

**Appendix E**  
**Biological Resources Protection Plan**

**BIOLOGICAL RESOURCES PROTECTION PLAN**  
**Black Hills DeBeque Exploratory Proposal**  
**MESA AND GARFIELD COUNTIES, COLORADO**

**Black Hills Plateau Production, LLC**  
**Denver, Colorado**

**April 2013**

## **1.0 Introduction**

This Biological Resources Protection Plan (Plan) describes measures to be taken by Black Hills Plateau Production, LLC (Black Hills) and its contractor(s) (Contractor) to avoid or minimize adverse effects to biological resources during construction, operation, and abandonment of the Black Hills DeBeque Exploratory Proposal (Project). Measures identified in this Plan apply to work within the Project areas defined as surface disturbance and traffic for the well pads, centralized facilities, pipelines, roads, and other areas.

Black Hills and Contractor(s) personnel are to be thoroughly familiar with this Plan and its contents prior to initiating construction on the Project.

## **2.0 Purpose**

This Plan was developed to mitigate potential impacts to biological resources from construction, operation, and abandonment of the Project. The protective, mitigation measures identified, below, are intended to minimize or avoid short- and long-term effects to biological resource habitats and populations.

## **3.0 Responsibilities**

### **3.1 Black Hills**

Black Hills is responsible for meeting the goals and objectives of this Plan and for monitoring Project-related work to ensure that the Contractor(s) applies the measures and complies with the natural resources constraints. Black Hills is responsible for pre-construction surveys to determine status of raptor nests, marking sensitive areas identified during surveys, and applying appropriate buffer areas recommended by the agencies.

### **3.2 Contractor**

The Contractor is responsible for adhering to biological resource construction restrictions described below.

## **4.0 Protection Measures**

In order to avoid long-term effects to key wildlife species and federally threatened and BLM-sensitive plant species, protection measures have been developed in consideration of the requirements of the Bureau of Land Management (BLM) Grand Junction Field Office (GJFO).

### **4.1 Seasonal Limitations and Buffer Zones**

There are a number of seasonal timing limitations and required buffer zones for sensitive resources within the project area. A seasonal timing limitation is defined as the time of year when no surface disturbing activities are allowed in a particular sensitive area. These timing limitations are also referred to as seasonal closures or construction constraints. Buffer zones are areas surrounding a sensitive location (e.g., raptor nest and special status plants) where seasonal

timing and spatial limitations would apply. Timing limitations occur for the following species that could be potentially affected by the Project:

- Breeding migratory birds;
- Raptors;
- Mule deer;
- Elk; and
- Federally threatened and BLM-sensitive plant species.

Two proposed wellpads are located on leases with lease stipulations to protect wintering big game (HDU 7-33 and DeBeque Canyon 1-13) which include a Timing Limitation from December 1 to May 1. Where winter range (sensitive big game winter habitats) is not protected by lease stipulations, Black Hills will follow BLM's annual Timing Limitation period from January 1 to March 1 to minimize impacts to wintering big game. Black Hills is proposing to meet with BLM and Colorado Parks and Wildlife (CPW) by July 1 of each year to discuss areas where Black Hills would request exceptions to Timing Limitations for the following winter.

## **4.2 Pre-construction Surveys**

Black Hills conducted surveys for biological resources within the project area, including threatened, endangered, and sensitive plant surveys, raptor nesting surveys, wetland surveys, and noxious weed surveys in 2010, 2011, and 2012 (West Water Engineering, 2010, 2011a, b, and c, and 2012). Additional surveys will be conducted prior to construction activities to determine the status of raptor nests documented within the project area. The following surveys have been completed within the Project area on all BLM-administered lands, and on private lands where survey permission was granted:

Special Status Plant Surveys. Special status plant surveys were conducted in 2010, 2011, and 2012 to include the following general survey areas in suitable habitat:

- Colorado hookless cactus and BLM-sensitive plant species: 100 meters within pipelines and access road improvements/construction, and 200 meters within 10-acre well pads and/or centralized facilities.
- DeBeque phacelia: 200 meters within pipelines and access road improvements/construction, and 300 meters within 10-acre well pads and/or centralized facilities.

Raptor Surveys: raptor surveys were conducted within 0.25 mile of well pads, pipelines, and access roads within appropriate habitat in 2010, 2011, and 2012. If cliff habitat was present, surveys were extended to 0.5 mile of proposed disturbance boundaries.

