

Appendix C

Casper Field Office
Sand Hills Management Area,

MITIGATION MEASURES FOR ALL SURFACE DISTURBING ACTIVITIES

MITIGATION MEASURES for AUTHORIZED SURFACE DISTURBING ACTIVITIES

Due to the fragile nature of the Sand Hills, specifically the presence of both stabilized and un-stabilized sand dunes and slopes greater than 25 percent, mitigation is a critical component of any project in area. Mitigation measures specific to surface impacts will include:

- Development of existing leases would require the establishment of consolidated production facilities to reduce the overall footprint and disturbance associated with the activity.
- Wells developed within the Sand Hills Management Area would be remote monitored to reduce unnecessary travel in the area.
- All pipelines and power lines constructed within the Sand Hills Management Area would be buried and should follow established roads.
- To minimize the miles of road within the Sand Hills Management Area, operators would utilize and share use of existing roads to the extent possible
- To avoid excessive soil movement, no new roads would be established in areas of active dunes or where destabilizing sand dunes would likely cause active movement
- All new roads would follow the natural topographic contour to the extent possible
- All new roads would remain as primitive as possible to still accommodate permitted activity.
- To minimize erosion, road crossings would be constructed at a right angle to all drainages.
- All surface disturbing activities would be constructed in a manner to retain the existing natural character to the extent possible.
- To prevent loss and degradation of important habitats, surface disturbing activities would be sited in a manner to avoid habitat for sensitive species.
- All drainage ditches and culverts would be kept clear and free flowing, and would also be maintained in accordance with the original construction standards. If any additional erosion occurs during the life of the project, the company needs to control it through additional culverts or wing ditches.
- The existing and new access roads would be maintained in a safe and usable condition.

A regular maintenance program may include, but is not limited to: grading, repairing, and maintaining the road surface, ditches, culverts, and cattle guards. Weeds would be controlled on disturbed areas within the limits of the road corridor.

- Culverts would be located, and aligned as specified in the site plans. Culverts shall have a minimum of 12" of fill or 1/2 the pipe diameter, whichever is greater, placed on top of the culvert, and would be of length sufficient to allow at least 24" of culvert to extend from the fill slope face. The inlet & outlet would be set at the gradient of the native ground or aligned with the existing channel. The entire length of pipe would be bedded on native material before backfilling. Backfilling would be completed using unfrozen material & rocks no larger than two inches in diameter. Care would be exercised to thoroughly compact the backfill around and under the culvert. The backfill would be brought up evenly in 6" lifts on both sides of the culvert and compacted. A permanent marker would be installed at both ends of the culvert to help prevent traffic from damaging the culvert.
- Cattleguards would be a minimum of 16 feet wide and 8 feet long and would be designed to minimum AASHTO H-20 standards. Cattleguards would be set-on either timber, precast concrete, or cast-in-place concrete bases at right angles to the roadway. Backfill around the cattleguard would be thoroughly compacted. A 16 foot wide bypass gate would be built adjacent to the cattleguard structure. Fence end panels on either side of the cattleguard would be constructed using 3 posts with braces.
- If soils along the access route are dry during road construction, water would be applied to the road surface to minimize soil loss as a result of wind erosion.
- Surface disturbance would be prohibited in any of the following areas or conditions. Construction with frozen material or during periods when the soil material is saturated, or when watershed damage is likely to occur. Exception, waiver, or modification of this limitation may be approved in writing, including documented supporting analysis, by the BLM Authorized Officer, with an acceptable plan for mitigation of anticipated impacts.
- Construction-related traffic would be restricted to routes approved by the BLM Authorized Officer. New access roads or cross-country vehicle travel would not be permitted unless prior written approval is given by the BLM Authorized Officer.
- When off-route OHV use is approved for development or operation of a project the following mitigation measures would apply:
 - When motorized off-route travel is required, OHVs must be safely operated in such a manner as to insure that no undue environmental damage is caused. Should the Authorized Officer determine that any vehicle operations are causing undue vegetative or soil disturbance, such operations would be immediately suspended.
 - Vehicle traffic would be directed toward the interdunal valley bottoms as opposed

to stabilized sand dunes.

- The operator would avoid damaging or removal of stabilizing vegetation on sand dunes (via spinning tires) through the use of 1) the environmentally appropriate staking and 2) suitable equipment. Tire slippage is a definite problem and should be avoided. If undue or excessive damage to vegetation/sand dunes occurs all operations would be suspended by the Authorized Officer.
- The operator would conduct no vehicle operations during periods of saturated ground conditions when surface rutting could occur except in sand dune areas where soil may be more stable when wet.
- Off-road vehicle traffic shall be minimized and no new roads or trails shall be established solely as a result of off-route vehicle use.
- The operator shall reclaim and reseed any areas where their operations have caused surface rutting or have otherwise removed all of the surface vegetation as directed by the Authorized Officer.
- No vehicle traffic would be allowed within 100 feet of sparsely vegetated sand (less than 20% vegetative cover) associated with active wind redeposition near active sand dunes.
- All buggy and/or conventional drill operations would be limited to slopes of 25% or less where vegetative cover is sparse, less than 30% ground cover.
- The operator would ensure that off-road vehicle traffic does not drive the same track as another vehicle, terrain permitting.