *Site Specific Consultation Based* ~~Required~~ Design Features~~/ Best Management Practices~~

Mineral Resources

Fluid Minerals RDFs

Roads - PPMA

• Do not construct new roads where~~n~~ there are existing roads that could be used or upgraded to meet the needs *of the project or operation*. *(This BMP should make allowance for reasonableness of use. As written it could result in requirements to use existing roads regardless of the reasonableness. The SETT should apply the BMPs to provide reasonable access and not to defeat the mining project's purpose and need—e.g., the construction of a new 2-mile-long road through sage-grouse habitat (possibly including habitat mitigation) might be more reasonable than using an existing road that requires a 20-mile trip to reach the same destination.)*

• Design roads to an appropriate standard, no higher than necessary, to accommodate their intended purpose *and level of use*.

•*When Possible,* Locate roads to avoid important areas and habitats. *("Important areas and habitats" needs to be defined. Also, avoidance may not always be practicable. In such instances, mitigation should be allowed to address impacts on sage grouse. The statement is vague and inconsistent with other requirements. Elimination should be considered).*

• Coordinate road construction and use among ROW or SUA holders. *(Coordination should allow for reasonable accommodation but not be an absolute requirement. Coordination, or inability to coordinate, should not be used as an excuse for inaction, nor should it be used to force parties into impractical arrangements. Will the federal agencies be give the ability (and use the authority to grant access to multiple users?)*

Comment [CC1]: Not sure what SUA is.

• Where possible *and practicable*, avoid constructing roads within *defined* riparian areas and ephemeral drainages. *(We note that such construction may also require section 404 permitting from the Army Corps of Engineers.)*

• Construct road crossings at right angles to ephemeral drainages and stream crossings. *(Coordination should allow for reasonable accommodation but not be an absolute requirement. Coordination, or inability to coordinate, should not be used as an excuse for inaction, nor should it be used to force parties into impractical arrangements. Furthermore, this should be rephrased to specific site conditions and need.)*

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• Establish speed limits on BLM and Forest Service-managed roads to reduce vehicle/wildlife collisions or design roads to be driven at slower speeds. *(This BMP needs to better describe the desired outcome. Merely setting slower speeds as an objective leads to the question - Slower that what? It would be better to say: speeds appropriate to condition and occupation of adjacent habitats by sage-grouse.*

This BMP needs flexibility to allow for variance in habitat quality, occupancy, and possibly seasonality considerations.)

• *Where possible e*~~E~~stablish trip restrictions (Lyon and Anderson 2003) or minimization through use of telemetry and remote well control (e.g., Supervisory Control and Data Acquisition).**I'm not sure what this stipulation means, or how it would apply. It is confusing and should be rewritten along with practical overrides for site specific and special conditions such as emergencies, upsets, etc.*

• Do not issue ROWs or SUAs to counties on newly constructed energy development roads, unless for a temporary use consistent with all other terms and conditions included in this document.

• Restrict vehicle traffic to only authorized users on newly constructed routes (using signage, gates, etc.) *(This BMP needs to better describe the desired outcome. Merely setting slower speeds as an objective leads to the question - Slower that what? It would be better to say: speeds appropriate to condition and occupation of adjacent habitats by sage-grouse. When does a newly constructed route become an established route?*

This BMP needs flexibility to allow for variance in habitat quality, occupancy, and possibly seasonality considerations.)

• Use dust abatement on roads and pads. *(This BMP needs additional language that allows for flexibility based on road use, road condition, season, and other considerations. Current practice of the land managers should be reviewed)*

• Close and re*claim*~~habilitate~~ duplicate roads. *(In the context of mining projects, this concern would generally be addressed through the mine reclamation plan. Nonetheless, the goal of road closure should be to establish a desired condition or use. Restoration of landform may or may not achieve that goal, and may or may not be practicable. How will "duplicate" roads be determined?)*

• *When feasible c*~~C~~luster disturbances, operations (fracture stimulation, liquids gathering, etc.), and facilities.

Operations - PPMA

• *When possible, u*~~U~~se directional and horizontal drilling to reduce surface disturbance. *(because of geology and financial aspects of directional/horizontal drilling, this may not always be possible).*

• *When possible, p*~~P~~lace infrastructure in already disturbed locations.

• Apply a phased development approach with concurrent reclamation *(Understanding among all parties is critical in the application of this BMP)*.

• *When possible,* Place liquid gathering facilities outside of priority areas. Have no tanks at well locations within priority habitat areas to minimize truck traffic and perching and nesting sites for ravens and raptors. *(Note that such a requirement may result in more disturbance. Such overarching BMPs must be tempered with site specific conditions).*

• Pipelines must be under or immediately adjacent to the road (Bui et al. 2010). *(This may not always be feasible due to topography, geology, proximity to watercourses, etc. and may create additional disturbance)*

• *Where feasible u*~~U~~se remote monitoring techniques for production facilities and develop a plan to reduce the frequency of vehicle use (Lyon and Anderson 2003). *(A rewrite could be: Reduce motor vehicle travel during field operations through development and implementation of remote monitoring and control systems plans. These plans should include provisions to reduce frequency of light motor vehicle travel in critical sage-grouse management areas (or similar)).*

• *To reduce predator perching, limit*~~Restrict~~ the construction of *vertical*~~tall~~ facilities and fences to the minimum number and amount needed. *(FURTHER CONSIDERATION MIGHT BE GIVEN TO COLLECTIVE IMPACTS IN THAT ROUTING TO AVOID SAGEBRUSH MIGHT CREATE GREATER IMPACTS (e.g. FUEL CONSUMPTION, TAILPIPE EMISSIONS, GREATER POTENTIAL FOR VEHICLE – WILDLIFE INTERACTION).*

• Site and/or minimize linear ROWs or SUAs to reduce disturbance to sagebrush habitats.

• *When possible and practicable and in consideration of operational and safety needs p.* ~~P~~lace new utility developments (power lines, pipelines, etc.) and transportation routes in existing utility or transportation corridors.

• Bury distribution power lines. **See note below under locatable mining. Burying* ~~*powerlines*~~*power lines is really expensive. If needed, I can call NV Energy and get the exact cost to bury a line underground. The cost to bury underground is something like 4 times the cost to construct above ground. It is a significant cost increase; in addition, burying underground results in a significantly more surface disturbance, and increased maintenance/replacement costs. A further consideration could include burying lines with operating voltages of less than 35 kV. Better wording may be: To reduce predator perching opportunities, underground routing of electrical power distribution lines/conductors is encouraged. Economic and operational considerations should be made in the evaluation of practicality of such an approach. Similarly, environmental impacts, including surface disturbance and temporary/permanent vegetation loss, should be considered.*

• *When possible,* Co-locate power lines, flow lines, and small pipelines under or immediately adjacent to existing roads (Bui et al. 2010) *provided it does not cause additional disturbance. This could be combined with the BMP above.*

• Design or site permanent ~~structures which~~*structures, which* create movement (e.g., pump jack) to minimize impacts to GRSG. *(AT A PRACTICAL LEVEL, WHAT DOES THIS MEAN? IS THE MOVEMENT A DISTRACTION, A PHYSICAL HAZARD, A VISUAL IMPACT, ETC? THIS NEEDS TO BE BETTER ARTICULATED (IT WAS POORLY STATED IN THE NTT AND APPARENTLY REPRODUCED HERE) TO PROVIDE ACTUAL GUIDANCE).*

• Cover (e.g., fine mesh netting or use other effective techniques) all drilling and production pits and tanks regardless of size to reduce GRSG mortality. *See note under locatable minerals below or reword to: Preclude Greater Sage-grouse access to pits and tanks through use of practical techniques (e.g. covers, netting, birdballs, location, etc).*~~.~~

• Equip tanks and other above-ground facilities with structures or devices that discourage *perching or* nesting of raptors and corvids. *(What about other predators (see Coates recent draft paper).*

• Control the spread and effects of non-native plant species (Evangelista et al. 2011) (e.g., by washing vehicles and equipment, minimize unnecessary surface disturbance). *(THE NON-NATIVE PLANT CONTROL POTENTIALLY CONFLICTS WITH PRACTICAL REVEGETATION ON LOWER PRECIPITATION ECOLOGICAL SITES (see CLEMENTS et al 2009, 2011, 2012, AND PYKE (MULTIPLE YEARS) etc WHEREIN ESTABLISHMENT OF NATIVE PLANTS IS CHALLENGING AND NOT ALWAYS DEMONSTRABLY SUCCESSFUL)*

• Use only closed-loop systems for drilling operations and no reserve pits. *(This may not be possible at all locations and given the multitude of drilling techniques).*

• *W*~~*w*~~*hen possible,* Restrict pit and impoundment construction to reduce or eliminate threats from West Nile virus (Doherty 2007). *(This may increase vehicle traffic and associated impacts and can lead to longer drilling duration. WHAT ABOUT REQUIREMENTS FOR STORMWATER CONTROLS, OPERATIONAL NEEDS, AND THE LIKE? MAYBE: Reduce the potential for creating excessive or unintended mosquito habitat and associated risk of West Nile Virus impacts to Greater Sage-grouse. This can be implemented through:*

- *Minimize pit and pond construction and, where necessary, size of pits and ponds*
- *ITERATE STEPS BELOW AFTER REVISIONS AND EDITING….*

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• Remove or re-inject produced water to reduce habitat for mosquitoes that vector West Nile virus. If surface disposal of produced water continues, use the following steps for reservoir design to limit favorable mosquito habitat:

– Overbuild size of ponds for muddy and non-vegetated shorelines.

– Build steep shorelines to decrease vegetation and increase wave actions. ~~*Bulding*~~*Building steep shorelines is not favored by the agencies. Should wildlife get into these ponds, they will not be able to get out if the shorelines are steep.*

– Avoid flooding terrestrial vegetation in flat terrain or low lying areas.

– Construct dams or impoundments that restrict down slope seepage or overflow.

– Line the channel where discharge water flows into the pond with crushed rock. *It would depend on how much water you plan to discharge. If it is a large flow, crushed rock would decrease erosion. If it is a small discharge, the crushed rock would only add to/contribute to more disturbance (which we do not want).*

– Construct spillway with steep sides and line it with crushed rock.

– Treat waters with larvicides to reduce mosquito production where water occurs on the surface. *We do not want to put any more chemicals into the environment than we have to. If it is a small pond with limited days of holding water, then larvicides are not necessary. If it is a large pond, then maybe we would want to apply larvicide.*

• Limit noise to less than 10 decibels above ambient measures (20-24 dBA) at sunrise at the perimeter of a lek during active lek season (Patricelli et al. 2010, Blickley et al. In preparation). *(Scientific literature on this issue is limited and should be considered in moving ahead with this BMP).*

• *When necessary,* Require noise shields *(on what and where?)* when drilling during the lek, nesting, brood-rearing, or wintering season. *If it is determined that noise is not a factor, or increased in the area, or if your project has less noise than background levels, then we should not require noise shields.*

• Fit transmission towers with anti-perch devices (Lammers and Collopy 2007).

• Require GRSG-safe fences (e.g. marked fences). *(Alternative language: Design and construct fences to ensure visibility to Greater Sage-grouse. Utilize fences designs consistent with NRCS fence standards and specifications and, where appropriate, use fence markers (e.g. Stevenson and Reese 2012)).*

• *When feasible l*~~L~~ocate new compressor stations outside priority habitats*. Otherwise* ~~and~~ design them to reduce noise that may be directed towards priority habitat.

• Clean up refuse (Bui et al. 2011). *(Alternative language: Implement site keeping practices to preclude the accumulation of debris, solid waste, putrescible wastes, and other potential anthropogenic subsidies for predators of Greater Sage-grouse. These include covering of dumpsters,…..)*

• *When possible l*~~L~~ocate man camps outside of priority habitats *if doing so does not create additional impacts*.

Reclamation – PPMA and PGMA

Comment [CC2]: Ambient natural noise at our site is 40-50 dBA. the 20-24 dBA identified here does not represent ambient background noise at all areas. NDOW has identified that one can park a car next to a lek with strutting grouse, and there is no impact (as is the case for the unnamed lek near Pole Creek Road/Montana Mountains). Therefore, why is NDOW (and others) suggesting noise impacts grouse?

Question: the definition of "perimeter of a lek" needs to be identified. There are not any definitions of what "Perimeter of a lek" is. Where is the "10 decibles" derived from? I think it is from "one" research paper. All other research papers I have read on noise and wildlife impacts indicates "the level of noise that causes an impact to wildlife is unknown". Therefore, you don't know if it is a 20 dBA increase, 30 dBA, or 10dBA increase. The 10 dBA increase selected is arbitrary.
If this measure is in other categories (e.g., locatable minerals), the comments above should be carried forward.

Comment [CC3]: What's this "In preparation"? If it is not published, it should not be cited.

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• Include objectives for ensuring habitat re*habilitation*~~storation~~ to meet GRSG habitat needs in reclamation practices/sites (Pyke 2011). Address post reclamation management in reclamation ~~plan~~*plans* such that goals and objectives are to protect and improve GRSG habitat needs.

• Maximize the area of interim *and concurrent* reclamation on long-term access roads and well pads, including reshaping, topsoiling and revegetating cut-and-fill slopes.

• *Where practicable rehabilitate* ~~Restore~~ disturbed areas at final reclamation to the *near* pre-disturbance landforms and *the* desired plant community.

• Irrigate interim reclamation if necessary for establishing seedlings more quickly. *(Water and water rights may not be available nor is this often successful in the Great Basin in the long term).*

• *Where appropriate u*~~U~~tilize mulching techniques to expedite reclamation and to protect soils.

Roads ~~–~~ *– PGMA (Please note many of the above comment apply for these identical or similarly worded BMPs)*

• Design roads to an appropriate standard no higher than necessary to accommodate their intended purpose.

• Do not construct new roads when there are existing roads that could be used or upgraded to meet the need.

• Where possible, avoid constructing roads within riparian areas and ephemeral drainages.

• Do not issue ROWs or SUAs to counties on energy development roads, unless for a temporary use consistent with all other terms and conditions included in this document.

• Establish speed limits to reduce vehicle/wildlife collisions or design roads to be driven at slower speeds.

• Coordinate road construction and use among ROW or SUA holders.

• Construct road crossings at right angles to ephemeral drainages and stream crossings.

• Use dust abatement practices on roads and pads.

• Close and reclaim duplicate roads by restoring original landform and establishing desired vegetation.

Operations – PGMA

• *When feasible c*~~C~~luster disturbances, operations (fracturing stimulation, liquids gathering, etc.), and facilities.

• *When feasible u*~~U~~se directional and horizontal drilling to reduce surface disturbance.

• Clean up refuse (Bui et al. 2010).

• Restrict the construction of tall facilities and fences to the minimum number and amount needed.

• Cover (e.g., fine mesh netting or use other effective techniques) all drilling and production pits and tanks regardless of size to reduce GRSG mortality.

• Equip tanks and other above-ground facilities with structures or devices that discourage nesting by raptors or corvids.

• *When feasible u*~~U~~se remote monitoring techniques for production facilities and develop a plan to reduce vehicular traffic frequency of vehicle use.

• Control the spread and effects from non-native plant species. (e.g., by washing vehicles and equipment.)

• Restrict pit and impoundment construction to reduce or eliminate augmenting threats from West Nile virus (Doherty 2007).

Locatable Minerals BMPs (Note: the above comments apply for identical or similarly worded BMPs)

The locatable minerals section of the Appendix A states that the BMPs would apply to both Preliminary Priority Management Areas ("PPMAs") and Preliminary General Management Areas ("PGMAs"). See App. A at 4. By applying the BMPs to general habitat, the Council appears to be going farther than the BLM's National Technical Team ("NTT") Report or BLM's preferred alternative (Alternative D) in the Draft Land Use Plan Amendment and Environmental Impact Statement ("LUPA/EIS"). However, so long as the imposition of BMPs remains flexible, rather than rigidly prescriptive, Barrick believes that there are situations where the incorporation of BMPs into projects occurring in PGMAs could be accommodated.

Roads – PPMA and PGMA

• Design roads to an appropriate standard no higher than necessary to accommodate their intended purposes.

• Locate roads *(when possible)* to avoid important areas and habitats. *(It would be helpful to define "important areas and important habitats.")*

Avoidance may not always be practicable. In such instances, mitigation should be allowed to address impacts on sage-grouse.

• Coordinate road construction and use among ROW or SUA holders. *(Coordination should allow for reasonable accommodation but not be an absolute requirement. Coordination, or inability to coordinate, should not be used as an excuse for inaction, nor should it be used to force parties into impractical arrangements.)*

• *When possible,* Construct road crossing at right angles to ephemeral drainages and

Comment [CC4]: Important areas – is too vague and unknown; and can be interpreted widely by each BLM office. Also, it should be "when possible" we will locate roads to avoid…

stream crossings. *(Coordination should allow for reasonable accommodation but not be an absolute requirement. Coordination, or inability to coordinate, should not be used as an excuse for inaction, nor should it be used to force parties into impractical arrangements.)*

• Establish speed limits on BLM and Forest Service managed roads to reduce vehicle/wildlife collisions or design roads to be driven at slower speeds. *(This BMP needs to better describe the desired outcome. Merely setting slower speeds as an objective leads to the question - Slower that what? It would be better to say: speeds appropriate to condition and occupation of adjacent habitats by sage-grouse.)*

This BMP needs flexibility to allow for variance in habitat quality, occupancy, and possibly seasonality considerations

• Do not issue ROWs or SUAs to counties on mining development roads, unless for a temporary use consistent with all other terms and conditions including this document.

• Restrict vehicle traffic to only authorized users on newly constructed routes (e. g., use signing, gates, etc.). *(This is an undue restriction on use of established roads. Once a road is established it is logical to direct as many users as possible to existing roads. This will reduce the pressure for construction of alternate routes. As written, the BMP conflicts with the desire to minimize road construction. Furthermore, restricted-use roads can cause resentment among unauthorized user groups and result in vandalism of private property; conflicts between authorized and unauthorized users; or resource damages, if unauthorized users create alternative routes around road-blocking gates. Finally public land is multiple use. Is it legal to restrict a certain group of users from that land?*

• *When necessary,* Use dust abatement practices on roads and pads. **dust abatement is not necessary during winter months when conditions are damp, and also not necessary if you have wet/moist clay soils. (This BMP needs additional language that allows for flexibility based on road use, road condition, season, and other considerations).*

• Close and reclaim duplicate roads, by restoring original landform and establishing desired vegetation. *(In the context of mining projects, this concern would generally be addressed through the mine reclamation plan. Nonetheless, the goal of road closure should be to establish a desired condition or use. Restoration of landform may or may not achieve that goal, and may or may not be practicable).*

• Do not construct new roads when there are existing roads that could be used or upgraded to meet the need. *(This BMP should make allowance for reasonableness of use. As written it could result in requirements to use existing roads regardless of the reasonableness. The SETT should apply the BMPs to provide reasonable access and not to defeat the mining project's purpose and need—e.g., the construction of a new 2-mile-long road through sage-grouse habitat (possibly including*

habitat mitigation) might be more reasonable than using an existing road that requires a 20-mile trip to reach the same destination).

• Where possible, avoid constructing roads within riparian areas and ephemeral drainages *(We note that such construction may also require section 404 permitting from the Army Corps of Engineers.)*

Operations – PPMA and PGMA

• *Where possible and safe, c*~~C~~luster disturbances associated with operations and facilities as close as possible *unless site specific conditions indicate that disturbances to sagebrush habitat would be reduced if operations and facilities locations would best fit a unique special arrangement*. *(This BMP needs allowance for other resource conflicts. For instance, concentrating some operations in clusters could result in concentration of air pollutants or could result in excess resource expenditure to transport workers or materials to one location when another location would relieve the resource pressure.)*

• *Minimize site disturbance though site analysis and facility planning. When possible, p*~~P~~lace infrastructure in already disturbed locations where the habitat has not been restored. *(As an objective this is fine, but as a BMP it needs to allow for practical considerations).*

• Restrict the construction of tall facilities and fences to the minimum number and amount needed. *(This BMP needs to recognize practicality, functionality, and economics in determining what the minimum number and amount are).*

• *When possible, site*~~Site~~ and/or minimize linear ROWs or SUAs to reduce disturbance to sagebrush habitats. *(This BMP needs to recognize that all sagebrush habitats are not equal and that merely reducing overall disturbance may not minimize impact on the resource).*

• Place new utility developments (power lines, pipelines, etc.) and transportation routes in existing utility or transportation corridors. *(This needs to be re-written to allow for practical considerations when consolidating utility corridors and to ensure it creates no additional disturbance).*

• Bury power lines *(burying power lines is usually not financially possible [check with NV Energy, I think the cost to bury a powerline is 4 times greater than above ground powerline]. Also, because so many other things at a mine site are "above ground and tall", does it really make sense to only bury the powerline. I would think "when appropriate and when financially possible, we would bury powerlines", but…for a mine site, it is not appropriate nor feasible. This is a "big" point, and we should not accept that all powerlines would be buried! Should we have to bury powerlines, it would make the cost of some projects unfeasible. Also, burying a powerline creates more disturbance (e.g., and would result in*

significantly more disturbance in sagebrush, sagegrouse habitat). Burying power lines is not always feasible for either technical or economic reasons. Power lines within facilities and existing disturbances may not add to overall habitat degradation or encroachment. Consideration should be given to limiting this to lives of 35 kV or less.

• Cover (e.g., fine mesh netting or use other effective techniques) all pits and tanks regardless of size to reduce GRSG mortality. *It is not physically possible to cover pits and tanks. They do not make nets that big! (and the bigger the net, the larger the cost). In addition, there is likely a human safety hazard in maintaining a net that large (e.g., if it was over a pit). Installing nets have other drawbacks to wildlife; depending on the size of the net "hole" (size of mesh), birds/bats can get caught in the net and die. The smaller the mesh, the more snow and ice would develop and rip the net when the snow/ice is excessive and heavy. Also, to install and maintain nets, over a pond/pit, you would need to install several large cranes~~ine's~~ on the sides/edges of the pond/pit, so you can lift the net when needed. These large cranes~~ines~~ would provide further perching areas for raptors (which is not desirable). This measure (cover with nets) is unfeasible from many areas, and should be deleted from consideration. Not all pits and tanks contain substances, or are constructed, such that they are detrimental to sage-grouse. Not all pits and tanks are in use during times when sage-grouse might be present. Also, existing bird netting practices have been successful in significantly reducing bird mortality. New netting requirements may add significant costs for little or no environmental gain.*

The term "pit" should be defined so as not to include the mining pit itself. Additionally, the phrase "regardless of size" should be deleted; there might be large pits or impoundments that economically or practically cannot be covered or for which alternative deterrence mechanisms would be effective.