Wetland Surveys: Wetland evaluations were conducted within portions of the project area in 2010, 2011, and 2012. Evaluations identified potentially jurisdictional wetlands and Waters of the U.S. (WoUS) based on vegetation, soils, and hydrologic characteristics present at the site.

Noxious Weeds and Non-Native Plant Species Surveys: Weeds species were documented within 100 feet of proposed disturbance in 2010, 2011, and 2012.

## **5.0 General Protection Measures**

In addition to site-specific seasonal timing limitations and buffer zones identified below, Black Hills will comply with the following plant and wildlife protection measures:

- Construction will not proceed in restricted areas until final clearance is obtained by the applicable federal and state agencies. This restriction applies to raptors, migratory birds, and federally-listed and BLM sensitive plants.
- Black Hills will implement seasonal timing limitations within big game sensitive wildlife habitats (winter range) as required by lease stipulation or as required by the BLM where there is no lease stipulation to protect wintering big game in big game sensitive wildlife habitats.
- Black Hills proposes to increase their contribution to a mitigation fund to \$300 per acre (\$100 per acre is included in the 2010 Wildlife Mitigation Plan) of disturbance basis for new well pads, pipelines, centralized facilities, and access roads. This contribution would cover all disturbances within the project area, within and outside sensitive big game winter habitats. The assessment of impacts will be documented and the funding contribution made on a yearly schedule.
- Black Hills proposes to meet with CPW and BLM around July 1 each year to discuss drilling plans for the following winter as well as to address requests for exceptions to timing limitations in sensitive big game winter habitats.
- Between December 1 and May 1, operational traffic within big game sensitive wildlife habitats (winter range) will be limited to emergency traffic only within 3 hours of sunrise and sunset (between 10 a.m. and 3 p.m.). Requests for exceptions will be submitted in writing, either by letter or Sundry Notice.
- A policy stating that no guns, dogs, drugs, or alcohol will be in place for all employees and subcontractors to minimize potential conflicts with wildlife.
- Well pads and facilities will be located away from environmentally sensitive areas such as riparian habitats and stream drainages.
- Existing roads will be used to the maximum extent possible and gas and water gathering pipelines will be placed adjacent to both existing and new roads to minimize disturbance.
- Dust suppression will be implemented by spraying water on unpaved roads on an as-needed basis. Magnesium chloride and other surfactants, binding agents, or other dust-suppression chemicals will not be used for dust control without prior approval from the BLM.
- Fluids pits will be fenced on three sides prior to drilling activity and closed off on the fourth side after drilling is completed. Fencing will be adequate to preclude entry by livestock, unless otherwise specified by BLM GJFO. Fencing for pits and other facilities with potential to cause harm to big game and other wildlife will be 8-foot woven wire fence with adequate bracing. The bottom two feet of mesh fence surrounding each pit should be sized adequately to preclude small animals from entering the pit. The fence construction should be on cut or undisturbed ground and the fence should be maintained in a livestock-tight condition.

- Environmental awareness training will be provided describing the consequences of poaching and information on Colorado wildlife laws, licensing, and residency requirements.
- Speed limits will be enforced from the beginning of construction throughout the life of the project to minimize collisions with wildlife. Posted speed limits will be followed. Where there is no posted speed limit, speeds on unpaved accessed roads and disturbed areas will not exceed 20 miles per hour.
- Single-purpose roads will be gated and general public access will be restricted to reduce traffic disruptions to wildlife where possible, and with landowner consent.
- Workers will carpool to construction and drilling locations to reduce traffic.
- Produced water gathering and water supply pipelines will be installed in the same trench as the gas gathering pipelines to reduce truck traffic within the Homer Deep Unit and the Horseshoe Canyon Unit. The produced water will be piped to centralized facilities and stored in tanks. Produced water will be trucked from the centralized facilities to the Hancock Gulch #1 Injection Well in the Homer Deep Unit.
- Multi-well pads are proposed to minimize surface disturbance and fragmentation. Two wells are proposed on each well pad during exploration.
- Remote telemetry will be used for all well locations during operations. Initially, regular visits (daily) are necessary but once the well has been in production for some period of time, the daily trips can be reduced to a single weekly or monthly visit.
- Bear-resistant containers will be used and refuse will be collected frequently to minimize potential for conflicts with bears.
- All pipeline-related disturbance will be reclaimed within one growing season after construction. Interim reclamation/stabilization at well pads will occur within 6 months of the last scheduled well on a pad or within 12 months of a well drilled on the pad.
- Cattle will be excluded from revegetated well pads to ensure complete revegetation of the disturbed area and promote use by big game.
- Vegetation will be cleared by mowed or brush hogging where appropriate, leaving the root structure intact – instead of scraping the surface (and in agreement with landowner conditions).
- Surface disturbance will be limited to the minimum amount necessary for construction and should not disturb any areas outside the staked construction disturbance limits to minimize sedimentation resulting from erosion.
- Limits of surface disturbance will be clearly flagged prior to construction and will be maintained through final construction cleanup.
- Topsoil will be stripped, stored, and replaced through construction of all project components. All topsoil will be salvaged in accordance with landowner requirements to minimize degradation of habitat.
- Topsoil stripping will include all growth medium present at a site, as indicated by color or texture. Stripping and preparation. No topsoil will be stripped when soils are saturated or frozen below the stripping depth.
- Topsoil storage depth may be specified during the onsite inspection. All stripped topsoil will be stored separately from subsoil or other excavated material and replaced prior to seedbed implementation to minimize compaction during topsoil salvaging and replacement during reclamation, subsoil scarification, and subsequent testing.