• Equip tanks and other above ground facilities with structures or devices that discourage nesting *or perching* of raptors and corvids. *If we have to access this equipment or facilities on a daily basis, it is not always feasible to install anti nesting devices. Installation of devices should only be done "when safe", when equipment is not accessed on a daily basis, and when it does not hinder the daily operation of such equipment. The Council should specify whether this provision applies to buildings. It may not be practical to discourage nesting on a building's roof.*

• Control the spread and effects of non-native plant species (Gelbard and Belnap 2003, Bergquist et al. 2007). *(Not all non-native species are deleterious to the habitat or the birds. Some may be useful in establishing vegetation communities that can progress toward suitable habitat while defending against aggressive non-native species. They may also be useful for establishing barriers to other threats to the habitat, such as fire. This blanket prohibition ignores evolving science on the use of non-natives to achieve long-term habitat improvements. AS NOTED ABOVE, THIS PRACTICE AS STATED WILL LIKELY PRECLUDE ESTABLISHMENT OF DESIRED VEGETATION ON SOME SITES. THUS: Reduce the invasion, establishment, and spread of noxious weeds and undesirable invasive plants through the development and implementation of weed management and reclamation plans (Clements, Pyke, and countless others…).).*

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• Restrict pit and impoundment construction to reduce or eliminate threats from West Nile virus (Doherty 2007). • Require GRSG-safe fences around sumps. **I'm assuming this involves the restriction of puddles/ponds so west ~~nile~~Nile ~~virsus~~virus doesn't develop. Again, this is almost impossible to restrict impoundment construction. The Council should clarify which sumps this provision is intended to cover. This BMP needs to identify its target impact and also accommodate temporary sumps and seasonality of use versus habitat occupation.*

• Clean up refuse (Bui et al. 2010).

• *When possible, l*~~L~~ocate man camps outside of priority GRSG habitats. *(The SETT, during consultation on locating man camps, should consider the purpose and need of the mining project itself and not apply the BMPs in a manner that would require the mine project proponent to locate the man camp too far from the mine so that it becomes undevelopable due to costs or access to labor. Further, the NTT Report BMPs for man camps do not apply to general habitat. The relocation should not cause additional disturbance).*

Reclamation – PPMA and PGMA

• *Where applicable, i*~~I~~nclude *GSG habitat*~~restoration~~ objectives *in mine closure and reclamation in mine reclamation plans*~~to meet GRSG habitat needs in reclamation practices/sites~~. *(This BMP needs to take into consideration that some locations may not be suitable for habitat restoration. It also needs to be coupled with assurance that habitat restoration results in compensation credits.)*

• Address post reclamation management in reclamation plans such that goals and objectives are to protect and improve GRSG habitat needs. *(This BMP needs to be subject to the post-mining land use goals established in the reclamation plan Alternate wording: Post-reclamation management objectives and practices should, where applicable, include maintenance and enhancement of Greater Sage-grouse habitat.)*

• Maximize the area of interim *and concurrent other infrastructure related disturbances through* ~~reclamation on long-term access roads and well pads including~~ reshaping*/regrading*, topsoiling and revegetating cut and fill slopes~~, and investigating the possibility of establishing fuel breaks~~. *(This BMP needs to be qualified by a recognition that it will be implemented to the extent practical. The fuel break concept should be reworded to: In coordination with appropriate agencies, evaluate, design, construct, and maintain wildfire-related features including fuel breaks, firebreaks, and staging areas.).*

• *If feasible r*~~R~~estore disturbed areas at final reclamation to pre-disturbance landform and desired plant community. *(the cost to restore landforms to pre-disturbance topography is economically prohibitive in most mine feasibility studies. Reclamation goals are set by the desired post-mining*

land use and reclamation plan. Not all areas can be reclaimed to their pre-disturbance land form).

• Irrigate interim reclamation as necessary during dry periods. **Define irrigate! Is this use of a water truck once per week, or installation of drip hoses. Depending on the size of the reclaimed area, it might be impossible to artificially irrigate an area. In addition, if we install irrigation pipe with sprinklers, would we need generators to run such irrigation (thus creating more noise that the sage grouse don't want). Depending on location, size, water source, water rights, and other considerations this may not be possible, let alone practical. Not comments above that this does not always work in the Great Basin.*

• *When appropriate ,* Utilize mulching techniques to expedite reclamation. *(Blanket prescriptions should be avoided as they are seldom universally applicable).*

Fuels and Fire Management

• Fire and fuels operations should focus on protecting and enhancing occupied GRSG habitats. This includes taking into account the feasibility and cost of future rehabilitation efforts during WFDSS planning and general fire operations in all occupied GRSG habitats

Fuels Management

• Where applicable, design fuels treatment objective to protect existing sagebrush ecosystems, modify fire behavior, restore native plants, and create landscape patterns which most benefit GRSG habitat.

• Provide training to fuels treatment personnel on GRSG biology, habitat requirements, and identification of areas used locally.

• Use burning prescriptions that minimize undesirable effects on vegetation or soils (e.g., minimize mortality of desirable perennial plant species and reduce risk of annual grass invasion).

• Ensure proposed sagebrush treatments are planned with full interdisciplinary input pursuant to NEPA and coordination with NDOW and SETT, and that treatment acreage is conservative in the context of surrounding GRSG seasonal habitats and landscape.

• Where appropriate, ensure that treatments are configured in a manner that promotes use by GRSG.

• Where applicable, incorporate roads and natural fuel breaks into fuel break design.• Where appropriate and allowable, utilize livestock grazing as a tool to reduce fuels and control non-native species.

• Power-wash all vehicles and equipment involved in fuels management activities prior to entering the area to minimize the introduction of undesirable and/or invasive plant species.

• Design vegetation treatments in areas of high fire ~~frequency which~~*frequency, which* facilitate firefighter safety, reduce the potential acres burned, and reduce the fire risk to GRSG habitat. Additionally, develop maps for GRSG ~~habitat which~~*habitat, which* spatially display existing fuels treatments that can be used to assist suppression activities.

• For implementing specific GRSG habitat restoration projects in annual grasslands, first give priority to sites which are adjacent to or surrounded by PPMA or that reestablish continuity between priority habitats. Annual grasslands are a second priority for restoration when the sites are not adjacent to PPMA, but within two miles of PPMA. The third priority for annual grassland habitat restoration projects are sites beyond two miles of PPMA. The intent is to focus restoration outward from existing, intact habitat.

• As funding and logistics permit, restore annual grasslands to a species composition characterized by perennial grasses, forbs, and shrubs or one of that referenced in land use planning documentation.

• Emphasize the use of native plant species, recognizing that non-native species may be necessary depending on the availability of native seed and prevailing site conditions.

• Remove standing and encroaching trees within at least 110 yards of occupied GRSG leks and other habitats (e.g., nesting, wintering and brood rearing) to reduce the availability of perch sites for avian predators, as resources permit.

• Protect wildland areas from wildfire originating on private lands, infrastructure corridors, and recreational areas.

• Reduce the risk of vehicle- or human-caused wildfires and the spread of invasive species by installing fuel breaks and/or planting perennial vegetation (e.g., green-strips) paralleling road rights-of-way. Strategically place and maintain pre-treated strips/areas (e.g., mowing, herbicide application, etc.) to aid in controlling wildfire, should wildfire occur near PPMA or important restoration areas (such as where investments in restoration have already been made).

Fire Management

• Compile District/Forest level information into state-wide GRSG tool boxes. Tool boxes will contain maps, listing of resource advisors, contact information, local guidance, and other relevant information for each District/Forest, which will be aggregated into a state-wide document.

• Provide localized maps to dispatch offices and extended attack incident commanders for use in prioritizing wildfire suppression resources and designing suppression tactics.

• Assign a resource advisor with GRSG expertise, or who has access to GRSG expertise, to all extended attack fires in or near GRSG habitat. Prior to the fire season, provide training to GRSG resource advisors on wildfire suppression organization, objectives, tactics, and procedures to develop a cadre of qualified individuals. Involve state wildlife agency expertise in fire operations through:

– instructing resource advisors during preseason trainings;

– qualification as resource advisors;

– coordination with resource advisors during fire incidents;

– contributing to incident planning with information such as habitat features or other key data useful in fire decision making.

• On critical fire weather days, pre-position additional fire suppression resources to optimize a quick and efficient response in GRSG habitat areas.

• During periods of multiple fires, ensure line officers are involved in setting priorities.

• To the extent possible, locate wildfire suppression facilities (i.e., base camps, spike camps, drop points, staging areas, heli-bases, etc.) in areas where physical disturbance to GRSG habitat can be minimized. These include disturbed areas, grasslands, near roads/trails or in other areas where there is existing disturbance or minimal sagebrush cover.

• Power-wash all firefighting vehicles, to the extent possible, including engines, water tenders, personnel vehicles, and all-terrain vehicles (ATV) prior to deploying in or near GRSG habitat areas to minimize noxious weed spread. Minimize unnecessary cross-country vehicle travel during fire operations in GRSG habitat.

• Minimize burnout operations in key GRSG habitat areas by constructing direct fire line whenever safe and practical to do so.

• Utilize retardant, mechanized equipment, and other available resources to minimize burned acreage during initial attack.

• As safety allows, conduct mop-up where the black adjoins unburned islands, dog legs, or other habitat features to minimize sagebrush loss.

• Adequately document fire operation activities in GRSG habitat for potential follow-up coordination activities.

Lands and Realty

Leases and Permits

• Only allow permits and leases that have *stipulations, which promote* neutral or beneficial effects sage-grouse and their habitat in sage-grouse habitat management areas. *(Exploration NOI's and Operating Permits and leases are only allowed where potential mineral concentrations of economic importance for mining can be demonstrated. This is a worthy goal, but there are many reasons to issue leases and permits and not all can produce a neutral or beneficial effect on sage-grouse habitat in and of themselves. The BLM cannot forego its obligation to manage for multiple uses*

in favor of a single resource. Furthermore, this may improperly infringe on private property rights in a way that results in an unconstitutional taking.

It is unclear why the Council would include the "neutral or beneficial effects" standard here in the Proposed Design Features. Each objective or goal should be set forth in Section 3.0 of the State's plan. By introducing the new standard here, the Council is creating inconsistent or ambiguous standards for leases or permits. This begs the question of whether leases or permits must meet the "no-net-unmitigated-loss" objective in Section 3.1.1, the "neutral or beneficial effects" standard in the Proposed Design Features, or both. Further, the term "permits" could be interpreted broadly to include many or most BLM authorizations for use of public lands.

We recommend that this item be deleted).

Right-of-Ways (ROWs) (THIS SECTION NEEDS MORE EDITING AND REVISION TO ENSURE UNIFORM APPROACH, ELIMINATION OF SIMILAR OR REDUNDANT PRACTICES/REQUIREMENTS, AND CONFORMANCE WITH INTENT)

• Work with existing rights-of-way holders ~~in an attempt~~ to *encourage* install*ation of* perch guards on all poles where existing utility poles are located within 3 miles of known leks, where necessary. Stipulate these requirements at grant renewal. *Agencies to provide funding for retrofitting structures and compensation for costs associated with de-energizing/re-energizing and loss of electrical delivery.*

• Use existing utility corridors and consolidate rights-of-way to reduce habitat loss, degradation, and fragmentation. Whenever possible, install new power lines within existing utility corridors. **this measure needs to be thought through. Rerouting a powerline in Nevada to avoid habitat loss and fragmentation could result in a 50-150 mile reroute. When is a reroute feasible, and when is it not feasible?*

• Where GRSG conservation opportunities exist, BLM field offices and Forests should work in cooperation with rights-of-way holders to conduct maintenance and operation activities, authorized under an approved ROW grant, to avoid and minimize effect on GRSG habitat. **Provide a measure to work in GRSG habitat in emergency conditions.*

• When renewing or amending ROWs, assess the impacts of ongoing use of the ROW to GRSG habitat and *incorporate stipulations, which* minimize such impacts to the extent allowed by law. *WOULD NOT THIS BE DONE THROUGH THE ASSOCIATED NEPA ANALYSIS AND LAND USE PLAN CONFORMANCE DETERMINATION? This measure should be deleted. If a project is already approved, it should not have more restrictions attached to it in the future.*

• Work with applicants to minimize habitat loss, fragmentation, and direct and indirect effects to GRSG and its habitat. *(This is very vague).*

• Conduct pre-application meetings with the BLM or Forest Service and SETT for all new ROW proposals consistent with the ROW regulations (43 CFR 2804.10) and consistent with current renewable energy

ROW policy guidance (WO-IM-2011-061, issued February, 2011). Assess the impact of the proposed ROW on GRSG and its habitat, and implement the following: Ensure that reasonable alternatives for siting the ROW outside of GRSG habitat or within a BLM designated utility corridor are considered and analyzed in the NEPA document; and identify technically feasible best management practices, conditions, (e.g., siting, burying power lines) that may be implemented in order to eliminate or minimize impacts. *Again, this measure is vague. An alternative that the BLM likes may not be financially feasible to NV Energy or a mining company.*

• Maximize the area of interim reclamation on long-term access roads and well pads including reshaping, topsoiling and revegetating cut and fill slopes.

• Authorize ROWs by applying appropriate BMPs (BLM Wind Energy Development EIS, June 2005), land use restrictions, stipulations, and mitigation measures. The BLM will document the reasons for its determination and require the ROW holder to implement these measures to minimize impacts to sage grouse habitat. *(THE "WIND" BMPs ARE NOT UNIVERSALLY ACCEPTED NOR APPLICABLE TO ALL ROW NEEDS.*

• Evaluate and take advantage of opportunities to remove, bury, or modify existing *distribution*~~power~~ lines *with operating voltages less than 35 kV* within priority sage-grouse habitat areas.

• Where existing leases or rights-of-way (ROWs) have had some level of development (road, fence, well, etc.) and are no longer in use, reclaim the site by removing these features and restoring the habitat. *(WHO? THE PERMITTEE OR THE AGENCY?)*

• Within designated ROW corridors encumbered by existing ROW authorizations: new ROWs should be co-located to the extent practical and feasible with the entire footprint of the proposed project *adjacent to or* within the existing disturbance associated with the authorized ROWs. *(See ABOVE AND IN CONSIDERATION OF OPERATIONAL REQUIREMENTS AND SAFETY).*

• Subject to valid, existing rights, where new ROWs associated with valid existing rights are required, co-locate new ROWs within existing ROWs or where it best minimizes sage-grouse impacts. Use existing roads, or realignments as described above, to access valid existing rights that are not yet developed. If valid existing rights cannot be accessed via existing roads, then build any new road constructed to the absolute minimum standard necessary. *(IS MINIMUM DIFFERENT FROM ABSOLUTE MINIMUM?)*

• Upon project completion, roads used for commercial access on public lands would be reclaimed, unless, based on site-specific analysis, the route provides specific benefits for public access and does not contribute to resource conflicts.

• Bury or reroute power lines outside of sage-grouse habitat wherever possible. If power lines cannot be sited outside of sage-grouse habitat, site power lines in the least suitable habitat possible, *(See comments on similar BMPs above).*

• Remove power lines that traverse important sage-grouse habitats when facilities being serviced are no longer in use or when projects are completed.

• Install anti-perching and anti-nesting measures on tall structures, such as power lines.

Travel and Transportation

• Establish speed limits on BLM and Forest Service-administered roads to reduce vehicle/wildlife collisions or design roads to be driven at slower speeds.

• Conduct re*habilitation or reclamation*~~storation~~ of roads, primitive roads, and trails not designated in travel management plans *where such plans exist and have been approved for implementation*. This also includes primitive route/roads that were not designated in wilderness study areas and within lands managed for wilderness characteristics that have been selected for protection.

• When reseeding roads, primitive roads, and trails, use appropriate seed mix~~e~~*tures*~~s~~ and consider the use of transplanted sagebrush in order to meet sage-grouse habitat restoration objectives *(specify source of objectives)*. Where *undesirable*~~existing~~ annual grasses are present, *select* pre-emergent herbicides *may*~~should~~ be used to enhance the effectiveness of any seeding and to also establish islands of desirable species for dispersion.

• Use existing roads, or realignments to access valid existing rights that are not yet developed. If valid existing rights cannot be accessed via existing roads, then any new roads would be constructed to the ~~absolute~~ minimum standard necessary *to support the intended use*.

• Allow no upgrading of existing routes that would change route category (road, primitive road, or trail) or capacity unless the upgrading would have minimal impact on sage-grouse habitat, is necessary for motorist safety, or eliminates the need to construct a new road*, while providing for the intended use*.

• Identify, map, quantify, and evaluate impacts of existing roads, including 2-tracks, in relation to known lek locations and sage-grouse winter ranges.

• Consider the use of speed bumps where appropriate to reduce vehicle speeds near leks, such during oil and gas development. *(might this encourage higher speeds?)*

• Manage on-road travel and OHV use in key grouse areas to avoid disturbance during critical times such as winter and nesting periods.

• Consider road removal, realignment, or seasonal closures where appropriate to avoid degradation of habitat.

• Reclaim closed roads with plant species beneficial to sage-grouse.

Recreation

• Only allow special recreation permits that have *stipulations, which promote* neutral or beneficial effects to sage-grouse and their habitat in sage-grouse habitat management areas.

• Issue special recreation permits with appropriate distance and timing restrictions to minimize impacts to seasonal sage-grouse habitat.

Energy Development and Infrastructure

The Nevada Energy and Infrastructure Development Standards were developed in 2010. We have learned a lot since that time, both about impacts to sage grouse, and about economic impacts should the Infrastructure Development Standards be implemented as written. To adopt these standards by reference makes moot the effort to obtain feedback on State Plan Appendix A.

• Adopt standards outlined in *Nevada Energy and Infrastructure Development Standards to Conserve Greater Sage-grouse Populations and Their Habitats,* April 2010, pgs 25-29. *(Given the statement above this should be deleted.*

Riparian Areas and Wetlands

• A*s a goal* ~~t a minimum~~, all riparian areas and wet meadow brood rearing habitat should meet proper functioning condition (PFC). Where PFC is met, strive to attain reference state vegetation relative to the ecological site description. *Where PFC is not met, emphasize rehabilitation in mitigation plans. This BMP seems out of context.*

Wild Horses and Burros

• Prioritize gathers in sage-grouse habitat, unless removals are necessary in other areas to prevent catastrophic environmental issues.

• Within sage-grouse habitat, develop or amend herd management area (HMAs) plans to incorporate sage-grouse habitat objectives and management considerations for all HMAs. For all HMAs within sage-grouse habitat, prioritize the evaluation of all appropriate management levels based on indicators that address structure/condition/composition of vegetation and measurements specific to achieving sage-grouse habitat objectives.

• When conducting NEPA analysis for wild horse and burro management activities, water developments or other rangeland improvements for wild horses in sage-grouse habitat, address the direct and indirect effects to sage-grouse populations and habitat. Implement any water developments or rangeland improvements using the criteria identified for domestic livestock identified in sage-grouse habitats.

Livestock Grazing and Range Management

• *Where applicable and as part of a ranch management plan, utilize*~~Adopt~~ the Natural Resource Conservation Service (NRCS) Conservation Practice Standards and Specification listed below. In

addition, *utilize* ~~adopt~~ the recommendations additions to the standards developed by NRCS*'s* and NDOW as part of NRCS' Sage-grouse Initiative

- Code 645: Upland Wildlife Habitat Management
- Code 528: Prescribed Grazing
  - Emphasize rest periods when appropriate as part of the grazing management plan and restoration.
- Code 614: Water Facilities
  - Avoid placement where sagebrush cover will be reduced near a lek, in nesting habitat, or winter habitat whenever possible. NDOW recommends structures be at least 1 mile from a lek.
- Code 574: Spring Development
- Code 533: Pumping Plant
  - NDOW recommends the structure should not be placed within 3 miles of a lek to avoid disturbance to nesting sage-grouse.
- Code 642: Water Well
- Code 516: Livestock Pipeline
- Code 410: Grade Stabilization Structure
  - If possible, avoid the installation of these structures during the late summer brood rearing period. NDOW recommends structure placement in mid-September through late November.
- Code 382: Fence
  - If possible, fencing should not be constructed near a lek and should be avoided in winter habitats near ridges. To make a fence more visible, use white tipped metal fence posts, securing flagging or reflectors to the top fence wires, or slide sections of PVC pipe over the top wire *(per Stevenson and Reece 2012)*.

• Remove or modify existing water developments that are having a net negative impact on GRSG habitats.

• Remove, relocate, or modify livestock ponds built in perennial channels that are having a net negative impact on riparian habitat, either directly or indirectly. Development of new livestock ponds should be designed to have neutral or positive impacts to GRSG habitat. *(THIS IS TOO BROAD AND COULD BE REFINED)*

• All troughs should be outfitted with the appropriate type and number of wildlife escape ramps.

Comment [CC5]: In the measures above, they wanted ponds to have steep side slopes.

• All field and district offices should apply BLM IM 2013-094 or similar methodology until superseded related to drought management planning.

• Use aircraft to check livestock in areas where consistent trespass has been noted and access/manpower is difficult to obtain.

Surface Disturbing Activities - General

(This needs to be consistent with above land use requirements)

• During the period specified, manage discretionary surface disturbing activities and uses *within PPMA's* to prevent disturbance to GRSG during life cycle periods. Seasonal protection is identified for the following:

-Seasonal protection within four (4) miles of active GRSG leks from March 1 through June 15 *during lekking hours of 1-hour before sunrise until 10:00 am*;

-Seasonal protection of GRSG *occupied* wintering areas from November 1 through March 31;

-Seasonal protection of GRSG *occupied* brood-rearing habitat from May 15 to August 15.

THERE NEEDS TO BE MODIFICATION TO PROVIDE FOR LONG-TERM CONSTRUCTION AND IN CONSIDERATION OF TOPOGRAPHIC BARRIERS AND FEATURES.

• For any surface-disturbing activities proposed in sagebrush shrublands, the Proponent will conduct clearance surveys for GRSG breeding activity during the GRSG's breeding season before initiating the activities. The surveys must encompass all sagebrush shrublands *within a PPMA* within 3.0 miles of the proposed activities. Three surveys would be conducted every season during pre-planning operations. In areas found to have probable GRSG activity, surveys should continue during project operations. These surveys should be conducted as part of a monitoring program to inform an adaptive management framework for required design features and operations. *(Basis or citation?)*

• Ensure that all authorized ground disturbing projects have vegetation reclamation standards suitable for the site type prior to construction and ensure that reclamation to appropriate GRSG standards are budgeted for.

• Implement appropriate time-of-day and/or time-of year restrictions for future construction and/or maintenance activities in known *PPMA* GRSG habitat to avoid adverse impacts. *(What is an adverse impact? This BMP should be eliminated).*

• Reseed all areas requiring reclamation with a seed mixture appropriate for the soils, climate, and landform of the area to ensure recovery of the ecological processes and habitat features of the potential natural vegetation, and to prevent the invasion of noxious weeds or other exotic invasive species. Long-term monitoring is required to determine success. *(This is redundant to the seasonal protection listed above)*

• Maximize the area of interim reclamation on long-term access roads and well pads including reshaping, topsoiling and revegetating cut and fill slopes.

Miscellaneous

Comment [CC6]: 4 miles is arbutary. I have seen random limits of 2, 3, 3.2, and 4 mile buffer. I have also seen the limit March 1 to June 30. Agencies are not consistent on limits. Also, they need to take into account topography and value of habitat. We cannot just place a 4 mile radius on a map and say "everything within this radius is restricted". There are other factors (e.g., topography, elevation, quality of habitat) that will affect whether sage grouse is even there and if there would be an impact.

Comment [CC7]: What does "seasonal protection" mean? Is this absolutely no development or activity within this time; or is it no activity from 4:00 PM to 10 AM. Basically, with these restrictions, one will be restricted between March 1 to August 15. This will absolutely "shut down" mining (and all other operations). No one can financially afford to operate with such a tight restriction!

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Comment [CC8]: This means you need to do biological surveys three years before you start to permit your operation (which is unfeasible). Implementing this, it would take years (5-6 years?) to permit a small operation! Again, unfeasible.

Comment [CC9]: What is the purpose of these surveys? What do we hope to achieve, or what is the ultimate goal? What will we do with the data? We do not want to do surveys….only to do surveys and collect data? Surveys should only be performed with an objective and purpose (e.g., if surveys find this…then you implement that; if surveys are negative, then you don't perform them again).

Comment [CC10]: Is this in addition to the reclamation bond that is already set??

Comment [CC11]: Time of day, time of year seasonal restirctions should only be set if an impact has been identified. If there is no potential impact, then no seasonal restrictions should be set. A "radius" area where seasonal restrictions apply is arbituary. Due to topography, elevation differences, and habitat quality, an impact may not be proable, even though you are within 3 miles of the lek. Is it 3.2 mile radius from the center of the lek, or center of your project?

Comment [CC12]: What is "long term monitoring"? 2 years, 5 years? 10 years?. Also, I have been hearing that BLM wants people to reclaim using "seedlings" of sagebrush, rather than seeding. Seedlings is really expensive, and labor intensive, and often not successful.

• On BLM and Forest Service-administered Wilderness and Wilderness Study Areas (WSAs), mechanized equipment may be used to protect areas of high resource concerns or values; however, the use of mechanized equipment will be evaluated against potential long-term resource damage. *(DOES NOT THE WILDERNESS ACT PROVIDE FOR THE PROHIBITION OF MECHANIZED EQUIPMENT WITHIN WILDERNESS AREAS?)*

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Natural Resources Conservation Service. Code 642: Conservation Practice Standard for Water Well. Website: http://efotg.sc.egov.usda.gov/references/public/AL/tg642.pdfNatural Resources Conservation Service. Code 516: Conservation Practice Standard for Livestock Pipeline. Website: http://efotg.sc.egov.usda.gov/references/public/AL/tg516.pdf

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Acronym List:

1 BMP: Best Management Practice

2 GRSG: Greater Sage-grouse

3 PGMA: Preliminary General Management Area

4 PPMA: Preliminary Priority Management Area

5 RDF: Required Design Feature

6 ROW: Right-of-way

7 SUA: Special Use Authorization

8 WFDSS: Wildland Fire Decision Support Tree

Appendix A: Required Design Features/ Best Management Practices

Mineral Resources

Fluid Minerals RDFs

Roads - PPMA

• Do not construct new roads when there are existing roads that could be used or upgraded to meet the need.

• Design roads to an appropriate standard, no higher than necessary, to accommodate their intended purpose.

• Locate roads to avoid important areas and habitats.

• Coordinate road construction and use among ROW or SUA holders.

• Where possible, avoid constructing roads within riparian areas and ephemeral drainages.

• Construct road crossings at right angles to ephemeral drainages and stream crossings.

• Establish speed limits on BLM and Forest Service-managed roads to reduce vehicle/wildlife collisions or design roads to be driven at slower speeds.

• Establish trip restrictions (Lyon and Anderson 2003) or minimization through use of telemetry and remote well control (e.g., Supervisory Control and Data Acquisition).

• Do not issue ROWs or SUAs to counties on newly constructed energy development roads, unless for a temporary use consistent with all other terms and conditions included in this document.

• Restrict vehicle traffic to only authorized users on newly constructed routes (using signage, gates, etc.)

• Use dust abatement on roads and pads.

• Close and rehabilitate duplicate roads.

• Cluster disturbances, operations (fracture stimulation, liquids gathering, etc.), and facilities.

Operations - PPMA

• Use directional and horizontal drilling to reduce surface disturbance.

• Place infrastructure in already disturbed locations.

• Apply a phased development approach with concurrent reclamation.

• Place liquid gathering facilities outside of priority areas. Have no tanks at well locations within priority habitat areas to minimize truck traffic and perching and nesting sites for ravens and raptors.

• Pipelines must be under or immediately adjacent to the road (Bui et al. 2010).

• Use remote monitoring techniques for production facilities and develop a plan to reduce the frequency of vehicle use (Lyon and Anderson 2003).

• Restrict the construction of tall facilities and fences to the minimum number and amount needed.

• Site and/or minimize linear ROWs or SUAs to reduce disturbance to sagebrush habitats.

• Place new utility developments (power lines, pipelines, etc.) and transportation routes in existing utility or transportation corridors.

• Bury distribution power lines.

• Co-locate power lines, flow lines, and small pipelines under or immediately adjacent to existing roads (Bui et al. 2010).

• Design or site permanent structures which create movement (e.g., pump jack) to minimize impacts to GRSG.

• Cover (e.g., fine mesh netting or use other effective techniques) all drilling and production pits and tanks regardless of size to reduce GRSG mortality.

• Equip tanks and other above-ground facilities with structures or devices that discourage nesting of raptors and corvids.

• Control the spread and effects of non-native plant species (Evangelista et al. 2011) (e.g., by washing vehicles and equipment, minimize unnecessary surface disturbance). *All projects within Sage-grouse Management Areas should have a noxious weed management plan in place prior to construction and operations.*

• Use only closed-loop systems for drilling operations and no reserve pits.

• Restrict pit and impoundment construction to reduce or eliminate threats from West Nile virus (Doherty 2007).

• Remove or re-inject produced water to reduce habitat for mosquitoes that vector West Nile virus. If surface disposal of produced water continues, use the following steps for reservoir design to limit favorable mosquito habitat:

  – Overbuild size of ponds for muddy and non-vegetated shorelines.

  – Build steep shorelines to decrease vegetation and increase wave actions.

  – Avoid flooding terrestrial vegetation in flat terrain or low lying areas.

– Construct dams or impoundments that restrict down slope seepage or overflow.

– Line the channel where discharge water flows into the pond with crushed rock.

– Construct spillway with steep sides and line it with crushed rock.

– Treat waters with larvicides to reduce mosquito production where water occurs on the surface.

• Limit noise to less than 10 decibels above ambient measures (20-24 dBA) at sunrise at the ~~perimeter~~ of a lek during active lek season (Patricelli et al. 2010, Blickley et al. In preparation).

Comment [R1]: What does "perimeter" mean? Should this be something more definitive (i.e. within 4-miles)?

• Require noise shields when drilling during the lek, nesting, brood-rearing, or wintering season.

• Fit transmission towers with anti-perch devices (Lammers and Collopy 2007).

• Require GRSG-safe fences (e.g. marked fences).

• Locate new compressor stations outside priority habitats and design them to reduce noise that may be directed towards priority habitat.

• Clean up refuse (Bui et al. 2011).

• Locate man camps outside of priority habitats.

Reclamation – PPMA and PGMA

• Include objectives for ensuring habitat restoration to meet GRSG habitat needs in reclamation practices/sites (Pyke 2011). Address post reclamation management in reclamation plan such that goals and objectives are to protect and improve GRSG habitat needs.

• Maximize the area of interim reclamation on long-term access roads and well pads, including reshaping, topsoiling and revegetating cut-and-fill slopes.

• Restore disturbed areas at final reclamation to the pre-disturbance landforms and desired plant community.

• Irrigate interim reclamation if necessary for establishing seedlings more quickly.

• Utilize mulching techniques to expedite reclamation and to protect soils.

Roads - PGMA

• Design roads to an appropriate standard no higher than necessary to accommodate their intended purpose.

• Do not construct new roads when there are existing roads that could be used or upgraded to meet the need.

• Where possible, avoid constructing roads within riparian areas and ephemeral drainages.

• Do not issue ROWs or SUAs to counties on energy development roads, unless for a temporary use consistent with all other terms and conditions included in this document.

• Establish speed limits to reduce vehicle/wildlife collisions or design roads to be driven at slower speeds.

• Coordinate road construction and use among ROW or SUA holders.

• Construct road crossings at right angles to ephemeral drainages and stream crossings.

• Use dust abatement practices on roads and pads.

• Close and reclaim duplicate roads by restoring original landform and establishing desired vegetation.

Operations – PGMA

• Cluster disturbances, operations (fracturing stimulation, liquids gathering, etc.), and facilities.

• Use directional and horizontal drilling to reduce surface disturbance.

• Clean up refuse (Bui et al. 2010).

• Restrict the construction of tall facilities and fences to the minimum number and amount needed.

• Cover (e.g., fine mesh netting or use other effective techniques) all drilling and production pits and tanks regardless of size to reduce GRSG mortality.

• Equip tanks and other above-ground facilities with structures or devices that discourage nesting by raptors or corvids.

• Use remote monitoring techniques for production facilities and develop a plan to reduce vehicular traffic frequency of vehicle use.

• Control the spread and effects from non-native plant species. (e.g., by washing vehicles and equipment.)

• Restrict pit and impoundment construction to reduce or eliminate augmenting threats from West Nile virus (Doherty 2007).

Locatable Minerals BMPs

Roads – PPMA and PGMA

• Design roads to an appropriate standard no higher than necessary to accommodate their intended purposes.

• Locate roads to avoid important areas and habitats.

• Coordinate road construction and use among ROW or SUA holders.

• Construct road crossing at right angles to ephemeral drainages and stream crossings.

• Establish speed limits on BLM and Forest Service managed roads to reduce vehicle/wildlife collisions or design roads to be driven at slower speeds.

• Do not issue ROWs or SUAs to counties on mining development roads, unless for a temporary use consistent with all other terms and conditions including this document.

• Restrict vehicle traffic to only authorized users on newly constructed routes (e. g., use signing, gates, etc.).

• Use dust abatement practices on roads and pads.

• Close and reclaim duplicate roads, by restoring original landform and establishing desired vegetation.

• Do not construct new roads when there are existing roads that could be used or upgraded to meet the need.

• Where possible, avoid constructing roads within riparian areas and ephemeral drainages

Operations – PPMA and PGMA

• Cluster disturbances associated with operations and facilities as close as possible.

• Place infrastructure in already disturbed locations where the habitat has not been restored.

• Restrict the construction of tall facilities and fences to the minimum number and amount needed.

• Site and/or minimize linear ROWs or SUAs to reduce disturbance to sagebrush habitats.

• Place new utility developments (power lines, pipelines, etc.) and transportation routes in existing utility or transportation corridors.

• Bury power lines.

• Cover (e.g., fine mesh netting or use other effective techniques) all pits and tanks regardless of size to reduce GRSG mortality.

• Equip tanks and other above ground facilities with structures or devices that discourage nesting of raptors and corvids.

• Control the spread and effects of non-native plant species (Gelbard and Belnap 2003, Bergquist et al. 2007).

• Restrict pit and impoundment construction to reduce or eliminate threats from West Nile virus (Doherty 2007). • Require GRSG-safe fences around sumps.

• Clean up refuse (Bui et al. 2010).

• Locate man camps outside of priority GRSG habitats.

Reclamation – PPMA and PGMA

• Include restoration objectives to meet GRSG habitat needs in reclamation practices/sites.

• Address post reclamation management in reclamation plans such that goals and objectives are to protect and improve GRSG habitat needs.

• Maximize the area of interim reclamation on long-term access roads and well pads including reshaping, topsoiling and revegetating cut and fill slopes, and investigating the possibility of establishing fuel breaks.

• Restore disturbed areas at final reclamation to pre-disturbance landform and desired plant community

• Irrigate interim reclamation as necessary during dry periods.

• Utilize mulching techniques to expedite reclamation.

Fuels and Fire Management

- *This sections seems very light on post-fire rehabilitation. Common themes in a new subsection should include:*

1. *Reseeding key habitat as soon as possible (i.e. fall) following fire,*
2. *Use of native and non-native species to maintain site ecological function based on pre-burn conditions and anticipated threat of invasive and noxious weed establishment (use ecological site descriptions and State-and-Transition Modeling if available,*
3. *Post-fire monitoring and brush planting if required due to lack of native seed sources*

    - *It seems like there should be a similar section for vegetation management.*

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• Fire and fuels operations should focus on protecting and enhancing occupied GRSG habitats. This includes taking into account the feasibility and cost of future rehabilitation efforts during WFDSS planning and general fire operations in all occupied GRSG habitats

Fuels Management

• Where applicable, design fuels treatment objective to protect existing sagebrush ecosystems, modify fire behavior, restore *ecological function* ~~native plants~~, and create landscape patterns which most benefit GRSG habitat.

• Provide training to fuels treatment personnel on GRSG biology, habitat requirements, and identification of areas used locally.

• Use burning prescriptions that minimize undesirable effects on vegetation or soils (e.g., minimize mortality of desirable perennial plant species and reduce risk of annual grass invasion).

• Ensure proposed sagebrush treatments are planned with full interdisciplinary input pursuant to NEPA and coordination with NDOW and SETT, and that treatment acreage is conservative in the context of surrounding GRSG seasonal habitats and landscape.

• Where appropriate, ensure that treatments are configured in a manner that promotes use by GRSG.

• Where applicable, incorporate roads and natural fuel breaks into fuel break design.• Where appropriate and allowable, utilize livestock grazing as a tool to reduce fuels and control non-native species.

• Power-wash all vehicles and equipment involved in fuels management activities prior to entering the area to minimize the introduction of undesirable and/or invasive plant species.

• Design vegetation treatments in areas of high fire frequency which facilitate firefighter safety, reduce the potential acres burned, and reduce the fire risk to GRSG habitat. Additionally, develop maps for GRSG habitat which spatially display existing fuels treatments that can be used to assist suppression activities.

• For implementing specific GRSG habitat restoration projects in annual grasslands, first give priority to sites which are adjacent to or surrounded by PPMA or that reestablish continuity between priority habitats. Annual grasslands are a second priority for ~~restoration~~ *rehabilitation* when the sites are not adjacent to PPMA, but within two miles of PPMA. The third priority for annual grassland habitat restoration projects are sites beyond two miles of PPMA. The intent is to focus restoration outward from existing, intact habitat.

• As funding and logistics permit, ~~restore~~ *rehabilitate* annual grasslands to a species composition characterized by perennial grasses, forbs, and shrubs *with the goal of establishing a functional ecological site based on state-and-transition modeling and ecological site descriptions.* ~~or one of that referenced in land use planning documentation~~.

• Emphasize the use of native plant species *where appropriate based on the probability of success*, recognizing that non-native species may be necessary depending on the availability of native seed and prevailing site conditions.

• *Based on ecological site descriptions,* ~~R~~*r*emove ~~standing and~~ encroaching trees within at least ~~110 yards~~ *4 miles* of occupied GRSG leks and other *limiting* habitats (e.g., nesting, wintering and brood rearing) to reduce the availability of perch sites for avian predators, as resources permit.

Comment [R2]: Full restoration of annual grassland dominated sites may be next to impossible. Rehabilitation to a functional ecological state would be a more logical goal. These projects should also be prioritized based on probability of success based on current condition, ecological site and state-and-transition modeling if available.

Comment [R3]: What is the significance of 110 yards? If the focus is on encroaching trees, then the lek offset should be consistent with disturbance offsets at 4 miles. If an tree ecological site is located within that buffer, then it doesn't make sense to remove those trees.

Comment [R4]: By adding "limiting" it seems to give a higher priority for treatment planning than simply treating all types of habitat.

• Protect wildland areas from wildfire originating on private lands, infrastructure corridors, and recreational areas.

• Reduce the risk of vehicle- or human-caused wildfires and the spread of invasive species by installing fuel breaks and/or planting perennial vegetation (e.g., green-strips) paralleling road rights-of-way. Strategically place and maintain pre-treated strips/areas (e.g., mowing, herbicide application, etc.) to aid in controlling wildfire, should wildfire occur near PPMA or important restoration areas (such as where investments in restoration have already been made).

Fire Management

• Compile District/Forest level information into state-wide GRSG tool boxes. Tool boxes will contain maps, listing of *state and local* resource advisors, contact information, local guidance, and other relevant information for each District/Forest, which will be aggregated into a state-wide document.

• Provide localized maps to dispatch offices and extended attack incident commanders for use in prioritizing wildfire suppression resources and designing suppression tactics.

• Assign a *state and/or local* resource advisor with GRSG expertise, or who has access to GRSG expertise, to all extended attack fires in or near GRSG habitat. Prior to the fire season, provide training to GRSG resource advisors on wildfire suppression organization, objectives, tactics, and procedures to develop a cadre of qualified individuals. Involve state wildlife agency expertise in fire operations through:

  – instructing resource advisors during preseason trainings;

  – qualification as resource advisors;

  – coordination with resource advisors during fire incidents;

  – contributing to incident planning with information such as habitat features or other key data useful in fire decision making.

• On critical fire weather days, pre-position additional fire suppression resources to optimize a quick and efficient response in GRSG habitat areas.

• During periods of multiple fires, ensure line officers*, in consultation with state and local resource advisors* are involved in setting priorities.

• To the extent possible, locate wildfire suppression facilities (i.e., base camps, spike camps, drop points, staging areas, heli-bases, etc.) in areas where physical disturbance to GRSG habitat can be minimized. These include disturbed areas, grasslands, near roads/trails or in other areas where there is existing disturbance or minimal sagebrush cover.

• Power-wash all firefighting vehicles, to the extent possible, including engines, water tenders, personnel vehicles, and all-terrain vehicles (ATV) prior to deploying in or near GRSG habitat areas to minimize

noxious weed spread. Minimize unnecessary cross-country vehicle travel during fire operations in GRSG habitat.

• Minimize burnout operations in key GRSG habitat areas by constructing direct fire line whenever safe and practical to do so.

• Utilize retardant, mechanized equipment, and other available resources to minimize burned acreage during initial attack.

• As safety allows, conduct mop-up where the black adjoins unburned islands, dog legs, or other habitat features to minimize sagebrush loss.

• Adequately document fire operation activities in GRSG habitat for potential follow-up coordination activities.

- *Coordinate and utilize local fire suppression resources to the maximum extent possible.*

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Lands and Realty

Leases and Permits

• Only allow permits and leases that have neutral or beneficial effects sage-grouse and their habitat in sage-grouse habitat management areas.

Right-of-Ways (ROWs)

• Work with existing rights-of-way holders in an attempt to install perch guards on all poles where existing utility poles are located within ~~3~~*4* miles of known leks, where necessary. Stipulate these requirements at grant renewal.

Comment [R5]: Lek "offsets" should be consistent. This document has used "perimeter of leks", "110-yards from leks" and now "3 miles of known leks". The "effective" offset should be kept consistent, and my suggestion based on recent literature should be 4-miles.

• Use existing utility corridors and consolidate rights-of-way to reduce habitat loss, degradation, and fragmentation. Whenever possible, install new power lines within existing utility corridors.

• Where GRSG conservation opportunities exist, BLM field offices and Forests should work in cooperation with rights-of-way holders to conduct maintenance and operation activities, authorized under an approved ROW grant, to avoid and minimize effect on GRSG habitat.

• When renewing or amending ROWs, assess the impacts of ongoing use of the ROW to GRSG habitat and minimize such impacts to the extent allowed by law.

• Work with applicants to minimize habitat loss, fragmentation, and direct and indirect effects to GRSG and its habitat.

• Conduct pre-application meetings with the BLM or Forest Service and SETT for all new ROW proposals consistent with the ROW regulations (43 CFR 2804.10) and consistent with current renewable energy ROW policy guidance (WO-IM-2011-061, issued February, 2011). Assess the impact of the proposed

ROW on GRSG and its habitat, and implement the following: Ensure that reasonable alternatives for siting the ROW outside of GRSG habitat or within a BLM designated utility corridor are considered and analyzed in the NEPA document; and identify technically feasible best management practices, conditions, (e.g., siting, burying power lines) that may be implemented in order to eliminate or minimize impacts.

• Maximize the area of interim reclamation on long-term access roads and well pads including reshaping, topsoiling and revegetating cut and fill slopes.

• Authorize ROWs by applying appropriate BMPs (BLM Wind Energy Development EIS, June 2005), land use restrictions, stipulations, and mitigation measures. The BLM will document the reasons for its determination and require the ROW holder to implement these measures to minimize impacts to sage grouse habitat.

• Evaluate and take advantage of opportunities to remove, bury, or modify existing power lines within priority sage-grouse habitat areas.

• Where existing leases or rights-of-way (ROWs) have had some level of development (road, fence, well, etc.) and are no longer in use, reclaim the site by removing these features and restoring the habitat.

• Within designated ROW corridors encumbered by existing ROW authorizations: new ROWs should be co-located to the extent practical and feasible with the entire footprint of the proposed project within the existing disturbance associated with the authorized ROWs.

• Subject to valid, existing rights, where new ROWs associated with valid existing rights are required, co-locate new ROWs within existing ROWs or where it best minimizes sage-grouse impacts. Use existing roads, or realignments as described above, to access valid existing rights that are not yet developed. If valid existing rights cannot be accessed via existing roads, then build any new road constructed to the absolute minimum standard necessary.

• Upon project completion, roads used for commercial access on public lands would be reclaimed, unless, based on site-specific analysis, the route provides specific benefits for public access and does not contribute to resource conflicts.

• Bury or reroute power lines outside of sage-grouse habitat wherever possible. If power lines cannot be sited outside of sage-grouse habitat, site power lines in the least suitable habitat possible,

• Remove power lines that traverse important sage-grouse habitats when facilities being serviced are no longer in use or when projects are completed.

• Install anti-perching and anti-nesting measures on tall structures, such as power lines.

Travel and Transportation

• Establish speed limits on BLM and Forest Service-administered roads to reduce vehicle/wildlife collisions or design roads to be driven at slower speeds.

• Conduct restoration of roads, primitive roads, and trails not designated in travel management plans. This also includes primitive route/roads that were not designated in wilderness study areas and within lands managed for wilderness characteristics that have been selected for protection.

• When reseeding roads, primitive roads, and trails, use appropriate seed mixes and consider the use of transplanted sagebrush in order to meet sage-grouse habitat restoration objectives. Where existing annual grasses are present, pre-emergent herbicides should be used to enhance the effectiveness of any seeding and to also establish islands of desirable species for dispersion.

• Use existing roads, or realignments to access valid existing rights that are not yet developed. If valid existing rights cannot be accessed via existing roads, then any new roads would be constructed to the absolute minimum standard necessary.