- Earthwork will not be conducted when the wind speed exceeds 30 mph.
- All disturbed surfaces not to be used during operation will be revegetated/reclaimed with native, palatable species for wildlife, with shrubs and forbs. Disturbed areas will be recontoured and graded to pre-project contours to create physical diversity of landforms (e.g., slopes, surface undulations, minor depressions, rock piles, etc.). Seed mix is provided below in Table 1:

**Table 1**  
**Seed Mixture for Reclamation/Revegetation on BLM-Administered Lands**

<b>Common Name</b>	<b>Scientific Names</b>	<b>Variety</b>	<b>Season</b>	<b>Form</b>	<b>Pure Live Seed (PLS) lbs/acre*</b>
<b>Grasses</b>					
Bottlebrush Squirreltail	<i>Elymus elymoides</i> , <i>Sitanion hystrix</i>	Toe Jam Creek	Cool	Bunch	2.0
Orchardgrass	<i>Dactylis glomerata</i>	Paiute, Pomar	Cool	Sod-forming	1.0
Slender Wheatgrass	<i>Elymus trachycaulus</i> , <i>Agropyron trachycaulum</i>	Revenue, Pryor	Cool	Bunch	3.0
Western Wheatgrass	<i>Pascopyrum smithii</i> , <i>Agropyron smithii</i>	Barton, Rodan, Rosana, Arriba, Walsh	Cool	Sod-forming	4.8
Indian Ricegrass	<i>Achnatherum hymenoides</i> , <i>Oryzopsis hymenoides</i>	Nezpar, Paloma, Star Lake	Cool	Bunch	2.8
Junegrass	<i>Koeleria cristata</i> , <i>Koeleria macrantha</i>		Cool	Bunch	0.1
<b>Forbs</b>					
Blue Flax	<i>Linum lewisii</i>	Maple grove			0.5
Northern sweetvetch	<i>Hedysarum borale</i>	Timp			0.5
Palmer Penstemon (OR Rocky Mtn Pen)	<i>Penstemon palmerii</i> <i>Penstemon strictus</i>	VNS** VNS			0.5
Small Burnet	<i>Sanguisorba minor</i>	Delar			1.0
Western Yarrow	<i>Achilea millefolium</i> [occidentalis]				0.1
<b>Shrubs</b>					
Four-wing saltbush	<i>Atriplex canescens</i>				2.0
Shadscale	<i>Atriplex confertifolia</i>				1.5
Winterfat	<i>Krascheninnikovia lanata</i> , <i>Ceratoides lanata</i>				0.5
Antelope bitterbrush	<i>Purshia tridentate</i>	VNS			1.0
<b>TOTAL Pure Live Seed per acre</b>					<b>21.3</b>
*Based on 80 pure live seeds (PLS) per square foot, broadcast-seeded. No hydroseeding.					
** Variety Not Specified					

## **6.0 Aquatic Wildlife Protection Measures**

To minimize adverse effects at the drainage crossings with water present, Black Hills will comply with the following aquatic wildlife protection measures:

- Follow measures described in their respective stormwater management plans to minimize the potential for spills of fuel and/or other hazardous materials to reach drainages.
- Use a flume crossing technique (dry open-cut) when water is present in drainages to maintain water flow, minimize changes in waterbody flow characteristics, and eliminate a significant quantity of downstream turbidity and sedimentation.
- Use native stream-bed materials for trench backfill.
- Avoid applying herbicides within 100 feet of wetlands and floodplains.