• Allow no upgrading of existing routes that would change route category (road, primitive road, or trail) or capacity unless the upgrading would have minimal impact on sage-grouse habitat, is necessary for motorist safety, or eliminates the need to construct a new road.

• Identify, map, quantify, and evaluate impacts of existing roads, including 2-tracks, in relation to known lek locations and sage-grouse winter ranges.

• Consider the use of speed bumps where appropriate to reduce vehicle speeds near leks, such during oil and gas development.

• Manage on-road travel and OHV use in key grouse areas to avoid disturbance during critical times such as winter and nesting periods.

• Consider road removal, realignment, or seasonal closures where appropriate to avoid degradation of habitat.

• Reclaim closed roads with plant species beneficial to sage-grouse.

Recreation

• Only allow special recreation permits that have neutral or beneficial effects to sage-grouse and their habitat in sage-grouse habitat management areas.

• Issue special recreation permits with appropriate distance and timing restrictions to minimize impacts to seasonal sage-grouse habitat.

- *Develop trail mapping, and educational campaigns to reduce recreational impacts on Sage-grouse.*

- *Where practical, relocated trails in key grouse habitat (i.e. within 4-miles of known leks, riparian areas, etc.)*

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Energy Development and Infrastructure

• Adopt standards outlined in *Nevada Energy and Infrastructure Development Standards to Conserve Greater Sage-grouse Populations and Their Habitats,* April 2010, pgs 25-29.

Riparian Areas and Wetlands

• At a minimum, all riparian areas and wet meadow brood rearing habitat should meet proper functioning condition (PFC). ~~Where PFC is met, strive to attain reference state vegetation relative to the ecological site description.~~

Comment [R6]: This will be a very difficult goal to attain, and in many cases PFC cannot be met due to acts of nature (i.e. high flow / flood events, landslides, etc. Perhaps a minimum goal that makes more sense is those riparian areas that are not in PFC, should have an improving trend.

Comment [R7]: Attaining a "reference state" should never be a goal. Given land use patterns over the past decade, it is very difficult to attain a reference state, and it may not be the best for the grouse. The same principles of ecological site descriptions and state-and-transition models should be used here.

Wild Horses and Burros

• Prioritize gathers in sage-grouse habitat, unless removals are necessary in other areas to prevent catastrophic environmental issues. *As soon as the population is estimated to exceed high AML, gather to low AML and implement fertility control.*

• Within sage-grouse habitat, develop or amend herd management area (HMAs) plans to incorporate sage-grouse habitat objectives and management considerations for all HMAs. For all HMAs within sage-grouse habitat, prioritize the evaluation of all appropriate management levels based on indicators that address structure/condition/composition of vegetation and measurements specific to achieving sage-grouse habitat objectives.

• When conducting NEPA analysis for wild horse and burro management activities, water developments or other rangeland improvements for wild horses in sage-grouse habitat, address the direct and indirect effects to sage-grouse populations and habitat. Implement any water developments or rangeland improvements using the criteria identified for domestic livestock identified in sage-grouse habitats.

Livestock Grazing and Range Management

• Adopt the Natural Resource Conservation Service (NRCS) Conservation Practice Standards and Specification listed below. In addition, adopt the recommendations additions to the standards developed by NRCS and NDOW as part of NRCS' Sage-grouse Initiative

- Code 645: Upland Wildlife Habitat Management
- Code 528: Prescribed Grazing
    - Emphasize rest periods when appropriate as part of the grazing management plan and restoration.
- Code 614: Water Facilities

- Avoid placement where sagebrush cover will be reduced near a lek, in nesting habitat, or winter habitat whenever possible. NDOW recommends structures be at least 1 mile from a lek.

- Code 574: Spring Development

- Code 533: Pumping Plant

  - NDOW recommends the structure should not be placed within 3 miles of a lek to avoid disturbance to nesting sage-grouse.

- Code 642: Water Well

- Code 516: Livestock Pipeline

- Code 410: Grade Stabilization Structure

  - If possible, avoid the installation of these structures during the late summer brood rearing period. NDOW recommends structure placement in mid-September through late November.

- Code 382: Fence

  - If possible, fencing should not be constructed near a lek and should be avoided in winter habitats near ridges. To make a fence more visible, use white tipped metal fence posts, securing flagging or reflectors to the top fence wires, or slide sections of PVC pipe over the top wire.

• ~~Remove~~ *Relocated* or modify existing water developments that are having a net negative impact on GRSG habitats. *Any changes to existing water developments must be conducted in accordance with State Water Law, and in close consultation with the water right owner in order to avoid a "taking" of private property water rights.*

• Remove, relocate, or modify livestock ponds built in perennial channels that are having a net negative impact on riparian habitat, either directly or indirectly. Development of new livestock ponds should be designed to have neutral or positive impacts to GRSG habitat.

• All troughs should be outfitted with the appropriate type and number of wildlife escape ramps.

• All field and district offices should apply BLM IM 2013-094 or similar methodology until superseded related to drought management planning.

• Use aircraft to check livestock in areas where consistent trespass has been noted and access/manpower is difficult to obtain.

Surface Disturbing Activities - General

• During the period specified, manage discretionary surface disturbing activities and uses to prevent disturbance to GRSG during life cycle periods. Seasonal protection is identified for the following:

-Seasonal protection within four (4) miles of active GRSG leks from March 1 through June 15;
-Seasonal protection of GRSG wintering areas from November 1 through March 31;
-Seasonal protection of GRSG brood-rearing habitat from May 15 to August 15.

• For any surface-disturbing activities proposed in sagebrush shrublands, the Proponent will conduct clearance surveys for GRSG breeding activity during the GRSG's breeding season before initiating the activities. The surveys must encompass all sagebrush shrublands within 3.0 miles of the proposed activities. Three surveys would be conducted every season during pre-planning operations. In areas found to have probable GRSG activity, surveys should continue during project operations. These surveys should be conducted as part of a monitoring program to inform an adaptive management framework for required design features and operations.

Comment [R8]: Would this be done per the conditions of the MOU the SETT, NDOW and Feds are developing? If so, it may make sense to reference that document.

• Ensure that all authorized ground disturbing projects have vegetation reclamation standards suitable for the site type prior to construction and ensure that reclamation to appropriate GRSG standards are budgeted for.

• Implement appropriate time-of-day and/or time-of year restrictions for future construction and/or maintenance activities in known GRSG habitat to avoid adverse impacts.

• Reseed all areas requiring reclamation with a seed mixture appropriate for the soils, climate, and landform of the area to ensure recovery of the ecological processes and habitat features of the potential natural vegetation, and to prevent the invasion of noxious weeds or other exotic invasive species. Long-term monitoring is required to determine success.

Comment [R9]: This language seems to be about the best in regards to reclamation. This may be appropriate to use in terms of post-fire rehabilitation efforts as well as riparian rehabilitation discussed in previous sections.

• Maximize the area of interim reclamation on long-term access roads and well pads including reshaping, topsoiling and revegetating cut and fill slopes.

Miscellaneous

• On BLM and Forest Service-administered Wilderness and Wilderness Study Areas (WSAs), mechanized equipment may be used to protect *or rehabilitate* areas of high resource concerns or values; however, the use of mechanized equipment will be evaluated against potential long-term resource damage.

Comment [R10]: Rehabilitation in WAs / WSAs should be a MUST. There are plenty of riparian areas, old burns, etc. that could use rehabilitation!

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Natural Resources Conservation Service. Code 614: Conservation Practice Standard for Watering Facility.
Website: http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs143_025623.pdf

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Natural Resources Conservation Service. Code 533: Conservation Practice Standard for Pumping Plant. Website: http://efotg.sc.egov.usda.gov/references/public/MN/533mn.pdf

Natural Resources Conservation Service. Code 642: Conservation Practice Standard for Water Well. Website: http://efotg.sc.egov.usda.gov/references/public/AL/tg642.pdfNatural Resources Conservation Service. Code 516: Conservation Practice Standard for Livestock Pipeline. Website: http://efotg.sc.egov.usda.gov/references/public/AL/tg516.pdf

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Acronym List:

BMP: Best Management Practice

GRSG: Greater Sage-grouse

PGMA: Preliminary General Management Area

PPMA: Preliminary Priority Management Area

RDF: Required Design Feature

ROW: Right-of-way

SUA: Special Use Authorization

WFDSS: Wildland Fire Decision Support Tree

Appendix A: Required Design Features/ Best Management Practices

Mineral Resources

Fluid Minerals RDFs

Roads - PPMA

• Do not construct new roads when there are existing roads that could be used or upgraded to meet the need.

• Design roads to an appropriate standard, no higher than necessary, to accommodate their intended purpose.

• Locate roads to avoid important areas and habitats.

• Coordinate road construction and use among ROW or SUA holders.

• Where possible, avoid constructing roads within riparian areas and ephemeral drainages.

• Construct road crossings at right angles to ephemeral drainages and stream crossings.

• ~~Establish speed limits on BLM and Forest Service managed roads~~ Work with local government to enforce speed limits to reduce vehicle/wildlife collisions or design roads to be driven at slower speeds.

• Establish trip restrictions (Lyon and Anderson 2003) or minimization through use of telemetry and remote well control (e.g., Supervisory Control and Data Acquisition).

• Do not issue ROWs or SUAs to counties on newly constructed energy development roads, unless for a temporary use consistent with all other terms and conditions included in this document.

• Restrict vehicle traffic to only authorized users on newly constructed routes (using signage, gates, etc.)

• Use dust abatement on roads and pads.

• Close and rehabilitate duplicate roads.

• Cluster disturbances, operations (fracture stimulation, liquids gathering, etc.), and facilities.

Operations - PPMA

• Use directional and horizontal drilling to reduce surface disturbance.

• Place infrastructure in already disturbed locations.

• Apply a phased development approach with concurrent reclamation.

• Place liquid gathering facilities outside of priority areas. Have no tanks at well locations within priority habitat areas to minimize truck traffic and perching and nesting sites for ravens and raptors.

• Pipelines must be under or immediately adjacent to the road (Bui et al. 2010).

• Use remote monitoring techniques for production facilities and develop a plan to reduce the frequency of vehicle use (Lyon and Anderson 2003).

• Restrict the construction of tall facilities and fences to the minimum number and amount needed.

• Site and/or minimize linear ROWs or SUAs to reduce disturbance to sagebrush habitats.

• Place new utility developments (power lines, pipelines, etc.) and transportation routes in existing utility or transportation corridors.

• Bury distribution power lines *when disturbance would be less impact than overhead lines would create*.

Comment [MSOffice1]:

• Co-locate power lines, flow lines, and small pipelines under or immediately adjacent to existing roads (Bui et al. 2010).

• Design or site permanent structures which create movement (e.g., pump jack) to minimize impacts to GRSG.

• Cover (e.g., fine mesh netting or use other effective techniques) all drilling and production pits and tanks regardless of size to reduce GRSG mortality.

• Equip tanks and other above-ground facilities with structures or devices that discourage nesting of raptors and corvids.

• Control the spread and effects of non-native plant species (Evangelista et al. 2011) (e.g., by washing vehicles and equipment, minimize unnecessary surface disturbance).

• Use only closed-loop systems for drilling operations and no reserve pits.

• Restrict pit and impoundment construction to reduce or eliminate threats from West Nile virus (Doherty 2007).

• Remove or re-inject produced water to reduce habitat for mosquitoes that vector West Nile virus. If surface disposal of produced water continues, use the following steps for reservoir design to limit favorable mosquito habitat:

  – Overbuild size of ponds for muddy and non-vegetated shorelines.

  – Build steep shorelines to decrease vegetation and increase wave actions.

  – Avoid flooding terrestrial vegetation in flat terrain or low lying areas.

  – Construct dams or impoundments that restrict down slope seepage or overflow.

– Line the channel where discharge water flows into the pond with crushed rock.

– Construct spillway with steep sides and line it with crushed rock.

– Treat waters with larvicides to reduce mosquito production where water occurs on the surface.

• Limit noise to less than 10 decibels above ambient measures (20-24 dBA) at sunrise at the perimeter of a lek during active lek season (Patricelli et al. 2010, Blickley et al. In preparation).

• Require noise shields when drilling during the lek, nesting, brood-rearing, or wintering season.

• Fit transmission towers with anti-perch devices (Lammers and Collopy 2007).

• Require GRSG-safe fences (e.g. marked fences). *All fences should be constructed according to NRCS Sage Grouse Initiative code 382 and be recognized as an official fence in Nevada per NRS.*

Comment [MSOffice2]:

• Locate new compressor stations outside priority habitats and design them to reduce noise that may be directed towards priority habitat.

• Clean up refuse (Bui et al. 2011).

• Locate man camps outside of priority habitats.

Reclamation – PPMA and PGMA

• Include objectives for ensuring habitat restoration to meet GRSG habitat needs in reclamation practices/sites (Pyke 2011). Address post reclamation management in reclamation plan such that goals and objectives are to protect and improve GRSG habitat needs.

• Maximize the area of interim reclamation on long-term access roads and well pads, including reshaping, topsoiling and revegetating cut-and-fill slopes.

• Restore disturbed areas at final reclamation to the pre-disturbance landforms and desired plant community.

• Irrigate interim reclamation if necessary for establishing seedlings more quickly.

• Utilize mulching techniques to expedite reclamation and to protect soils.

Roads - PGMA

• Design roads to an appropriate standard no higher than necessary to accommodate their intended purpose.

• Do not construct new roads when there are existing roads that could be used or upgraded to meet the need.

• Where possible, avoid constructing roads within riparian areas and ephemeral drainages.

• Do not issue ROWs or SUAs to counties on energy development roads, unless for a temporary use consistent with all other terms and conditions included in this document.

~~• Establish speed limits to reduce vehicle/wildlife collisions or design roads to be driven at slower speeds.~~

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• Coordinate road construction and use among ROW or SUA holders.

• Construct road crossings at right angles to ephemeral drainages and stream crossings.

• Use dust abatement practices on roads and pads.

• Close and reclaim duplicate roads by restoring original landform and establishing desired vegetation.

Operations – PGMA

• Cluster disturbances, operations (fracturing stimulation, liquids gathering, etc.), and facilities.

• Use directional and horizontal drilling to reduce surface disturbance.

• Clean up refuse (Bui et al. 2010).

• Restrict the construction of tall facilities and fences to the minimum number and amount needed.

• Cover (e.g., fine mesh netting or use other effective techniques) all drilling and production pits and tanks regardless of size to reduce GRSG mortality.

• Equip tanks and other above-ground facilities with structures or devices that discourage nesting by raptors or corvids.

• Use remote monitoring techniques for production facilities and develop a plan to reduce vehicular traffic frequency of vehicle use.

• Control the spread and effects from non-native plant species. (e.g., by washing vehicles and equipment.)

• Restrict pit and impoundment construction to reduce or eliminate augmenting threats from West Nile virus (Doherty 2007).

Locatable Minerals BMPs

Roads – PPMA and PGMA

• Design roads to an appropriate standard no higher than necessary to accommodate their intended purposes.

• Locate roads to avoid important areas and habitats.

• Coordinate road construction and use among ROW or SUA holders.

• Construct road crossing at right angles to ephemeral drainages and stream crossings.

• Establish speed limits on BLM and Forest Service managed roads to reduce vehicle/wildlife collisions or design roads to be driven at slower speeds.

• Do not issue ROWs or SUAs to counties on mining development roads, unless for a temporary use consistent with all other terms and conditions including this document.

• Restrict vehicle traffic to only authorized users on newly constructed routes (e. g., use signing, gates, etc.).

• Use dust abatement practices on roads and pads.

• Close and reclaim duplicate roads, by restoring original landform and establishing desired vegetation.

• Do not construct new roads when there are existing roads that could be used or upgraded to meet the need.

• Where possible, avoid constructing roads within riparian areas and ephemeral drainages

Operations – PPMA and PGMA

• Cluster disturbances associated with operations and facilities as close as possible.

• Place infrastructure in already disturbed locations where the habitat has not been restored.

• Restrict the construction of tall facilities and fences to the minimum number and amount needed.

• Site and/or minimize linear ROWs or SUAs to reduce disturbance to sagebrush habitats.

• Place new utility developments (power lines, pipelines, etc.) and transportation routes in existing utility or transportation corridors.

• Bury power lines.

• Cover (e.g., fine mesh netting or use other effective techniques) all pits and tanks regardless of size to reduce GRSG mortality.

• Equip tanks and other above ground facilities with structures or devices that discourage nesting of raptors and corvids.

• Control the spread and effects of non-native plant species (Gelbard and Belnap 2003, Bergquist et al. 2007).

• Restrict pit and impoundment construction to reduce or eliminate threats from West Nile virus (Doherty 2007). • Require GRSG-safe fences around sumps.

• Clean up refuse (Bui et al. 2010).

• Locate man camps outside of priority GRSG habitats.

Reclamation – PPMA and PGMA

• Include restoration objectives to meet GRSG habitat needs in reclamation practices/sites.

• Address post reclamation management in reclamation plans such that goals and objectives are to protect and improve GRSG habitat needs.

• Maximize the area of interim reclamation on long-term access roads and well pads including reshaping, topsoiling and revegetating cut and fill slopes, and investigating the possibility of establishing fuel breaks.

• Restore disturbed areas at final reclamation to pre-disturbance landform and desired plant community

• Irrigate interim reclamation as necessary during dry periods.

• Utilize mulching techniques to expedite reclamation.

Fuels and Fire Management

• Fire and fuels operations should focus on protecting and enhancing occupied GRSG habitats. This includes taking into account the feasibility and cost of future rehabilitation efforts during WFDSS planning and general fire operations in all occupied GRSG habitats

Fuels Management

• Where applicable, design fuels treatment objective to protect existing sagebrush ecosystems, modify fire behavior, restore native plants, and create landscape patterns which most benefit GRSG habitat.

• Provide training to fuels treatment personnel on GRSG biology, habitat requirements, and identification of areas used locally.

• Use burning prescriptions that minimize undesirable effects on vegetation or soils (e.g., minimize mortality of desirable perennial plant species and reduce risk of annual grass invasion).

• Ensure proposed sagebrush treatments are planned with full interdisciplinary input pursuant to NEPA and coordination with NDOW and SETT, and that treatment acreage is conservative in the context of surrounding GRSG seasonal habitats and landscape.

• Where appropriate, ensure that treatments are configured in a manner that promotes use by GRSG.

• Where applicable, incorporate roads and natural fuel breaks into fuel break design.

• Where appropriate and allowable, utilize livestock grazing as a tool to reduce fuels and control non-native species.

• Power-wash all vehicles and equipment involved in fuels management activities prior to entering the area to minimize the introduction of undesirable and/or invasive plant species.

• Design vegetation treatments in areas of high fire frequency which facilitate firefighter safety, reduce the potential acres burned, and reduce the fire risk to GRSG habitat. Additionally, develop maps for GRSG habitat which spatially display existing fuels treatments that can be used to assist suppression activities.

• For implementing specific GRSG habitat restoration projects in annual grasslands, first give priority to sites which are adjacent to or surrounded by PPMA or that reestablish continuity between priority habitats. Annual grasslands are a second priority for restoration when the sites are not adjacent to PPMA, but within two miles of PPMA. The third priority for annual grassland habitat restoration projects are sites beyond two miles of PPMA. The intent is to focus restoration outward from existing, intact habitat.

• As funding and logistics permit, restore annual grasslands to a species composition characterized by perennial grasses, forbs, and shrubs or one of that referenced in land use planning documentation.

• Emphasize the use of native plant species, recognizing that non-native species may be necessary depending on the availability of native seed and prevailing site conditions *viable non-native fire resistant plants are more benefitial than invasive annuals*.

Comment [MSOffice3]:

• Remove standing and encroaching trees within at least 110 yards of occupied GRSG leks and other habitats (e.g., nesting, wintering and brood rearing) to reduce the availability of perch sites for avian predators, as resources permit.

• Protect wildland areas from wildfire originating on private lands, infrastructure corridors, and recreational areas.

• Reduce the risk of vehicle- or human-caused wildfires and the spread of invasive species by installing fuel breaks and/or planting perennial vegetation (e.g., green-strips) paralleling road rights-of-way. Strategically place and maintain pre-treated strips/areas (e.g., mowing, herbicide application, targeted grazing etc.) to aid in controlling wildfire, should wildfire occur near PPMA or important restoration areas (such as where investments in restoration have already been made).

Comment [MSOffice4]:

Fire Management

• Compile District/Forest level information into state-wide GRSG tool boxes. Tool boxes will contain maps, listing of resource advisors, contact information, local guidance, and other relevant information for each District/Forest, which will be aggregated into a state-wide document.

• Provide localized maps to dispatch offices and extended attack incident commanders for use in prioritizing wildfire suppression resources and designing suppression tactics.

• Assign a resource advisor with GRSG expertise, or who has access to GRSG expertise, to all extended attack fires in or near GRSG habitat. Prior to the fire season, provide training to GRSG resource advisors on wildfire suppression organization, objectives, tactics, and procedures to develop a cadre of qualified individuals. Involve state wildlife agency expertise in fire operations through:

– instructing resource advisors during preseason trainings;

– qualification as resource advisors;

– coordination with resource advisors during fire incidents;

– contributing to incident planning with information such as habitat features or other key data useful in fire decision making.

• On critical fire weather days, pre-position additional fire suppression resources to optimize a quick and efficient response in GRSG habitat areas. *Encourage local resources (volunteer fire departments and country equipment) to respond to initial attack efforts and further encourage these agencies to obtain required ICS training to be able to run incidents for longer periods when needed during critical fire periods.*

Comment [MSOffice5]:

• During periods of multiple fires, ensure line officers are involved in setting priorities.

• To the extent possible, locate wildfire suppression facilities (i.e., base camps, spike camps, drop points, staging areas, heli-bases, etc.) in areas where physical disturbance to GRSG habitat can be minimized. These include disturbed areas, grasslands, near roads/trails or in other areas where there is existing disturbance or minimal sagebrush cover.

• Power-wash all firefighting vehicles, to the extent possible, including engines, water tenders, personnel vehicles, and all-terrain vehicles (ATV) prior to deploying in or near GRSG habitat areas to minimize noxious weed spread. Minimize unnecessary cross-country vehicle travel during fire operations in GRSG habitat.

• Minimize burnout operations in key GRSG habitat areas by constructing direct fire line whenever safe and practical to do so.

• Utilize retardant, mechanized equipment, and other available resources to minimize burned acreage during initial attack.

• As safety allows, conduct mop-up where the black adjoins unburned islands, dog legs, or other habitat features to minimize sagebrush loss.

• Adequately document fire operation activities in GRSG habitat for potential follow-up coordination activities.

Lands and Realty

Leases and Permits

• Only allow permits and leases that have net neutral or beneficial effects sage-grouse and their habitat in sage-grouse habitat management areas.

Right-of-Ways (ROWs)

• Work with existing rights-of-way holders in an attempt to install perch guards on all poles where existing utility poles are located within 3 miles of known leks, where necessary. Stipulate these requirements at grant renewal.