## **7.0 Colorado River Endangered Fishes**

To mitigate adverse effects to Colorado River endangered fishes from withdrawal and discharge of hydrostatic test waters, Black Hills will implement the following measures as described in the FWS Programmatic Biological Opinion for Water Depletions Associated with BLM's Fluid Mineral Program within the Upper Colorado River Basin in Colorado (FWS, 2008):

- Avoid entrainment by pumping from off-channel locations (e.g., ponds, lakes, and diversion ditches), not directly connected to the mainstem rivers even during high spring flows;
- If the pump head must be located in the river channel where larval fish are known to occur (generally within Designated Critical Habitat), the following measures apply:
  - Do not situate the pump in a low-flow or no-flow area as these habitats tend to concentrate larval fishes. Instead place the pump into fast moving riffle habitat.
  - Restrict the amount of pumping, to the greatest extent possible, during that period of the year when larval fish may be present (June 1 to August 15).
  - Avoid pumping, to the greatest extent possible during the pre-dawn hours (two hours prior to sunrise) as larval fish drift studies indicate that this is a period of greatest daily activity.
- Screen all pump intakes with ¼ inch or finer mesh material.
- Report any fish impinged on any intake screens to FWS at (970) 243-2778 or the Colorado Parks and Wildlife Northwest Region, 711 Independent Avenue, Grand Junction, Colorado, 81505, (970-255-6100).

Black Hills will also implement the following measures:

- Discharge all hydrostatic test water in a vegetated upland area at a distance from waterbodies to encourage infiltration and minimize flow into waterbodies. The water discharge from these activities would be directed to a temporary catch basin consisting of straw bales, Mirafi fabric, and /or silt fence to dissipate energy to prevent erosion and to filter the discharge in order to avoid sedimentation. Sediment barriers (e.g., silt fence and/or straw wattles) would also be utilized as necessary between the surface discharge

point to remove sediment from any surface runoff that might occur. The discharge location will be approved by BLM prior to discharge.

- Water withdrawal will occur from locations other than the Colorado River between June 1 and August 15, if possible.

## 8.0 Migratory Birds

Black Hills will comply with the following migratory bird protection measures on federal and non-federal lands:

- Vegetation removal will occur prior to May 15 or after July 15 to avoid take of migratory bird species, nests, or eggs.
- A fluids pit is proposed for each well pad and is expected to be active during drilling and completion activities (approximately 90 days). To preclude entry into the fluids pit by migratory birds, Black Hills will net the fluids pit with a maximum mesh size of 1 ½ inches.
- If a fluids pit will only be used for drilling (fresh water), Black Hills will contact BLM to determine if netting is necessary, on a case-by-case basis.

## 9.0 Raptor Protection Measures

Black Hills will comply with the following raptor protection measures on federal and non-federal lands:

- Revisit nests documented within 0.5 mile of the Project area (West Water Engineering, 2010, 2011a, b, and c, and 2012) prior to surface-disturbing activities that would occur between February 1 and August 15 to determine nesting activity.
  - If the nest is determined to be occupied and active, Black Hills will avoid surface disturbing activities within 0.25 mile or 0.5 mile of the raptor nest during FWS and CPW seasonal breeding periods (see Table 2, below).
  - If the nest is not occupied, or nestlings have fledged and dispersed from the nest, construction or other disturbing activities will occur without consideration of seasonal breeding periods identified in Table 2.