• Use existing utility corridors and consolidate rights-of-way to reduce habitat loss, degradation, and fragmentation. Whenever possible, install new power lines within existing utility corridors.

• Where GRSG conservation opportunities exist, BLM field offices and Forests should work in cooperation with rights-of-way holders to conduct maintenance and operation activities, authorized under an approved ROW grant, to avoid and minimize effect on GRSG habitat.

• When renewing or amending ROWs, assess the impacts of ongoing use of the ROW to GRSG habitat and minimize such impacts to the extent allowed by law.

• Work with applicants to minimize habitat loss, fragmentation, and direct and indirect effects to GRSG and its habitat.

• Conduct pre-application meetings with the BLM or Forest Service and SETT for all new ROW proposals consistent with the ROW regulations (43 CFR 2804.10) and consistent with current renewable energy ROW policy guidance (WO-IM-2011-061, issued February, 2011). Assess the impact of the proposed ROW on GRSG and its habitat, and implement the following: Ensure that reasonable alternatives for siting the ROW outside of GRSG habitat or within a BLM designated utility corridor are considered and analyzed in the NEPA document; and identify technically feasible best management practices, conditions, (e.g., siting, burying power lines) that may be implemented in order to eliminate or minimize impacts.

• Maximize the area of interim reclamation on long-term access roads and well pads including reshaping, topsoiling and revegetating cut and fill slopes.

• Authorize ROWs by applying appropriate BMPs (BLM Wind Energy Development EIS, June 2005), land use restrictions, stipulations, and mitigation measures. The BLM will document the reasons for its determination and require the ROW holder to implement these measures to minimize impacts to sage grouse habitat.

• Evaluate and take advantage of opportunities to remove, bury, or modify existing power lines within priority sage-grouse habitat areas.

• Where existing leases or rights-of-way (ROWs) have had some level of development (road, fence, well, etc.) and are no longer in use, reclaim the site by removing these features, without interfering with valid pre-existing rights, and restoring the habitat.

Comment [MSOffice6]:

• Within designated ROW corridors encumbered by existing ROW authorizations: new ROWs should be co-located to the extent practical and feasible with the entire footprint of the proposed project within the existing disturbance associated with the authorized ROWs.

• Subject to valid, existing rights, where new ROWs associated with valid existing rights are required, co-locate new ROWs within existing ROWs or where it best minimizes sage-grouse impacts. Use existing roads, or realignments as described above, to access valid existing rights that are not yet developed. If valid existing rights cannot be accessed via existing roads, then build any new road constructed to the absolute minimum standard necessary.

• Upon project completion, roads used for commercial access on public lands would be reclaimed, unless, based on site-specific analysis, the route provides specific benefits for public access and does not contribute to resource conflicts.

• Bury or reroute power lines outside of sage-grouse habitat wherever possible. If power lines cannot be sited outside of sage-grouse habitat, site power lines in the least suitable habitat possible,

• Remove power lines that traverse important sage-grouse habitats when facilities being serviced are no longer in use or when projects are completed.

• Install anti-perching and anti-nesting measures on tall structures, such as power lines.

Travel and Transportation

• ~~Establish speed limits on BLM and Forest Service-administered roads~~ *Work with local governments enforce speed limits in order* to reduce vehicle/wildlife collisions or design roads to be driven at slower speeds.

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Comment [MSOffice7]:

• Conduct restoration of roads, primitive roads, and trails not designated in travel management plans. This also includes primitive route/roads that were not designated in wilderness study areas and within lands managed for wilderness characteristics that have been selected for protection.

• When reseeding roads, primitive roads, and trails, use appropriate seed mixes and consider the use of transplanted sagebrush in order to meet sage-grouse habitat restoration objectives. Where existing annual grasses are present, pre-emergent herbicides should be used to enhance the effectiveness of any seeding and to also establish islands of desirable species for dispersion.

• Use existing roads, or realignments to access valid existing rights that are not yet developed. If valid existing rights cannot be accessed via existing roads, then any new roads would be constructed to the absolute minimum standard necessary.

• Allow no upgrading of existing routes that would change route category (road, primitive road, or trail) or capacity unless the upgrading would have minimal impact on sage-grouse habitat, is necessary for motorist safety, or eliminates the need to construct a new road.

• Identify, map, quantify, and evaluate impacts of existing roads, including 2-tracks, in relation to known lek locations and sage-grouse winter ranges.

• Consider the use of speed bumps where appropriate to reduce vehicle speeds near leks, such during oil and gas development.

• Manage on-road travel and OHV use in key grouse areas to avoid disturbance during critical times such as winter and nesting periods.

• Consider road removal, realignment, or seasonal closures where appropriate to avoid degradation of habitat.

• Reclaim closed roads with plant species beneficial to sage-grouse.

Recreation

• Only allow special recreation permits that have neutral or beneficial effects to sage-grouse and their habitat in sage-grouse habitat management areas.

• Issue special recreation permits with appropriate distance and timing restrictions to minimize impacts to seasonal sage-grouse habitat.

Energy Development and Infrastructure

• Adopt standards outlined in *Nevada Energy and Infrastructure Development Standards to Conserve Greater Sage-grouse Populations and Their Habitats,* April 2010, pgs 25-29.

Riparian Areas and Wetlands

• At a minimum, all riparian areas and wet meadow brood rearing habitat should meet proper functioning condition (PFC). *Where PFC is not met, condition should be trending upward.* Where PFC is met, strive to attain reference state vegetation relative to the ecological site description.

Comment [MSOffice8]:

Wild Horses and Burros

• Prioritize gathers in sage-grouse habitat, unless removals are necessary in other areas to prevent catastrophic environmental issues.

• Within sage-grouse habitat, develop or amend herd management area (HMAs) plans to incorporate sage-grouse habitat objectives and management considerations for all HMAs. For all HMAs within sage-

grouse habitat, prioritize the evaluation of all appropriate management levels based on indicators that address structure/condition/composition of vegetation and measurements specific to achieving sage-grouse habitat objectives.

• When conducting NEPA analysis for wild horse and burro management activities, water developments or other rangeland improvements for wild horses in sage-grouse habitat, address the direct and indirect effects to sage-grouse populations and habitat. Implement any water developments or rangeland improvements using the criteria ~~identified~~ for wild horses and burros year around use and consistent with necessary rights and right of ways ~~domestic livestock identified~~ in sage-grouse habitats.

Comment [MSOffice9]:

Livestock Grazing and Range Management

• Adopt the Natural Resource Conservation Service (NRCS) Conservation Practice Standards and Specification listed below. In addition, adopt the recommendations additions to the standards developed by NRCS and NDOW as part of NRCS' Sage-grouse Initiative

- Code 645: Upland Wildlife Habitat Management
- Code 528: Prescribed Grazing
  - Emphasize rest periods when appropriate as part of the grazing management plan and restoration.
- Code 614: Water Facilities
  - Avoid placement where existing sagebrush cover will be reduced near a lek, in nesting habitat, or winter habitat whenever possible. NDOW recommends structures be at least 1 mile from a lek.
- Code 574: Spring Development
  - Springs may be developed as long as valid water claims or rights exist and development shows a net benefit to overall habitat management within a SGMA.
- Code 533: Pumping Plant
  - NDOW recommends the structure should not be placed within 3 miles of a lek to avoid disturbance to nesting sage-grouse.
- Code 642: Water Well
  - Wells placement shall encourage dispersion of livestock and provide for a neutral or no net negative impact to habitat within a SGMA. Further water developments will decrease concentrated livestock and wildlife use and further protect sagebrush habitats.
- Code 516: Livestock Pipeline
  - Pipelines shall be replaced as needed to provide for better dispersion of livestock.
  - Pipelines shall be replaced along existing pipelines, roadways, or fences.

Comment [MSOffice10]:

Comment [MSOffice11]:

Comment [MSOffice12]:

- Replacement and maintenance of pipelines shall use the least invasive techniques and extensive work requiring heavy equipment shall be done in a manner consistent with season of use by the Greater Sage Grouse (i.e. replacing improvements in SG winter habitat during the summer and replacing improvements in breeding and nesting habitat during the fall)
- Replacement of improvements shall be allowed in order to not jeopardize existing and valid claims and rights.

Comment [MSOffice13]:

- Code 410: Grade Stabilization Structure
  - If possible, avoid the installation of these structures during the late summer brood rearing period. NDOW recommends structure placement in mid-September through late November.
- Code 382: Fence
  - If possible, fencing should not be constructed near a lek and should be avoided in winter habitats near ridges. To make a fence more visible, use white tipped metal fence posts, securing flagging or reflectors to the top fence wires, or slide sections of PVC pipe over the top wire.

• ~~Remove or m~~*M*odify existing water developments *(including locating troughs to further disperse livestock)* that are having a net negative impact on GRSG habitats. *Use or modification of water developments must be consistent with valid and existing water rights and not jeopardize these rights.*

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Comment [MSOffice14]:

• Remove, relocate, or modify livestock ponds built in perennial channels that are having a net negative impact on riparian habitat, either directly or indirectly. Development of new livestock ponds should be designed to have neutral or positive impacts to GRSG habitat.

• All troughs should be outfitted with the appropriate type and number of wildlife escape ramps.

• All field and district offices should apply BLM IM 2013-094 or similar methodology until superseded related to drought management planning.

• Use aircraft to check livestock in areas where consistent trespass has been noted and access/manpower is difficult to -*obtain.* ~~obtain.~~

Surface Disturbing Activities - General

• During the period specified, manage discretionary surface disturbing activities and uses to prevent disturbance to GRSG during life cycle periods. Seasonal protection is identified for the following:

-Seasonal protection within four (4) miles of active GRSG leks from March 1 through June 15;
-Seasonal protection of GRSG wintering areas from November 1 through March 31;
-Seasonal protection of GRSG brood-rearing habitat from May 15 to August 15.

• For any surface-disturbing activities proposed in sagebrush shrublands, the Proponent will conduct clearance surveys for GRSG breeding activity during the GRSG's breeding season before initiating the

activities. The surveys must encompass all sagebrush shrublands within 3.0 miles of the proposed activities. Three surveys would be conducted every season during pre-planning operations. In areas found to have probable GRSG activity, surveys should continue during project operations. These surveys should be conducted as part of a monitoring program to inform an adaptive management framework for required design features and operations.

• Ensure that all authorized ground disturbing projects have vegetation reclamation standards suitable for the site type prior to construction and ensure that reclamation to appropriate GRSG standards are budgeted for.

• Implement appropriate time-of-day and/or time-of year restrictions for future construction and/or maintenance activities in known GRSG habitat to avoid adverse impacts.

• Reseed all areas requiring reclamation with a seed mixture appropriate for the soils, climate, and landform of the area to ensure recovery of the ecological processes and habitat features of the potential natural vegetation, and to prevent the invasion of noxious weeds or other exotic invasive species. Long-term monitoring is required to determine success.

• Maximize the area of interim reclamation on long-term access roads and well pads including reshaping, topsoiling and revegetating cut and fill slopes.

Miscellaneous

• On BLM and Forest Service-administered Wilderness and Wilderness Study Areas (WSAs), mechanized equipment may be used to protect areas of high resource concerns or values; however, the use of mechanized equipment will be evaluated against potential long-term resource damage.

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Acronym List:

BMP: Best Management Practice

GRSG: Greater Sage-grouse

PGMA: Preliminary General Management Area

PPMA: Preliminary Priority Management Area

RDF: Required Design Feature

ROW: Right-of-way

SUA: Special Use Authorization

WFDSS: Wildland Fire Decision Support Tree

Appendix A: Required Design Features/ Best Management Practices

Mineral Resources

Fluid Minerals RDFs

Roads - PPMA

• Do not construct new roads when there are existing roads that could be used or upgraded to meet the need.

• Design roads to an appropriate standard, no higher than necessary, to accommodate their intended purpose.

• Locate roads to avoid important areas and habitats.

• Coordinate road construction and use among ROW or SUA holders.

• Where possible, avoid constructing roads within riparian areas and ephemeral drainages.

• Construct road crossings at right angles to ephemeral drainages and stream crossings.

• Establish speed limits on BLM and Forest Service-managed roads to reduce vehicle/wildlife collisions or design roads to be driven at slower speeds.

• Establish trip restrictions (Lyon and Anderson 2003) or minimization through use of telemetry and remote well control (e.g., Supervisory Control and Data Acquisition).

• Do not issue ROWs or SUAs to counties on newly constructed energy development roads, unless for a temporary use consistent with all other terms and conditions included in this document.

• Restrict vehicle traffic to only authorized users on newly constructed routes (using signage, gates, etc.)

• Use dust abatement on roads and pads.

• Close and rehabilitate duplicate roads *in cooperation with landholders and where appropriate authority exists to do so*.

Comment [NE1]: If a duplicate road is on BLM Land or traditionally used roadways like RS 2477 or minor county roads, then I'm not sure this is doable.

• Cluster disturbances, operations (fracture stimulation, liquids gathering, etc.), and facilities.

Operations - PPMA

• Use directional and horizontal drilling to reduce surface disturbance.

• Place infrastructure in already disturbed locations.

• Apply a phased development approach with concurrent reclamation.

• Place liquid gathering facilities outside of priority areas. Have no tanks at well locations within priority habitat areas to minimize truck traffic and perching and nesting sites for ravens and raptors.

• Pipelines must be under or immediately adjacent to the road (Bui et al. 2010).

• Use remote monitoring techniques for production facilities and develop a plan to reduce the frequency of vehicle use (Lyon and Anderson 2003).

• Restrict the construction of tall facilities and fences to the minimum number and amount needed.

• Site and/or minimize linear ROWs or SUAs to reduce disturbance to sagebrush habitats.

• Place new utility developments (power lines, pipelines, etc.) and transportation routes in existing utility or transportation corridors *where feasible and where adequate spacing separation can be achieved in order to preserve grid reliability and ongoing maintenance capability*.

• Bury distribution power lines *where feasible and where ground disturbance could be minimized*.

• Co-locate power lines, flow lines, and small pipelines under or immediately adjacent to existing roads (Bui et al. 2010).

• Design or site permanent structures which create movement (e.g., pump jack) to minimize impacts to GRSG.

• Cover (e.g., fine mesh netting or use other effective techniques) all drilling and production pits and tanks regardless of size to reduce GRSG mortality.

• Equip tanks and other above-ground facilities with structures or devices that discourage nesting of raptors and corvids.

• Control the spread and effects of non-native plant species (Evangelista et al. 2011) (e.g., by washing vehicles and equipment, minimize unnecessary surface disturbance).

• Use only closed-loop systems for drilling operations and no reserve pits.

• Restrict pit and impoundment construction to reduce or eliminate threats from West Nile virus (Doherty 2007).

• Remove or re-inject produced water to reduce habitat for mosquitoes that vector West Nile virus. If surface disposal of produced water continues, use the following steps for reservoir design to limit favorable mosquito habitat:

  – Overbuild size of ponds for muddy and non-vegetated shorelines.

  – Build steep shorelines to decrease vegetation and increase wave actions.

– Avoid flooding terrestrial vegetation in flat terrain or low lying areas.

– Construct dams or impoundments that restrict down slope seepage or overflow.

– Line the channel where discharge water flows into the pond with crushed rock.

– Construct spillway with steep sides and line it with crushed rock.

– Treat waters with larvicides to reduce mosquito production where water occurs on the surface.

• Limit noise to less than 10 decibels above ambient measures (20-24 dBA) at sunrise at the perimeter of a lek during active lek season (Patricelli et al. 2010, Blickley et al. In preparation).

• Require noise shields when drilling during the lek, nesting, brood-rearing, or wintering season.

• Fit *new* transmission towers with anti-perch devices (Lammers and Collopy 2007).

• Require GRSG-safe fences (e.g. marked fences).

• Locate new compressor stations outside priority habitats and design them to reduce noise that may be directed towards priority habitat.

• Clean up refuse (Bui et al. 2011).

• Locate man camps outside of priority habitats.

Reclamation – PPMA and PGMA

• Include objectives for ensuring habitat restoration to meet GRSG habitat needs in reclamation practices/sites (Pyke 2011). Address post reclamation management in reclamation plan such that goals and objectives are to protect and improve GRSG habitat needs.

• Maximize the area of interim reclamation on long-term access roads and well pads, including reshaping, topsoiling and revegetating cut-and-fill slopes.

• Restore disturbed areas at final reclamation to the pre-disturbance landforms and desired plant community.

• Irrigate interim reclamation if necessary for establishing seedlings more quickly.

• Utilize mulching techniques to expedite reclamation and to protect soils.

Roads - PGMA

• Design roads to an appropriate standard no higher than necessary to accommodate their intended purpose.

• Do not construct new roads when there are existing roads that could be used or upgraded to meet the need.

• Where possible, avoid constructing roads within riparian areas and ephemeral drainages.

• Do not issue ROWs or SUAs to counties on energy development roads, unless for a temporary use consistent with all other terms and conditions included in this document.

• Establish speed limits to reduce vehicle/wildlife collisions or design roads to be driven at slower speeds.

• Coordinate road construction and use among ROW or SUA holders.

• Construct road crossings at right angles to ephemeral drainages and stream crossings.

• Use dust abatement practices on roads and pads.

• Close and reclaim duplicate roads *in cooperation with landholders and where appropriate authority exists to do so* by restoring original landform and establishing desired vegetation.

Operations – PGMA

• Cluster disturbances, operations (fracturing stimulation, liquids gathering, etc.), and facilities.

• Use directional and horizontal drilling to reduce surface disturbance.

• Clean up refuse (Bui et al. 2010).

• Restrict the construction of tall facilities and fences to the minimum number and amount needed.

• Cover (e.g., fine mesh netting or use other effective techniques) all drilling and production pits and tanks regardless of size to reduce GRSG mortality.

• Equip tanks and other above-ground facilities with structures or devices that discourage nesting by raptors or corvids.

• Use remote monitoring techniques for production facilities and develop a plan to reduce vehicular traffic frequency of vehicle use.

• Control the spread and effects from non-native plant species. (e.g., by washing vehicles and equipment.)

• Restrict pit and impoundment construction to reduce or eliminate augmenting threats from West Nile virus (Doherty 2007).

Locatable Minerals BMPs

Roads – PPMA and PGMA

• Design roads to an appropriate standard no higher than necessary to accommodate their intended purposes.

• Locate roads to avoid important areas and habitats.

• Coordinate road construction and use among ROW or SUA holders.

• Construct road crossing at right angles to ephemeral drainages and stream crossings.

• Establish speed limits on BLM and Forest Service managed roads to reduce vehicle/wildlife collisions or design roads to be driven at slower speeds.

• Do not issue ROWs or SUAs to counties on mining development roads, unless for a temporary use consistent with all other terms and conditions including this document.

• Restrict vehicle traffic to only authorized users on newly constructed routes (e. g., use signing, gates, etc.).

• Use dust abatement practices on roads and pads.

• Close and reclaim duplicate roads *in cooperation with landholders and where appropriate authority exists to do so*, by restoring original landform and establishing desired vegetation.

• Do not construct new roads when there are existing roads that could be used or upgraded to meet the need.

• Where possible, avoid constructing roads within riparian areas and ephemeral drainages

Operations – PPMA and PGMA

• Cluster disturbances associated with operations and facilities as close as possible.

• Place infrastructure in already disturbed locations where the habitat has not been restored.

• Restrict the construction of tall facilities and fences to the minimum number and amount needed.

• Site and/or minimize linear ROWs or SUAs to reduce disturbance to sagebrush habitats.

• Place new utility developments (power lines, pipelines, etc.) and transportation routes in existing utility or transportation corridors.

• Bury power lines *where feasible and where ground disturbance could be minimized*.

• Cover (e.g., fine mesh netting or use other effective techniques) all pits and tanks regardless of size to reduce GRSG mortality.

• Equip tanks and other above ground facilities with structures or devices that discourage nesting of raptors and corvids.

• Control the spread and effects of non-native plant species (Gelbard and Belnap 2003, Bergquist et al. 2007).

• Restrict pit and impoundment construction to reduce or eliminate threats from West Nile virus (Doherty 2007). • Require GRSG-safe fences around sumps.

• Clean up refuse (Bui et al. 2010).

• Locate man camps outside of priority GRSG habitats.

Reclamation – PPMA and PGMA

• Include restoration objectives to meet GRSG habitat needs in reclamation practices/sites.

• Address post reclamation management in reclamation plans such that goals and objectives are to protect and improve GRSG habitat needs.

• Maximize the area of interim reclamation on long-term access roads and well pads including reshaping, topsoiling and revegetating cut and fill slopes, and investigating the possibility of establishing fuel breaks.

• Restore disturbed areas at final reclamation to pre-disturbance landform and desired plant community

• Irrigate interim reclamation as necessary during dry periods.

• Utilize mulching techniques to expedite reclamation.

Fuels and Fire Management

• Fire and fuels operations should focus on protecting and enhancing occupied GRSG habitats. This includes taking into account the feasibility and cost of future rehabilitation efforts during WFDSS planning and general fire operations in all occupied GRSG habitats

Fuels Management

• Where applicable, design fuels treatment objective to protect existing sagebrush ecosystems, modify fire behavior, restore native plants, and create landscape patterns which most benefit GRSG habitat.

• Provide training to fuels treatment personnel on GRSG biology, habitat requirements, and identification of areas used locally.

• Use burning prescriptions that minimize undesirable effects on vegetation or soils (e.g., minimize mortality of desirable perennial plant species and reduce risk of annual grass invasion).

• Ensure proposed sagebrush treatments are planned with full interdisciplinary input pursuant to NEPA and coordination with NDOW and SETT, and that treatment acreage is conservative in the context of surrounding GRSG seasonal habitats and landscape.

• Where appropriate, ensure that treatments are configured in a manner that promotes use by GRSG.

• Where applicable, incorporate roads and natural fuel breaks into fuel break design.• Where appropriate and allowable, utilize livestock grazing as a tool to reduce fuels and control non-native species.

• Power-wash all vehicles and equipment involved in fuels management activities prior to entering the area to minimize the introduction of undesirable and/or invasive plant species.

• Design vegetation treatments in areas of high fire frequency which facilitate firefighter safety, reduce the potential acres burned, and reduce the fire risk to GRSG habitat. Additionally, develop maps for GRSG habitat which spatially display existing fuels treatments that can be used to assist suppression activities.

• For implementing specific GRSG habitat restoration projects in annual grasslands, first give priority to sites which are adjacent to or surrounded by PPMA or that reestablish continuity between priority habitats. Annual grasslands are a second priority for restoration when the sites are not adjacent to PPMA, but within two miles of PPMA. The third priority for annual grassland habitat restoration projects are sites beyond two miles of PPMA. The intent is to focus restoration outward from existing, intact habitat.

• As funding and logistics permit, restore annual grasslands to a species composition characterized by perennial grasses, forbs, and shrubs or one of that referenced in land use planning documentation.

• Emphasize the use of native plant species, recognizing that non-native species may be necessary depending on the availability of native seed and prevailing site conditions.

• Remove standing and encroaching trees within at least 110 yards of occupied GRSG leks and other habitats (e.g., nesting, wintering and brood rearing) to reduce the availability of perch sites for avian predators, as resources permit.

• Protect wildland areas from wildfire originating on private lands, infrastructure corridors, and recreational areas.

• Reduce the risk of vehicle- or human-caused wildfires and the spread of invasive species by installing fuel breaks and/or planting perennial vegetation (e.g., green-strips) paralleling road rights-of-way. Strategically place and maintain pre-treated strips/areas (e.g., mowing, herbicide application, etc.) to aid in controlling wildfire, should wildfire occur near PPMA or important restoration areas (such as where investments in restoration have already been made).

Fire Management

• Compile District/Forest level information into state-wide GRSG tool boxes. Tool boxes will contain maps, listing of resource advisors, contact information, local guidance, and other relevant information for each District/Forest, which will be aggregated into a state-wide document.

• Provide localized maps to dispatch offices and extended attack incident commanders for use in prioritizing wildfire suppression resources and designing suppression tactics.

• Assign a resource advisor with GRSG expertise, or who has access to GRSG expertise, to all extended attack fires in or near GRSG habitat. Prior to the fire season, provide training to GRSG resource advisors on wildfire suppression organization, objectives, tactics, and procedures to develop a cadre of qualified individuals. Involve state wildlife agency expertise in fire operations through:

– instructing resource advisors during preseason trainings;

– qualification as resource advisors;

– coordination with resource advisors during fire incidents;

– contributing to incident planning with information such as habitat features or other key data useful in fire decision making.

• On critical fire weather days, pre-position additional fire suppression resources to optimize a quick and efficient response in GRSG habitat areas.

• During periods of multiple fires, ensure line officers are involved in setting priorities.

• To the extent possible, locate wildfire suppression facilities (i.e., base camps, spike camps, drop points, staging areas, heli-bases, etc.) in areas where physical disturbance to GRSG habitat can be minimized. These include disturbed areas, grasslands, near roads/trails or in other areas where there is existing disturbance or minimal sagebrush cover.

• Power-wash all firefighting vehicles, to the extent possible, including engines, water tenders, personnel vehicles, and all-terrain vehicles (ATV) prior to deploying in or near GRSG habitat areas to minimize noxious weed spread. Minimize unnecessary cross-country vehicle travel during fire operations in GRSG habitat.

• Minimize burnout operations in key GRSG habitat areas by constructing direct fire line whenever safe and practical to do so.

• Utilize retardant, mechanized equipment, and other available resources to minimize burned acreage during initial attack.

• As safety allows, conduct mop-up where the black adjoins unburned islands, dog legs, or other habitat features to minimize sagebrush loss.

• Adequately document fire operation activities in GRSG habitat for potential follow-up coordination activities.

Lands and Realty

Leases and Permits

• Only allow permits and leases that have neutral or beneficial effects sage-grouse and their habitat in sage-grouse habitat management areas.

Right-of-Ways (ROWs)

• Work with existing rights-of-way holders in an attempt to install perch guards on all poles where existing utility poles are located within 3 miles of known leks, where necessary. Stipulate these requirements at grant renewal.

• Use existing utility corridors and consolidate rights-of-way to reduce habitat loss, degradation, and fragmentation. Whenever possible, install new power lines within existing utility corridors.

• Where GRSG conservation opportunities exist, BLM field offices and Forests should work in cooperation with rights-of-way holders to conduct maintenance and operation activities, authorized under an approved ROW grant, to avoid and minimize effect on GRSG habitat.

• When renewing or amending ROWs, assess the impacts of ongoing use of the ROW to GRSG habitat and minimize such impacts to the extent allowed by law.

• Work with applicants to minimize habitat loss, fragmentation, and direct and indirect effects to GRSG and its habitat.

• Conduct pre-application meetings with the BLM or Forest Service and SETT for all new ROW proposals consistent with the ROW regulations (43 CFR 2804.10) and consistent with current renewable energy ROW policy guidance (WO-IM-2011-061, issued February, 2011). Assess the impact of the proposed ROW on GRSG and its habitat, and implement the following: Ensure that reasonable alternatives for siting the ROW outside of GRSG habitat or within a BLM designated utility corridor are considered and analyzed in the NEPA document; and identify technically feasible best management practices, conditions, (e.g., siting, burying power lines) that may be implemented in order to eliminate or minimize impacts.

• Maximize the area of interim reclamation on long-term access roads and well pads including reshaping, topsoiling and revegetating cut and fill slopes.

• Authorize ROWs by applying appropriate BMPs (BLM Wind Energy Development EIS, June 2005), land use restrictions, stipulations, and mitigation measures. The BLM will document the reasons for its determination and require the ROW holder to implement these measures to minimize impacts to sage grouse habitat.

• Evaluate and take advantage of opportunities to remove, bury, or modify existing power lines within priority sage-grouse habitat areas *where feasible, taking into consideration that minimization of new and/or ongoing ground disturbance is the higher priority*.

• Where existing leases or rights-of-way (ROWs) have had some level of development (road, fence, well, etc.) and are no longer in use, reclaim the site by removing these features and restoring the habitat.

• Within designated ROW corridors encumbered by existing ROW authorizations: new ROWs should be co-located to the extent practical and feasible with the entire footprint of the proposed project within the existing disturbance associated with the authorized ROWs.

• Subject to valid, existing rights, where new ROWs associated with valid existing rights are required, co-locate new ROWs within existing ROWs or where it best minimizes sage-grouse impacts. Use existing roads, or realignments as described above, to access valid existing rights that are not yet developed. If valid existing rights cannot be accessed via existing roads, then build any new road constructed to the absolute minimum standard necessary.

• Upon project completion, roads used for commercial access on public lands would be reclaimed, unless, based on site-specific analysis, the route provides specific benefits for public access and does not contribute to resource conflicts.

• ~~Bury or r~~*R*eroute power lines outside of sage-grouse habitat wherever possible. If power lines cannot be sited outside of sage-grouse habitat, site power lines in the least suitable habitat possible,

• Remove power lines that traverse important sage-grouse habitats when facilities being serviced are no longer in use or when projects are completed.

• Install anti-perching and anti-nesting measures on tall structures, such as power lines *where feasible, commensurate with the design of the structures*.

Travel and Transportation

• Establish speed limits on BLM and Forest Service-administered roads to reduce vehicle/wildlife collisions or design roads to be driven at slower speeds.

• Conduct restoration of roads, primitive roads, and trails not designated in travel management plans. This also includes primitive route/roads that were not designated in wilderness study areas and within lands managed for wilderness characteristics that have been selected for protection*, with due consideration given to any historical significance of existing trails*.

Comment [NE2]: My point here is that we don't want to mandate restoration of the Pony Express route or something of similar historical significance.

• When reseeding roads, primitive roads, and trails, use appropriate seed mixes and consider the use of transplanted sagebrush in order to meet sage-grouse habitat restoration objectives. Where existing annual grasses are present, pre-emergent herbicides should be used to enhance the effectiveness of any seeding and to also establish islands of desirable species for dispersion.

• Use existing roads, or realignments to access valid existing rights that are not yet developed. If valid existing rights cannot be accessed via existing roads, then any new roads would be constructed to the absolute minimum standard necessary.

• Allow no upgrading of existing routes that would change route category (road, primitive road, or trail) or capacity unless the upgrading would have minimal impact on sage-grouse habitat, is necessary for motorist safety, or eliminates the need to construct a new road.

• Identify, map, quantify, and evaluate impacts of existing roads, including 2-tracks, in relation to known lek locations and sage-grouse winter ranges.

• Consider the use of speed bumps where appropriate to reduce vehicle speeds near leks, such during oil and gas development.

• Manage on-road travel and OHV use in key grouse areas to avoid disturbance during critical times such as winter and nesting periods.

• Consider road removal, realignment, or seasonal closures where appropriate to avoid degradation of habitat.

• Reclaim closed roads with plant species beneficial to sage-grouse.

Recreation

• Only allow special recreation permits that have neutral or beneficial effects to sage-grouse and their habitat in sage-grouse habitat management areas.

• Issue special recreation permits with appropriate distance and timing restrictions to minimize impacts to seasonal sage-grouse habitat.

Energy Development and Infrastructure

• Adopt standards outlined in *Nevada Energy and Infrastructure Development Standards to Conserve Greater Sage-grouse Populations and Their Habitats,* April 2010, pgs 25-29.

Comment [NE3]: Add a reference and link to this document in the "literature cited" section at the end.

Riparian Areas and Wetlands

• At a minimum, all riparian areas and wet meadow brood rearing habitat should meet proper functioning condition (PFC). Where PFC is met, strive to attain reference state vegetation relative to the ecological site description.

Wild Horses and Burros

• Prioritize gathers in sage-grouse habitat, unless removals are necessary in other areas to prevent catastrophic environmental issues.

• Within sage-grouse habitat, develop or amend herd management area (HMAs) plans to incorporate sage-grouse habitat objectives and management considerations for all HMAs. For all HMAs within sage-

grouse habitat, prioritize the evaluation of all appropriate management levels based on indicators that address structure/condition/composition of vegetation and measurements specific to achieving sage-grouse habitat objectives.

• When conducting NEPA analysis for wild horse and burro management activities, water developments or other rangeland improvements for wild horses in sage-grouse habitat, address the direct and indirect effects to sage-grouse populations and habitat. Implement any water developments or rangeland improvements using the criteria identified for domestic livestock identified in sage-grouse habitats.

Livestock Grazing and Range Management

• Adopt the Natural Resource Conservation Service (NRCS) Conservation Practice Standards and Specification listed below. In addition, adopt the recommendations additions to the standards developed by NRCS and NDOW as part of NRCS' Sage-grouse Initiative

- Code 645: Upland Wildlife Habitat Management
- Code 528: Prescribed Grazing
  - Emphasize rest periods when appropriate as part of the grazing management plan and restoration.
- Code 614: Water Facilities
  - Avoid placement where sagebrush cover will be reduced near a lek, in nesting habitat, or winter habitat whenever possible. NDOW recommends structures be at least 1 mile from a lek.
- Code 574: Spring Development
- Code 533: Pumping Plant
  - NDOW recommends the structure should not be placed within 3 miles of a lek to avoid disturbance to nesting sage-grouse.
- Code 642: Water Well
- Code 516: Livestock Pipeline
- Code 410: Grade Stabilization Structure
  - If possible, avoid the installation of these structures during the late summer brood rearing period. NDOW recommends structure placement in mid-September through late November.
- Code 382: Fence
  - If possible, fencing should not be constructed near a lek and should be avoided in winter habitats near ridges. To make a fence more visible, use white tipped metal fence posts, securing flagging or reflectors to the top fence wires, or slide sections of PVC pipe over the top wire.

• Remove or modify existing water developments that are having a net negative impact on GRSG habitats.

• Remove, relocate, or modify livestock ponds built in perennial channels that are having a net negative impact on riparian habitat, either directly or indirectly. Development of new livestock ponds should be designed to have neutral or positive impacts to GRSG habitat.

• All troughs should be outfitted with the appropriate type and number of wildlife escape ramps.

• All field and district offices should apply BLM IM 2013-094 or similar methodology until superseded related to drought management planning.

• Use aircraft to check livestock in areas where consistent trespass has been noted and access/manpower is difficult to obtain.

Surface Disturbing Activities - General

• During the period specified, manage discretionary surface disturbing activities and uses to prevent disturbance to GRSG during life cycle periods. Seasonal protection is identified for the following:

-Seasonal protection within *three*~~four~~ (*3*4) miles of active GRSG leks from March 1 through June 15;

-Seasonal protection of GRSG wintering areas from November 1 through March 31;

-Seasonal protection of GRSG brood-rearing habitat from May 15 to August 15.

Comment [NE4]: We need to be consistent here, since we've said 3 miles in other documents. I believe we should stick with 3 miles if there is consensus to do so.

• For any surface-disturbing activities proposed in sagebrush shrublands, the Proponent will conduct clearance surveys for GRSG breeding activity during the GRSG's breeding season before initiating the activities. The surveys must encompass all sagebrush shrublands within 3.0 miles of the proposed activities. Three surveys would be conducted every season during pre-planning operations. In areas found to have probable GRSG activity, surveys should continue during project operations. These surveys should be conducted as part of a monitoring program to inform an adaptive management framework for required design features and operations.

• Ensure that all authorized ground disturbing projects have vegetation reclamation standards suitable for the site type prior to construction and ensure that reclamation to appropriate GRSG standards are budgeted for.

• Implement appropriate time-of-day and/or time-of year restrictions for future construction and/or maintenance activities in known GRSG habitat to avoid adverse impacts.

• Reseed all areas requiring reclamation with a seed mixture appropriate for the soils, climate, and landform of the area to ensure recovery of the ecological processes and habitat features of the potential natural vegetation, and to prevent the invasion of noxious weeds or other exotic invasive species. Long-term monitoring is required to determine success.

• Maximize the area of interim reclamation on long-term access roads and well pads including reshaping, topsoiling and revegetating cut and fill slopes.

Miscellaneous

• On BLM and Forest Service-administered Wilderness and Wilderness Study Areas (WSAs), mechanized equipment may be used to protect areas of high resource concerns or values; however, the use of mechanized equipment will be evaluated against potential long-term resource damage.

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Natural Resources Conservation Service. Code 642: Conservation Practice Standard for Water Well. Website: http://efotg.sc.egov.usda.gov/references/public/AL/tg642.pdfNatural Resources Conservation Service. Code 516: Conservation Practice Standard for Livestock Pipeline. Website: http://efotg.sc.egov.usda.gov/references/public/AL/tg516.pdf

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Acronym List:

1 BMP: Best Management Practice

2 GRSG: Greater Sage-grouse

3 PGMA: Preliminary General Management Area

4 PPMA: Preliminary Priority Management Area

5 RDF: Required Design Feature

6 ROW: Right-of-way

7 SUA: Special Use Authorization

8 WFDSS: Wildland Fire Decision Support Tree

Appendix A: Required Design Features/ Best Management Practices

Mineral Resources

Fluid Minerals RDFs

Roads - PPMA

• Do not construct new roads when there are existing roads that could be used or upgraded to meet the need.

• Design roads to an appropriate standard, no higher than necessary, to accommodate their intended purpose.

• Locate roads to avoid important areas and habitats.

• Coordinate road construction and use among ROW or SUA holders.

• Where possible, avoid constructing roads within riparian areas and ephemeral drainages.

• Construct road crossings at right angles to ephemeral drainages and stream crossings.

• Establish speed limits on BLM and Forest Service-managed roads to reduce vehicle/wildlife collisions or design roads to be driven at slower speeds.

• Establish trip restrictions (Lyon and Anderson 2003) or minimization through use of telemetry and remote well control (e.g., Supervisory Control and Data Acquisition).

• Do not issue ROWs or SUAs to counties on newly constructed energy development roads, unless for a temporary use consistent with all other terms and conditions included in this document.

• Restrict vehicle traffic to only authorized users on newly constructed routes (using signage, gates, etc.)

• Use dust abatement on roads and pads.

• Close and rehabilitate duplicate roads.

• Cluster disturbances, operations (fracture stimulation, liquids gathering, etc.), and facilities.

Operations - PPMA

• Use directional and horizontal drilling to reduce surface disturbance.

• Place infrastructure in already disturbed locations.

• Apply a phased development approach with concurrent reclamation.

• Place liquid gathering facilities outside of priority areas. Have no tanks at well locations within priority habitat areas to minimize truck traffic and perching and nesting sites for ravens and raptors.

• Pipelines must be under or immediately adjacent to the road (Bui et al. 2010).

• Use remote monitoring techniques for production facilities and develop a plan to reduce the frequency of vehicle use (Lyon and Anderson 2003).

• Restrict the construction of tall facilities and fences to the minimum number and amount needed.

• Site and/or minimize linear ROWs or SUAs to reduce disturbance to sagebrush habitats.

• Place new utility developments (power lines, pipelines, etc.) and transportation routes in existing utility or transportation corridors.

• Bury distribution power lines.

• Co-locate power lines, flow lines, and small pipelines under or immediately adjacent to existing roads (Bui et al. 2010).

• Design or site permanent structures which create movement (e.g., pump jack) to minimize impacts to GRSG.

• Cover (e.g., fine mesh netting or use other effective techniques) all drilling and production pits and tanks regardless of size to reduce GRSG mortality.

• Equip tanks and other above-ground facilities with structures or devices that discourage nesting of raptors and corvids.

• Control the spread and effects of non-native plant species (Evangelista et al. 2011) (e.g., by washing vehicles and equipment, minimize unnecessary surface disturbance).

• Use only closed-loop systems for drilling operations and no reserve pits.

• Restrict pit and impoundment construction to reduce or eliminate threats from West Nile virus (Doherty 2007).

• Remove or re-inject produced water to reduce habitat for mosquitoes that vector West Nile virus. If surface disposal of produced water continues, use the following steps for reservoir design to limit favorable mosquito habitat:

  – Overbuild size of ponds for muddy and non-vegetated shorelines.

  – Build steep shorelines to decrease vegetation and increase wave actions.

  – Avoid flooding terrestrial vegetation in flat terrain or low lying areas.

  – Construct dams or impoundments that restrict down slope seepage or overflow.

– Line the channel where discharge water flows into the pond with crushed rock.

– Construct spillway with steep sides and line it with crushed rock.

– Treat waters with larvicides to reduce mosquito production where water occurs on the surface.

• Limit noise to less than 10 decibels above ambient measures (20-24 dBA) at sunrise at the perimeter of a lek during active lek season (Patricelli et al. 2010, Blickley et al. In preparation).

• Require noise shields when drilling during the lek, nesting, brood-rearing, or wintering season.

• Fit transmission towers with anti-perch devices (Lammers and Collopy 2007).

• Require GRSG-safe fences (e.g. marked fences).

• Locate new compressor stations outside priority habitats and design them to reduce noise that may be directed towards priority habitat.

• Clean up refuse (Bui et al. 2011).

• Locate man camps outside of priority habitats.

Reclamation – PPMA and PGMA

• Include objectives for ensuring habitat restoration to meet GRSG habitat needs in reclamation practices/sites (Pyke 2011). Address post reclamation management in reclamation plan such that goals and objectives are to protect and improve GRSG habitat needs.

• Maximize the area of interim reclamation on long-term access roads and well pads, including reshaping, topsoiling and revegetating cut-and-fill slopes.

• Restore disturbed areas at final reclamation to the pre-disturbance landforms and desired plant community.

• Irrigate interim reclamation if necessary for establishing seedlings more quickly.

• Utilize mulching techniques to expedite reclamation and to protect soils.

Roads - PGMA

• Design roads to an appropriate standard no higher than necessary to accommodate their intended purpose.

• Do not construct new roads when there are existing roads that could be used or upgraded to meet the need.

• Where possible, avoid constructing roads within riparian areas and ephemeral drainages.

• Do not issue ROWs or SUAs to counties on energy development roads, unless for a temporary use consistent with all other terms and conditions included in this document.

• Establish speed limits to reduce vehicle/wildlife collisions or design roads to be driven at slower speeds.

• Coordinate road construction and use among ROW or SUA holders.

• Construct road crossings at right angles to ephemeral drainages and stream crossings.

• Use dust abatement practices on roads and pads.

• Close and reclaim duplicate roads by restoring original landform and establishing desired vegetation.

Operations – PGMA

• Cluster disturbances, operations (fracturing stimulation, liquids gathering, etc.), and facilities.

• Use directional and horizontal drilling to reduce surface disturbance.

• Clean up refuse (Bui et al. 2010).

• Restrict the construction of tall facilities and fences to the minimum number and amount needed.

• Cover (e.g., fine mesh netting or use other effective techniques) all drilling and production pits and tanks regardless of size to reduce GRSG mortality.

• Equip tanks and other above-ground facilities with structures or devices that discourage nesting by raptors or corvids.

• Use remote monitoring techniques for production facilities and develop a plan to reduce vehicular traffic frequency of vehicle use.

• Control the spread and effects from non-native plant species. (e.g., by washing vehicles and equipment.)

• Restrict pit and impoundment construction to reduce or eliminate augmenting threats from West Nile virus (Doherty 2007).

<u>*Locatable Minerals BMPs*</u>

Roads – PPMA and PGMA

• Design roads to an appropriate standard no higher than necessary to accommodate their intended purposes.

• Locate roads to avoid important areas and habitats.

• Coordinate road construction and use among ROW or SUA holders.

• Construct road crossing at right angles to ephemeral drainages and stream crossings.

• Establish speed limits on BLM and Forest Service managed roads to reduce vehicle/wildlife collisions or design roads to be driven at slower speeds.

• Do not issue ROWs or SUAs to counties on mining development roads, unless for a temporary use consistent with all other terms and conditions including this document.

• Restrict vehicle traffic to only authorized users on newly constructed routes (e. g., use signing, gates, etc.).

• Use dust abatement practices on roads and pads.

• Close and reclaim duplicate roads, by restoring original landform and establishing desired vegetation.

• Do not construct new roads when there are existing roads that could be used or upgraded to meet the need.

• Where possible, avoid constructing roads within riparian areas and ephemeral drainages

Operations – PPMA and PGMA

• Cluster disturbances associated with operations and facilities as close as possible.

• Place infrastructure in already disturbed locations where the habitat has not been restored.

• Restrict the construction of tall facilities and fences to the minimum number and amount needed.

• Site and/or minimize linear ROWs or SUAs to reduce disturbance to sagebrush habitats.

• Place new utility developments (power lines, pipelines, etc.) and transportation routes in existing utility or transportation corridors.

• Bury power lines.

• Cover (e.g., fine mesh netting or use other effective techniques) all pits and tanks regardless of size to reduce GRSG mortality.

• Equip tanks and other above ground facilities with structures or devices that discourage nesting of raptors and corvids.

• Control the spread and effects of non-native plant species (Gelbard and Belnap 2003, Bergquist et al. 2007).

• Restrict pit and impoundment construction to reduce or eliminate threats from West Nile virus (Doherty 2007). • Require GRSG-safe fences around sumps.

• Clean up refuse (Bui et al. 2010).

• Locate man camps outside of priority GRSG habitats.

Reclamation – PPMA and PGMA

• Include restoration objectives to meet GRSG habitat needs in reclamation practices/sites.

• Address post reclamation management in reclamation plans such that goals and objectives are to protect and improve GRSG habitat needs.

• Maximize the area of interim reclamation on long-term access roads and well pads including reshaping, topsoiling and revegetating cut and fill slopes, and investigating the possibility of establishing fuel breaks.

• Restore disturbed areas at final reclamation to pre-disturbance landform and desired plant community

• Irrigate interim reclamation as necessary during dry periods.

• Utilize mulching techniques to expedite reclamation.

Fuels and Fire Management

• Fire and fuels operations should focus on protecting and enhancing occupied GRSG habitats. This includes taking into account the feasibility and cost of future rehabilitation efforts during WFDSS planning and general fire operations in all occupied GRSG habitats

Fuels Management

• Where applicable, design fuels treatment objective to protect existing sagebrush ecosystems, modify fire behavior, restore native plants, and create landscape patterns which most benefit GRSG habitat.

• Provide training to fuels treatment personnel on GRSG biology, habitat requirements, and identification of areas used locally.

• Use burning prescriptions that minimize undesirable effects on vegetation or soils (e.g., minimize mortality of desirable perennial plant species and reduce risk of annual grass invasion).

• Ensure proposed sagebrush treatments are planned with full interdisciplinary input pursuant to NEPA and coordination with NDOW and SETT, and that treatment acreage is conservative in the context of surrounding GRSG seasonal habitats and landscape.

• Where appropriate, ensure that treatments are configured in a manner that promotes use by GRSG.

• Where applicable, incorporate roads and natural fuel breaks into fuel break design.• Where appropriate and allowable, utilize livestock grazing as a tool to reduce fuels and control non-native species.

• Power-wash all vehicles and equipment involved in fuels management activities prior to entering the area to minimize the introduction of undesirable and/or invasive plant species.

• Design vegetation treatments in areas of high fire frequency which facilitate firefighter safety, reduce the potential acres burned, and reduce the fire risk to GRSG habitat. Additionally, develop maps for GRSG habitat which spatially display existing fuels treatments that can be used to assist suppression activities.

• For implementing specific GRSG habitat restoration projects in annual grasslands, first give priority to sites which are adjacent to or surrounded by PPMA or that reestablish continuity between priority habitats. Annual grasslands are a second priority for restoration when the sites are not adjacent to PPMA, but within two miles of PPMA. The third priority for annual grassland habitat restoration projects are sites beyond two miles of PPMA. The intent is to focus restoration outward from existing, intact habitat.

• As funding and logistics permit, restore annual grasslands to a species composition characterized by perennial grasses, forbs, and shrubs or one of that referenced in land use planning documentation.

• Emphasize the use of native plant species, recognizing that non-native species may be necessary depending on the availability of native seed and prevailing site conditions.

• Remove standing and encroaching trees within at least 110 yards of occupied GRSG leks and other habitats (e.g., nesting, wintering and brood rearing) to reduce the availability of perch sites for avian predators, as resources permit.

Comment [RB1]: I would hate to see 100 year old historical trees taken out. Site by site determination needed in this case.

• Protect wildland areas from wildfire originating on private lands, infrastructure corridors, and recreational areas.

Comment [RB2]: Replace wildlands with wilderness

• Reduce the risk of vehicle- or human-caused wildfires and the spread of invasive species by installing fuel breaks and/or planting perennial vegetation (e.g., green-strips) paralleling road rights-of-way. Strategically place and maintain pre-treated strips/areas (e.g., mowing, herbicide application, etc.) to aid in controlling wildfire, should wildfire occur near PPMA or important restoration areas (such as where investments in restoration have already been made).

Comment [RB3]: Implementation and maintenanceosts and who is responsible?

Fire Management

• Compile District/Forest level information into state-wide GRSG tool boxes. Tool boxes will contain maps, listing of resource advisors, contact information, local guidance, and other relevant information for each District/Forest, which will be aggregated into a state-wide document.

• Provide localized maps to dispatch offices and extended attack incident commanders for use in prioritizing wildfire suppression resources and designing suppression tactics.

• Assign a resource advisor with GRSG expertise, or who has access to GRSG expertise, to all extended attack fires in or near GRSG habitat. Prior to the fire season, provide training to GRSG resource advisors

on wildfire suppression organization, objectives, tactics, and procedures to develop a cadre of qualified individuals. Involve state wildlife agency expertise in fire operations through:

– instructing resource advisors during preseason trainings;

– qualification as resource advisors;

– coordination with resource advisors during fire incidents;

– contributing to incident planning with information such as habitat features or other key data useful in fire decision making.

• On critical fire weather days, pre-position additional fire suppression resources to optimize a quick and efficient response in GRSG habitat areas.

• During periods of multiple fires, ensure line officers are involved in setting priorities.

• To the extent possible, locate wildfire suppression facilities (i.e., base camps, spike camps, drop points, staging areas, heli-bases, etc.) in areas where physical disturbance to GRSG habitat can be minimized. These include disturbed areas, grasslands, near roads/trails or in other areas where there is existing disturbance or minimal sagebrush cover.

• Power-wash all firefighting vehicles, to the extent possible, including engines, water tenders, personnel vehicles, and all-terrain vehicles (ATV) prior to deploying in or near GRSG habitat areas to minimize noxious weed spread. Minimize unnecessary cross-country vehicle travel during fire operations in GRSG habitat.

• Minimize burnout operations in key GRSG habitat areas by constructing direct fire line whenever safe and practical to do so.

• Utilize retardant, mechanized equipment, and other available resources to minimize burned acreage during initial attack.

• As safety allows, conduct mop-up where the black adjoins unburned islands, dog legs, or other habitat features to minimize sagebrush loss.

• Adequately document fire operation activities in GRSG habitat for potential follow-up coordination activities.

Lands and Realty

Leases and Permits

• Only allow permits and leases that have neutral or beneficial effects sage-grouse and their habitat in sage-grouse habitat management areas.

Right-of-Ways (ROWs)

• Work with existing rights-of-way holders in an attempt to install perch guards on all poles where existing utility poles are located within 3 miles of known leks, where necessary. Stipulate these requirements at grant renewal.

• Use existing utility corridors and consolidate rights-of-way to reduce habitat loss, degradation, and fragmentation. Whenever possible, install new power lines within existing utility corridors.

• Where GRSG conservation opportunities exist, BLM field offices and Forests should work in cooperation with rights-of-way holders to conduct maintenance and operation activities, authorized under an approved ROW grant, to avoid and minimize effect on GRSG habitat.

• When renewing or amending ROWs, assess the impacts of ongoing use of the ROW to GRSG habitat and minimize such impacts to the extent allowed by law.

• Work with applicants to minimize habitat loss, fragmentation, and direct and indirect effects to GRSG and its habitat.

• Conduct pre-application meetings with the BLM or Forest Service and SETT for all new ROW proposals consistent with the ROW regulations (43 CFR 2804.10) and consistent with current renewable energy ROW policy guidance (WO-IM-2011-061, issued February, 2011). Assess the impact of the proposed ROW on GRSG and its habitat, and implement the following: Ensure that reasonable alternatives for siting the ROW outside of GRSG habitat or within a BLM designated utility corridor are considered and analyzed in the NEPA document; and identify technically feasible best management practices, conditions, (e.g., siting, burying power lines) that may be implemented in order to eliminate or minimize impacts.

• Maximize the area of interim reclamation on long-term access roads and well pads including reshaping, topsoiling and revegetating cut and fill slopes.

• Authorize ROWs by applying appropriate BMPs (BLM Wind Energy Development EIS, June 2005), land use restrictions, stipulations, and mitigation measures. The BLM will document the reasons for its determination and require the ROW holder to implement these measures to minimize impacts to sage grouse habitat.

• Evaluate and take advantage of opportunities to remove, bury, or modify existing power lines within priority sage-grouse habitat areas.

• Where existing leases or rights-of-way (ROWs) have had some level of development (road, fence, well, etc.) and are no longer in use, reclaim the site by removing these features and restoring the habitat.

• Within designated ROW corridors encumbered by existing ROW authorizations: new ROWs should be co-located to the extent practical and feasible with the entire footprint of the proposed project within the existing disturbance associated with the authorized ROWs.

Comment [RB4]: Does this apply to existing and future projects? Will old projects be Grandfathered in? On existing large transmission lines is it realistic to accomplish and maintain? Who will be responsible for costs?

Comment [RB5]: Cost in rate hikes to utility customers?

Comment [RB6]: Will old abandoned mines be included?

• Subject to valid, existing rights, where new ROWs associated with valid existing rights are required, co-locate new ROWs within existing ROWs or where it best minimizes sage-grouse impacts. Use existing roads, or realignments as described above, to access valid existing rights that are not yet developed. If valid existing rights cannot be accessed via existing roads, then build any new road constructed to the absolute minimum standard necessary.

• Upon project completion, roads used for commercial access on public lands would be reclaimed, unless, based on site-specific analysis, the route provides specific benefits for public access and does not contribute to resource conflicts.

• Bury or reroute power lines outside of sage-grouse habitat wherever possible. If power lines cannot be sited outside of sage-grouse habitat, site power lines in the least suitable habitat possible,

Comment [RB7]: What about existing transmission lines? Will they be Grandfathered in?

• Remove power lines that traverse important sage-grouse habitats when facilities being serviced are no longer in use or when projects are completed.

• Install anti-perching and anti-nesting measures on tall structures, such as power lines.

Comment [RB8]: What about existing lines?

Travel and Transportation

• Establish speed limits on BLM and Forest Service-administered roads to reduce vehicle/wildlife collisions or design roads to be driven at slower speeds.

• Conduct restoration of roads, primitive roads, and trails not designated in travel management plans. This also includes primitive route/roads that were not designated in wilderness study areas and within lands managed for wilderness characteristics that have been selected for protection.

• When reseeding roads, primitive roads, and trails, use appropriate seed mixes and consider the use of transplanted sagebrush in order to meet sage-grouse habitat restoration objectives. Where existing annual grasses are present, pre-emergent herbicides should be used to enhance the effectiveness of any seeding and to also establish islands of desirable species for dispersion.

• Use existing roads, or realignments to access valid existing rights that are not yet developed. If valid existing rights cannot be accessed via existing roads, then any new roads would be constructed to the absolute minimum standard necessary.

• Allow no upgrading of existing routes that would change route category (road, primitive road, or trail) or capacity unless the upgrading would have minimal impact on sage-grouse habitat, is necessary for motorist safety, or eliminates the need to construct a new road.

Comment [RB9]: Consultation with County Government

• Identify, map, quantify, and evaluate impacts of existing roads, including 2-tracks, in relation to known lek locations and sage-grouse winter ranges.

• Consider the use of speed bumps where appropriate to reduce vehicle speeds near leks, such during oil and gas development.

Comment [RB10]: Realistic? Liability issues?

• Manage on-road travel and OHV use in key grouse areas to avoid disturbance during critical times such as winter and nesting periods.

• Consider road removal, realignment, or seasonal closures where appropriate to avoid degradation of habitat.

• Reclaim closed roads with plant species beneficial to sage-grouse.

Recreation

• Only allow special recreation permits that have neutral or beneficial effects to sage-grouse and their habitat in sage-grouse habitat management areas.

• Issue special recreation permits with appropriate distance and timing restrictions to minimize impacts to seasonal sage-grouse habitat.

Energy Development and Infrastructure

• Adopt standards outlined in *Nevada Energy and Infrastructure Development Standards to Conserve Greater Sage-grouse Populations and Their Habitats,* April 2010, pgs 25-29.

Riparian Areas and Wetlands

• At a minimum, all riparian areas and wet meadow brood rearing habitat should meet proper functioning condition (PFC). Where PFC is met, strive to attain reference state vegetation relative to the ecological site description.

Wild Horses and Burros

• Prioritize gathers in sage-grouse habitat, unless removals are necessary in other areas to prevent catastrophic environmental issues.

• Within sage-grouse habitat, develop or amend herd management area (HMAs) plans to incorporate sage-grouse habitat objectives and management considerations for all HMAs. For all HMAs within sage-grouse habitat, prioritize the evaluation of all appropriate management levels based on indicators that address structure/condition/composition of vegetation and measurements specific to achieving sage-grouse habitat objectives.

• When conducting NEPA analysis for wild horse and burro management activities, water developments or other rangeland improvements for wild horses in sage-grouse habitat, address the direct and indirect effects to sage-grouse populations and habitat. Implement any water developments or rangeland improvements using the criteria identified for domestic livestock identified in sage-grouse habitats.

Livestock Grazing and Range Management

• Adopt the Natural Resource Conservation Service (NRCS) Conservation Practice Standards and Specification listed below. In addition, adopt the recommendations additions to the standards developed by NRCS and NDOW as part of NRCS' Sage-grouse Initiative

- Code 645: Upland Wildlife Habitat Management
- Code 528: Prescribed Grazing
  - Emphasize rest periods when appropriate as part of the grazing management plan and restoration.
- Code 614: Water Facilities
  - Avoid placement where sagebrush cover will be reduced near a lek, in nesting habitat, or winter habitat whenever possible. NDOW recommends structures be at least 1 mile from a lek.
- Code 574: Spring Development
- Code 533: Pumping Plant
  - NDOW recommends the structure should not be placed within 3 miles of a lek to avoid disturbance to nesting sage-grouse.
- Code 642: Water Well
- Code 516: Livestock Pipeline
- Code 410: Grade Stabilization Structure
  - If possible, avoid the installation of these structures during the late summer brood rearing period. NDOW recommends structure placement in mid-September through late November.
- Code 382: Fence
  - If possible, fencing should not be constructed near a lek and should be avoided in winter habitats near ridges. To make a fence more visible, use white tipped metal fence posts, securing flagging or reflectors to the top fence wires, or slide sections of PVC pipe over the top wire.

• Remove or modify existing water developments that are having a net negative impact on GRSG habitats.

• Remove, relocate, or modify livestock ponds built in perennial channels that are having a net negative impact on riparian habitat, either directly or indirectly. Development of new livestock ponds should be designed to have neutral or positive impacts to GRSG habitat.

• All troughs should be outfitted with the appropriate type and number of wildlife escape ramps.

• All field and district offices should apply BLM IM 2013-094 or similar methodology until superseded related to drought management planning.

Comment [RB11]: Are you referring to strictly private land? Or are you referring to public and private land?

Comment [RB12]: Deal with this at the allotment level through individual grazing plans. Emphasizing season of use, rest, and any other management tools available to reach management goals.

Comment [RB13]: Modify or relocate existing water developments that are having a net negative impact on GRSG habitats, with no reduction or loss of certificated water rights. All should be in consultation with the permitee.

Comment [RB14]: Delete paragraph the pervious paragraph implies livestock ponds.

• Use aircraft to check livestock in areas where consistent trespass has been noted and access/manpower is difficult to obtain.

Surface Disturbing Activities - General

• During the period specified, manage discretionary surface disturbing activities and uses to prevent disturbance to GRSG during life cycle periods. Seasonal protection is identified for the following:

-Seasonal protection within four (4) miles of active GRSG leks from March 1 through June 15;
-Seasonal protection of GRSG wintering areas from November 1 through March 31;
-Seasonal protection of GRSG brood-rearing habitat from May 15 to August 15.

• For any surface-disturbing activities proposed in sagebrush shrublands, the Proponent will conduct clearance surveys for GRSG breeding activity during the GRSG's breeding season before initiating the activities. The surveys must encompass all sagebrush shrublands within 3.0 miles of the proposed activities. Three surveys would be conducted every season during pre-planning operations. In areas found to have probable GRSG activity, surveys should continue during project operations. These surveys should be conducted as part of a monitoring program to inform an adaptive management framework for required design features and operations.

• Ensure that all authorized ground disturbing projects have vegetation reclamation standards suitable for the site type prior to construction and ensure that reclamation to appropriate GRSG standards are budgeted for.

• Implement appropriate time-of-day and/or time-of year restrictions for future construction and/or maintenance activities in known GRSG habitat to avoid adverse impacts.

• Reseed all areas requiring reclamation with a seed mixture appropriate for the soils, climate, and landform of the area to ensure recovery of the ecological processes and habitat features of the potential natural vegetation, and to prevent the invasion of noxious weeds or other exotic invasive species. Long-term monitoring is required to determine success.

• Maximize the area of interim reclamation on long-term access roads and well pads including reshaping, topsoiling and revegetating cut and fill slopes.

Miscellaneous

• On BLM and Forest Service-administered Wilderness and Wilderness Study Areas (WSAs), mechanized equipment may be used to protect areas of high resource concerns or values; however, the use of mechanized equipment will be evaluated against potential long-term resource damage.

Comment [RB15]: In compliance with FAA Rules, no harrassmsnt of livestock, wildlife,

Comment [RB16]: On some allotments this could mean certain pastures are only available in Sept. and Oct

Comment [RB17]: Whoo's responsible? What will it cost? Where will the money come from? How and who will differentiate the scale of projects and whether they are at an industrial scale or have an agrarian focus with existing property rights.

Comment [RB18]: Lack of long-term monitoring by agencies does not prohibit livestock use,

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Natural Resources Conservation Service. Code 614: Conservation Practice Standard for Watering Facility. Website: http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs143_025623.pdf

Natural Resources Conservation Service. Code 574: Conservation Practice Specification for Spring Development. Website: http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs144p2_052394.pdf

Natural Resources Conservation Service. Code 533: Conservation Practice Standard for Pumping Plant. Website: http://efotg.sc.egov.usda.gov/references/public/MN/533mn.pdf

Natural Resources Conservation Service. Code 642: Conservation Practice Standard for Water Well. Website: http://efotg.sc.egov.usda.gov/references/public/AL/tg642.pdfNatural Resources Conservation Service. Code 516: Conservation Practice Standard for Livestock Pipeline. Website: http://efotg.sc.egov.usda.gov/references/public/AL/tg516.pdf

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Acronym List:

BMP: Best Management Practice

GRSG: Greater Sage-grouse

PGMA: Preliminary General Management Area

PPMA: Preliminary Priority Management Area

RDF: Required Design Feature

ROW: Right-of-way

1 SUA: Special Use Authorization

2 WFDSS: Wildland Fire Decision Support Tree

COMMENTS BY MEMBER TINA NAPPE

The list of man caused interferences with the health and well-being of sage grouse and other obligate sage brush species should be complete and unabridged. The heading can be a "Check List of Developments which May Impact Sage Grouse". This is a check list of sage grouse impact interferences designed for users, agencies, and the interested public to assess whether a development or use will create an impact. I also support the categories, since most users will search by category rather than subject headings such as "water", "fences", "roads", "offroad". But maybe the list will be shorter if by subject matter allowing the public to scan more easily.

We may all have concerns about various cautionary measures listed. I, for instance, am concerned with the water list. Surface water is important for all wildlife. Wells may reduce springs. Surface water is often diverted. The use of water can result in pollution. Maintaining a water source for wildlife is important. On the positive side, shouldn't any development maintain water at the source for wildlife. Shouldn't this requirement be included? The water for wildlife must be easily accessible. While Mosquito larvae can be harmful to birds, it is an important food source. Where water is contained introducing mosquito fish may be preferable to poisoning.

Under Agriculture: While some fences may be critical. Others might be removed.

Under Recreation: Limits on off road travel does not seem to be clearly stated.

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Tina Nappe

CHANGE ALL BMPs TO RDFs

Appendix A: Required Design Features/ Best Management Practices

Mineral Resources

Fluid Minerals RDFs

Roads - PPMA

• Do not construct new roads when there are existing roads that could be used or upgraded to meet the need.

• Design roads to an appropriate standard, no higher than necessary, to accommodate their intended purpose.

• Locate roads to avoid important areas and habitats.

• Coordinate road construction and use among ROW or SUA holders.

• Where possible, avoid constructing roads within riparian areas and ephemeral drainages.

• Construct road crossings at right angles to ephemeral drainages and stream crossings.

• Establish speed limits on BLM and Forest Service-managed roads to reduce vehicle/wildlife collisions or design roads to be driven at slower speeds.

• Establish trip restrictions (Lyon and Anderson 2003) or minimization through use of telemetry and remote well control (e.g., Supervisory Control and Data Acquisition).

• Do not issue ROWs or SUAs to counties on newly constructed energy development roads, unless for a temporary use consistent with all other terms and conditions included in this document.

• Restrict vehicle traffic to only authorized users on newly constructed routes (using signage, gates, etc.)

• Use dust abatement on roads and pads.

• Close and rehabilitate duplicate roads.

• Cluster disturbances, operations (fracture stimulation, liquids gathering, etc.), and facilities.

Operations - PPMA

• Use directional and horizontal drilling to reduce surface disturbance.

- Place infrastructure in already disturbed locations.
- Apply a phased development approach with concurrent reclamation.
- Place liquid gathering facilities outside of priority areas. Have no tanks at well locations within priority habitat areas to minimize truck traffic and perching and nesting sites for ravens and raptors.
- Pipelines must be under or immediately adjacent to the road (Bui et al. 2010).
- Use remote monitoring techniques for production facilities and develop a plan to reduce the frequency of vehicle use (Lyon and Anderson 2003).
- Restrict the construction of tall facilities and fences to the minimum number and amount needed.
- Site and/or minimize linear ROWs or SUAs to reduce disturbance to sagebrush habitats.
- Place new utility developments (power lines, pipelines, etc.) and transportation routes in existing utility or transportation corridors.
- Bury distribution power lines.
- Co-locate power lines, flow lines, and small pipelines under or immediately adjacent to existing roads (Bui et al. 2010).
- Design or site permanent structures which create movement (e.g., pump jack) to minimize impacts to GRSG.
- Cover (e.g., fine mesh netting or use other effective techniques) all drilling and production pits and tanks regardless of size to reduce GRSG mortality.
- Equip tanks and other above-ground facilities with structures or devices that discourage nesting of raptors and corvids.
- Control the spread and effects of non-native plant species (Evangelista et al. 2011) (e.g., by washing vehicles and equipment, minimize unnecessary surface disturbance).
- Use only closed-loop systems for drilling operations and no reserve pits.
- Restrict pit and impoundment construction to reduce or eliminate threats from West Nile virus (Doherty 2007).
- Remove or re-inject produced water to reduce habitat for mosquitoes that vector West Nile virus. If surface disposal of produced water continues, use the following steps for reservoir design to limit favorable mosquito habitat:
    - Overbuild size of ponds for muddy and non-vegetated shorelines.
    - Build steep shorelines to decrease vegetation and increase wave actions.

– Avoid flooding terrestrial vegetation in flat terrain or low lying areas.

– Construct dams or impoundments that restrict down slope seepage or overflow.

– Line the channel where discharge water flows into the pond with crushed rock.

– Construct spillway with steep sides and line it with crushed rock.

– Treat waters with larvicides to reduce mosquito production where water occurs on the surface.

• Limit noise to less than 10 decibels above ambient measures (20-24 dBA) at sunrise at the perimeter of a lek during active lek season (Patricelli et al. 2010, Blickley et al. In preparation). **MAXIUM NOISE LEVEL FOR ALL ACTIVITIES WILL NOT EXCEED 34 DECIBELS.**

- **AMBIENT NOISE LEVELS ARE CUMMULATIVE, AND ARE NOT TO BE RECALCUATED FOLLOWING NEW DEVELOPMENTS OR ACTIVITIES.**

• Require noise shields when drilling during the lek, nesting, brood-rearing, or wintering season.

• Fit transmission towers with anti-perch devices (Lammers and Collopy 2007).

• Require GRSG-safe fences (e.g. marked fences).

• Locate new compressor stations outside priority habitats and design them to reduce noise that may be directed towards priority habitat.

• Clean up refuse (Bui et al. 2011).

• Locate man camps outside of priority habitats.

Reclamation – PPMA and PGMA

• Include objectives for ensuring habitat restoration to meet GRSG habitat needs in reclamation practices/sites (Pyke 2011). Address post reclamation management in reclamation plan such that goals and objectives are to protect and improve GRSG habitat needs.

• Maximize the area of interim reclamation on long-term access roads and well pads, including reshaping, topsoiling and revegetating cut-and-fill slopes.

• Restore disturbed areas at final reclamation to the pre-disturbance landforms and desired plant community.

• Irrigate interim reclamation if necessary for establishing seedlings more quickly.

• Utilize mulching techniques to expedite reclamation and to protect soils.

Roads - PGMA

• Design roads to an appropriate standard no higher than necessary to accommodate their intended purpose.

• Do not construct new roads when there are existing roads that could be used or upgraded to meet the need.

• Where possible, **PREVENT** ~~avoid~~ constructing roads within riparian areas and ephemeral drainages.

• Do not issue ROWs or SUAs to counties on energy development roads, unless for a temporary use consistent with all other terms and conditions included in this document.

• Establish speed limits to reduce vehicle/wildlife collisions or design roads to be driven at slower speeds.

• Coordinate road construction and use among ROW or SUA holders.

• Construct road crossings at right angles to ephemeral drainages and stream crossings.

• Use dust abatement practices on roads and pads.

• Close and reclaim duplicate roads by restoring original landform and establishing desired vegetation.

Operations – PGMA

• Cluster disturbances, operations (fracturing stimulation, liquids gathering, etc.), and facilities.

• Use directional and horizontal drilling to reduce surface disturbance.

• Clean up refuse (Bui et al. 2010).

• Restrict the construction of tall facilities and fences to the minimum number and amount needed.

• Cover (e.g., fine mesh netting or use other effective techniques) all drilling and production pits and tanks regardless of size to reduce GRSG mortality.

• Equip tanks and other above-ground facilities with structures or devices that discourage nesting by raptors or corvids.

• Use remote monitoring techniques for production facilities and develop a plan to reduce vehicular traffic frequency of vehicle use.

• Control the spread and effects from non-native plant species. (e.g., by washing vehicles and equipment.)

• Restrict pit and impoundment construction to reduce or eliminate augmenting threats from West Nile virus (Doherty 2007).

Locatable Minerals ~~*BMPs*~~ *RDFs*

Roads – PPMA and PGMA

• Design roads to an appropriate standard no higher than necessary to accommodate their intended purposes.

• Locate roads to avoid important areas and habitats.

• Coordinate road construction and use among ROW or SUA holders.

• Construct road crossing at right angles to ephemeral drainages and stream crossings.

• Establish speed limits on BLM and Forest Service managed roads to reduce vehicle/wildlife collisions or design roads to be driven at slower speeds.

• Do not issue ROWs or SUAs to counties on mining development roads, unless for a temporary use consistent with all other terms and conditions including this document.

• Restrict vehicle traffic to only authorized users on newly constructed routes (e. g., use signing, gates, etc.).

• Use dust abatement practices on roads and pads.

• Close and reclaim duplicate roads, by restoring original landform and establishing desired vegetation.

• Do not construct new roads when there are existing roads that could be used or upgraded to meet the need.

• Where possible, avoid constructing roads within riparian areas and ephemeral drainages

Operations – PPMA and PGMA

• Cluster disturbances associated with operations and facilities as close as possible.

• Place infrastructure in already disturbed locations where the habitat has not been restored.

• Restrict the construction of tall facilities and fences to the minimum number and amount needed.

• Site and/or minimize linear ROWs or SUAs to reduce disturbance to sagebrush habitats.

• Place new utility developments (power lines, pipelines, etc.) and transportation routes in existing utility or transportation corridors.

• Bury power lines.

• Cover (e.g., fine mesh netting or use other effective techniques) all pits and tanks regardless of size to reduce GRSG mortality.

• Equip tanks and other above ground facilities with structures or devices that discourage nesting of raptors and corvids.

• Control the spread and effects of non-native plant species (Gelbard and Belnap 2003, Bergquist et al. 2007).

• Restrict pit and impoundment construction to reduce or eliminate threats from West Nile virus (Doherty 2007).

• Require GRSG-safe fences around sumps.

• Clean up refuse (Bui et al. 2010).

• Locate man camps outside of priority GRSG habitats.

Reclamation – PPMA and PGMA

• Include restoration objectives to meet GRSG habitat needs in reclamation practices/sites.

• Address post reclamation management in reclamation plans such that goals and objectives are to protect and improve GRSG habitat needs.

• Maximize the area of interim reclamation on long-term access roads and well pads including reshaping, topsoiling and revegetating cut and fill slopes, and investigating the possibility of establishing fuel breaks.

• Restore disturbed areas at final reclamation to pre-disturbance landform and desired plant community

• Irrigate interim reclamation as necessary during dry periods.

• Utilize mulching techniques to expedite reclamation.

Fuels and Fire Management

• Fire and fuels operations should focus on protecting and enhancing occupied GRSG habitats. This includes taking into account the feasibility and cost of future rehabilitation efforts during WFDSS planning and general fire operations in all occupied GRSG habitats

Fuels Management

• Where applicable, design fuels treatment objective to protect existing sagebrush ecosystems, modify fire behavior, restore native plants, and create landscape patterns which most benefit GRSG habitat.

• Provide training to fuels treatment personnel on GRSG biology, habitat requirements, and identification of areas used locally.

• Use burning prescriptions that minimize undesirable effects on vegetation or soils (e.g., minimize mortality of desirable perennial plant species and reduce risk of annual grass invasion).

• Ensure proposed sagebrush treatments are planned with full interdisciplinary input pursuant to NEPA and coordination with NDOW and SETT, and that treatment acreage is conservative in the context of surrounding GRSG seasonal habitats and landscape.

• Where appropriate, ensure that treatments are configured in a manner that promotes use by GRSG.

• Where applicable, incorporate roads and natural fuel breaks into fuel break design.

• Where appropriate and allowable, utilize **supervised** livestock grazing as a tool to reduce fuels and control non-native species.

• Power-wash all vehicles and equipment involved in fuels management activities prior to entering the area to minimize the introduction of undesirable and/or invasive plant species.

• Design vegetation treatments in areas of high fire frequency which facilitate firefighter safety, reduce the potential acres burned, and reduce the fire risk to GRSG habitat. Additionally, develop maps for GRSG habitat which spatially display existing fuels treatments that can be used to assist suppression activities.

• For implementing specific GRSG habitat restoration projects in annual grasslands, first give priority to sites which are adjacent to or surrounded by PPMA or that reestablish continuity between priority habitats. Annual grasslands are a second priority for restoration when the sites are not adjacent to PPMA, but within two miles of PPMA. The third priority for annual grassland habitat restoration projects are sites beyond two miles of PPMA. The intent is to focus restoration outward from existing, intact habitat.

• As funding and logistics permit, restore annual grasslands to a species composition characterized by perennial grasses, forbs, and shrubs or one of that referenced in land use planning documentation.

• Emphasize the use of native plant species, recognizing that non-native species may be necessary depending on the availability of native seed and prevailing site conditions.

• Remove standing and encroaching trees within at least ~~**110 yards**~~ **1 kilometer** of occupied GRSG leks and other habitats (e.g., nesting, wintering and brood rearing) to reduce the availability of perch sites for avian predators, as resources permit.

• Protect wildland areas from wildfire originating on private lands, infrastructure corridors, and recreational areas.

• Reduce the risk of vehicle- or human-caused wildfires and the spread of invasive species by installing fuel breaks and/or planting perennial vegetation (e.g., green-strips) paralleling road rights-of-way. Strategically place and maintain pre-treated strips/areas (e.g., mowing, herbicide application, etc.) to aid in controlling wildfire, should wildfire occur near PPMA or important restoration areas (such as where investments in restoration have already been made).

Fire Management

• Compile District/Forest level information into state-wide GRSG tool boxes. Tool boxes will contain maps, listing of resource advisors, contact information, local guidance, and other relevant information for each District/Forest, which will be aggregated into a state-wide document.

• Provide localized maps to dispatch offices and extended attack incident commanders for use in prioritizing wildfire suppression resources and designing suppression tactics.

• Assign a resource advisor with GRSG expertise, or who has access to GRSG expertise, to all extended attack fires in or near GRSG habitat. Prior to the fire season, provide training to GRSG resource advisors on wildfire suppression organization, objectives, tactics, and procedures to develop a cadre of qualified individuals. Involve state wildlife agency expertise in fire operations through:

– instructing resource advisors during preseason trainings;

– qualification as resource advisors;

– coordination with resource advisors during fire incidents;

– contributing to incident planning with information such as habitat features or other key data useful in fire decision making.

• On critical fire weather days, pre-position additional fire suppression resources to optimize a quick and efficient response in GRSG habitat areas.

• During periods of multiple fires, ensure line officers are involved in setting priorities.

• To the extent possible, locate wildfire suppression facilities (i.e., base camps, spike camps, drop points, staging areas, heli-bases, etc.) in areas where physical disturbance to GRSG habitat can be minimized. These include disturbed areas, grasslands, near roads/trails or in other areas where there is existing disturbance or minimal sagebrush cover.

• Power-wash all firefighting vehicles, to the extent possible, including engines, water tenders, personnel vehicles, and all-terrain vehicles (ATV) prior to deploying in or near GRSG habitat areas to minimize noxious weed spread. Minimize unnecessary cross-country vehicle travel during fire operations in GRSG habitat.

• Minimize burnout operations in key GRSG habitat areas by constructing direct fire line whenever safe and practical to do so.

• Utilize retardant, mechanized equipment, and other available resources to minimize burned acreage during initial attack.

• As safety allows, conduct mop-up where the black adjoins unburned islands, dog legs, or other habitat features to minimize sagebrush loss.

• Adequately document fire operation activities in GRSG habitat for potential follow-up coordination activities.

Lands and Realty

Leases and Permits

• Only allow permits and leases that have neutral or beneficial effects sage-grouse and their habitat in sage-grouse habitat management areas.

Right-of-Ways (ROWs)

• Work with existing rights-of-way holders in an attempt to install perch guards on all poles where existing utility poles are located within ~~3 miles~~ **4 miles** of known leks, where necessary. Stipulate these requirements at grant renewal.

• Use existing utility corridors and consolidate rights-of-way to reduce habitat loss, degradation, and fragmentation. Whenever possible, install new power lines within existing utility corridors.

• Where GRSG conservation opportunities exist, BLM field offices and Forests should work in cooperation with rights-of-way holders to conduct maintenance and operation activities, authorized under an approved ROW grant, to avoid and minimize effect on GRSG habitat.

• When renewing or amending ROWs, assess the impacts of ongoing use of the ROW to GRSG habitat and minimize such impacts to the extent allowed by law.

• Work with applicants to minimize habitat loss, fragmentation, and direct and indirect effects to GRSG and its habitat.

• Conduct pre-application meetings with the BLM or Forest Service and SETT for all new ROW proposals consistent with the ROW regulations (43 CFR 2804.10) and consistent with current renewable energy ROW policy guidance (WO-IM-2011-061, issued February, 2011). Assess the impact of the proposed ROW on GRSG and its habitat, and implement the following: Ensure that reasonable alternatives for siting the ROW outside of GRSG habitat or within a BLM designated utility corridor are considered and analyzed in the NEPA document; and identify technically feasible best management practices, conditions, (e.g., siting, burying power lines) that may be implemented in order to eliminate or minimize impacts.

• Maximize the area of interim reclamation on long-term access roads and well pads including reshaping, topsoiling and revegetating cut and fill slopes.

• Authorize ROWs by applying appropriate BMPs (BLM Wind Energy Development EIS, June 2005), land use restrictions, stipulations, and mitigation measures. The BLM will document the reasons for its determination and require the ROW holder to implement these measures to minimize impacts to sage grouse habitat.

• Evaluate and take advantage of opportunities to remove, bury, or modify existing power lines within priority sage-grouse habitat areas.

• Where existing leases or rights-of-way (ROWs) have had some level of development (road, fence, well, etc.) and are no longer in use, reclaim the site by removing these features and restoring the habitat.

• Within designated ROW corridors encumbered by existing ROW authorizations: new ROWs should be co-located to the extent practical and feasible with the entire footprint of the proposed project within the existing disturbance associated with the authorized ROWs.

• Subject to valid, existing rights, where new ROWs associated with valid existing rights are required, co-locate new ROWs within existing ROWs or where it best minimizes sage-grouse impacts. Use existing roads, or realignments as described above, to access valid existing rights that are not yet developed. If valid existing rights cannot be accessed via existing roads, then build any new road constructed to the absolute minimum standard necessary.

• Upon project completion, roads used for commercial access on public lands would be reclaimed, unless, based on site-specific analysis, the route provides specific benefits for public access and does not contribute to resource conflicts. **Require a Reclamation Bond for all projects within SGMAs.**

• Bury or reroute power lines outside of sage-grouse habitat wherever possible. If power lines cannot be sited outside of sage-grouse habitat, site power lines in the least suitable habitat possible,

• Remove power lines that traverse important sage-grouse habitats when facilities being serviced are no longer in use or when projects are completed.

• Install anti-perching and anti-nesting measures on tall structures, such as power lines.

Travel and Transportation

• Establish speed limits on BLM and Forest Service-administered roads to reduce vehicle/wildlife collisions or design roads to be driven at slower speeds.

• Conduct restoration of roads, primitive roads, and trails not designated in travel management plans. This also includes primitive route/roads that were not designated in wilderness study areas and within lands managed for wilderness characteristics that have been selected for protection.

• When reseeding roads, primitive roads, and trails, use appropriate seed mixes and consider the use of transplanted sagebrush in order to meet sage-grouse habitat restoration objectives. Where existing annual grasses are present, pre-emergent herbicides should be used to enhance the effectiveness of any seeding and to also establish islands of desirable species for dispersion.

• Use existing roads, or realignments to access valid existing rights that are not yet developed. If valid existing rights cannot be accessed via existing roads, then any new roads would be constructed to the absolute minimum standard necessary.

• Allow no upgrading of existing routes that would change route category (road, primitive road, or trail) or capacity unless the upgrading would have minimal impact on sage-grouse habitat, is necessary for motorist safety, or eliminates the need to construct a new road.

• **Work with BLM to identify**, map, quantify, and evaluate impacts of existing roads, including 2-tracks, in relation to known lek locations and sage-grouse winter ranges.

• Consider the use of speed bumps where appropriate to reduce vehicle speeds near leks, such during oil and gas development.

• Manage on-road travel and OHV use in key grouse areas to avoid disturbance during critical times such as winter and nesting periods.

• Consider road removal, realignment, or seasonal closures where appropriate to avoid degradation of habitat.

• Reclaim closed roads with **native** plant species beneficial to sage-grouse.

Recreation

• Only allow special recreation permits that have neutral or beneficial effects to sage-grouse and their habitat in sage-grouse habitat management areas.

• Issue special recreation permits with appropriate distance and timing restrictions to minimize impacts to seasonal sage-grouse habitat.

Energy Development and Infrastructure

• Adopt standards outlined in *Nevada Energy and Infrastructure Development Standards to Conserve Greater Sage-grouse Populations and Their Habitats,* April 2010, pgs 25-29.

Riparian Areas and Wetlands

• At a minimum, all riparian areas and wet meadow brood rearing habitat should meet proper functioning condition (PFC). Where PFC is met, strive to attain reference state vegetation relative to the ecological site description.

Wild Horses and Burros

• Prioritize gathers in sage-grouse habitat, unless removals are necessary in other areas to prevent catastrophic environmental issues.

• Within sage-grouse habitat, develop or amend herd management area (HMAs) plans to incorporate sage-grouse habitat objectives and management considerations for all HMAs. For all HMAs within sage-

grouse habitat, prioritize the evaluation of all appropriate management levels based on indicators that address structure/condition/composition of vegetation and measurements specific to achieving sage-grouse habitat objectives.

• When conducting NEPA analysis for wild horse and burro management activities, water developments or other rangeland improvements for wild horses in sage-grouse habitat, address the direct and indirect effects to sage-grouse populations and habitat. Implement any water developments or rangeland improvements using the criteria identified for domestic livestock identified in sage-grouse habitats.

Livestock Grazing and Range Management

• Adopt the Natural Resource Conservation Service (NRCS) Conservation Practice Standards and Specification listed below. In addition, adopt the recommendations additions to the standards developed by NRCS and NDOW as part of NRCS' Sage-grouse Initiative

- Code 645: Upland Wildlife Habitat Management
- Code 528: Prescribed Grazing
    - Emphasize rest periods when appropriate as part of the grazing management plan and restoration.
- Code 614: Water Facilities
    - Avoid placement where sagebrush cover will be reduced near a lek, in nesting habitat, or winter habitat whenever possible. NDOW recommends structures be at least 1 mile from a lek.
- Code 574: Spring Development
- Code 533: Pumping Plant
    - NDOW recommends the structure should not be placed within 3 miles of a lek to avoid disturbance to nesting sage-grouse.
- Code 642: Water Well
- Code 516: Livestock Pipeline
- Code 410: Grade Stabilization Structure
    - If possible, avoid the installation of these structures during the late summer brood rearing period. NDOW recommends structure placement in mid-September through late November.
- Code 382: Fence
    - If possible, fencing should not be constructed near a lek and should be avoided in winter habitats near ridges. To make a fence more visible, use white tipped metal fence posts, securing flagging or reflectors to the top fence wires, or slide sections of PVC pipe over the top wire.

• Remove or modify existing water developments that are having a net negative impact on GRSG habitats.

• Remove, relocate, or modify livestock ponds built in perennial channels that are having a net negative impact on riparian habitat, either directly or indirectly. Development of new livestock ponds should be designed to have neutral or positive impacts to GRSG habitat.

• All troughs should be outfitted with the appropriate type and number of wildlife escape ramps.

• All field and district offices should apply BLM IM 2013-094 or similar methodology until superseded related to drought management planning.

• Use aircraft to check livestock in areas where consistent trespass has been noted and access/manpower is difficult to obtain.

Surface Disturbing Activities - General

• During the period specified, manage discretionary surface disturbing activities and uses to prevent disturbance to GRSG during life cycle periods. Seasonal protection is identified for the following:

-Seasonal protection within four (4) miles of active GRSG leks from March 1 through June 15;
-Seasonal protection of GRSG wintering areas from November 1 through March 31; **[SPECIFY DISTANCES]**
-Seasonal protection of GRSG brood-rearing habitat from May 15 to August 15. **[SPECIFY DISTANCES]**

• For any surface-disturbing activities proposed in sagebrush shrublands, the Proponent will conduct clearance surveys for GRSG breeding activity during the GRSG's breeding season before initiating the activities. The surveys must encompass all sagebrush shrublands within 3.0 miles of the proposed activities. Three surveys would be conducted every season during pre-planning operations. In areas found to have probable GRSG activity, surveys should continue during project operations. These surveys should be conducted as part of a monitoring program to inform an adaptive management framework for required design features and operations.

• Ensure that all authorized ground disturbing projects have vegetation reclamation standards suitable for the site type prior to construction and ensure that reclamation to appropriate GRSG standards are budgeted for.

• Implement appropriate time-of-day and/or time-of year restrictions for future construction and/or maintenance activities in known GRSG habitat to avoid adverse impacts.

• Reseed all areas requiring reclamation with a seed mixture appropriate for the soils, climate, and landform of the area to ensure recovery of the ecological processes and habitat features of the potential natural vegetation, and to prevent the invasion of noxious weeds or other exotic invasive species. Long-term monitoring is required to determine success.

• Maximize the area of interim reclamation on long-term access roads and well pads including reshaping, topsoiling and revegetating cut and fill slopes.

MONITOR THE RECLAMATION/RESTORATION OF ALL SURFACE DISTURBING ACTIVITES FOR A MINIMUM OF 3 YEARS FOLLOWING PROJECT COMPLETION.

Miscellaneous

• On BLM and Forest Service-administered Wilderness and Wilderness Study Areas (WSAs), mechanized equipment may be used to protect areas of high resource concerns or values; however, the use of mechanized equipment will be evaluated against potential long-term resource damage.

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Acronym List:

BMP: Best Management Practice

GRSG: Greater Sage-grouse

PGMA: Preliminary General Management Area

PPMA: Preliminary Priority Management Area

RDF: Required Design Feature

ROW: Right-of-way

SUA: Special Use Authorization

WFDSS: Wildland Fire Decision Support Tree

11/17/13
To the Sagebrush Ecosystem Council

From Karen Boeger, NV Chapter Backcountry Hunters and Anglers*
* BHA advocates for conservation and restoration of the "backcountry": big, wild, unfragmented wildlife habitat =
The best habitat for wildlife, fish and traditional hunters and anglers.

Comments on proposed BMPs:

Fuels management, p 7:
1. Re use of livestock grazing as a tool, ADD: only with use of intensive management. (Timing is everything. Without daily monitoring and management oversight, the situation could be worsened rather than improved.)
2. ADD: any treatment project must include a post treatment management plan, timely monitoring and implementation of adaptive management when indicated by monitoring.

Fire management, p8:
1. WSAs and Wilderness areas must have site specific management plans

ROWs, p 10:
1. Re reclamation of project roads for commercial access, unless specific benefits for public access: ADD: not if within SGMA. No new roads.

Travel &transportation, p 11
1. Re public safety exception to no upgrading provision: beware. This can have the opposite effect as speeds will increase with increased standard. A "difficult" road can actually increase safety by forcing appropriate speed and increasing caution. Note 1 BMP suggests water bars to decrease speeds.
2. Re evaluation of impacts of existing routes to leks and SG winter range: ADD: if impacts are unacceptable level, adaptive management action will be taken, including closing routes entirely or seasonally.
3. Re seasonal closure to avoid degradation of habitat, ADD: and or to avoid disturbance during critical times. ADD: provision to entirely close routes in priority habitat when deemed best long term benefit to SG.
4. ADD: BLM & FS must prioritize route designation in SGMAs and travel be restricted to designated routes. Where route designation process already completed, a new look must be taken with SG habitat health given higher priority and revisions made where appropriate.

RIparian areas & wetlands, p 12
1. ADD: timely monitoring, followed by adaptive management action where indicated. If not at PFC,. Management plan must assure trend will be upward and consequences for downward trend.

Livestock grazing and management, p 12, 13
1. See # 1 above

2. Consequences for unmet utilization standards have been removed. What assurance for adaptive management changes on a timely basis (6 mos - 1 yr) ?
3. Often a change of season of use can reduce existing impacts, is this practice a part of the NRCS/NDOW standards?
4. Have the standards and guides developed years ago by the No. NV and E NV RACs been incorporated into the NRCS/NDOW standards?

Thank you for consideration of these comments.