**Table 2**  
**Raptor Species that Might Nest in the Vicinity of the Project Area with Seasonal Timing and Spatial Buffers Recommended by FWS and CPW**

Species	Breeding Season Timing Buffer	Breeding Season Spatial Buffer (mile)
Bald Eagle	November 15-July 31	0.5
Burrowing Owl	March 15-August 15	0.25
Cooper's Hawk	April 1-August 15	0.25
Ferruginous Hawk	February 1-August 15	0.5
Flammulated Owl	March 1-August 15	0.25

Species	Breeding Season Timing Buffer	Breeding Season Spatial Buffer (mile)
Golden Eagle	December 15-July 15	0.5
Great Horned Owl	February 1- August 15	0.25
Merlin	March 1-August 15	0.25
Northern Goshawk	March 1-September 15	0.5
Northern Harrier	April 1-August 15	0.25
Northern Pygmy Owl	March 1-August 15	0.25
Northern Saw-whet Owl	March 1-August 15	0.25
Osprey	April 1-August 31	0.25
Peregrine Falcon	March 15-July 31	0.5
Prairie Falcon	March 15-July 31	0.5
Red-tailed Hawk	February 15-August 15	0.25
Sharp-shinned Hawk	April 1-August 15	0.25
Swainson's Hawk	April 1-August 15	0.25

## 10.0 Threatened, Endangered, and Sensitive Plant Protection Measures

Black Hills conducted surveys for federally threatened and BLM sensitive plant species (special status plants, collectively) that could occur within the Project area (West Water Engineering, 2010, 2011a, b, and c, and 2012) on BLM-administered lands and on private lands where survey access was permitted. Surveys for DeBeque phacelia focused on identifying suitable habitat. Phacelia relies on a combination of precipitation and temperature necessary for germination and may not grow every year. On private lands with no survey access permitted, surveys identified potentially suitable DeBeque phacelia habitat from the road and/or aerial photography. The following measures will be applied to minimize or avoid effects to special status plants documented during survey efforts within the project area:

- No well pads or centralized facilities will be constructed within 100 meters of suitable or potentially suitable DeBeque phacelia habitat, or within 20 meters of documented Colorado hookless cactus plants, unless existing disturbance is closer to the documented plants or habitat. When feasible, well pads and/or centralized facilities will be placed further than 20 meters from BLM-sensitive plants.
- Pipeline corridors will be constructed adjacent to existing disturbance (roads or existing pipeline corridors) where feasible, or collocated with new proposed access roads.
- Pipeline corridors and new access roads will be constructed further than 100 meters from suitable or potentially suitable DeBeque phacelia habitat, or further than 20 meters from documented Colorado hookless cactus plants and BLM-sensitive plants, if feasible. In situations that this scenario is not possible for pipeline corridors, Black Hills will minimize effects to special status plants to the extent practicable by reducing the construction corridor width, constructing the pipelines on the opposite side of existing disturbance if special status plants are not present, or constructing the pipelines within an existing road if special status plants are present on both sides of the road.

- Construction would occur outside of the special status plant flowering season and spatial buffers, identified below:
  - No construction within 200 meters of DeBeque phacelia suitable or potentially suitable habitat between April and late June.
  - No construction within 100 meters of Colorado hookless cactus plants between April and late May.
  - No construction within 100 meters of Naturita milkvetch plants between April and early June.
- Orange fencing will be erected along well pad, centralized facility, pipeline, and access road construction disturbance extents within 20 meters of known Colorado hookless cactus and BLM-sensitive plant species and within 100 meters of suitable or potentially suitable DeBeque phacelia habitat to ensure construction traffic and workers would not accidentally crush plants.
- Surface pipelines will be securely fastened so that the pipeline does not migrate into suitable or potentially suitable DeBeque phacelia habitat, or known special status plant sites. Surface pipelines will be monitored daily.
- During construction, Black Hills will water (no additives) existing gravel/dirt roads, pipeline construction corridors, well pads, and/or centralized facilities within 100 meters on either side of known special status plants (200 meters within DeBeque phacelia suitable or potentially suitable habitat) to reduce possible dust deposition. Water will be obtained from an approved water source.
- Straw bale wattles, silt fences, or other measures will be installed on the edge of proposed ground-disturbance and existing access roads if proposed disturbance is within 20 meters of documented Colorado hookless cactus and/or BLM-sensitive plants, and/or 100 meters of suitable or potentially suitable DeBeque phacelia habitat to reduce the potential for altering hydrology / habitat.
- A biological monitor will be present on-site during all ground-disturbing activities, including installation of best management practices (conservation measures) and reclamation activities to ensure effects to special status plants are minimized as much as possible. Areas requiring a biological monitor will be determined in conjunction with BLM GJFO.
- Black Hills will follow BLM's *Noxious and Invasive Management Plan for Oil and Gas Operators* (BLM, 2007) to control or eliminate noxious weeds and other undesirable plants documented within the Project area.
- Black Hills will inform all employees about prohibitions against possessing, damaging, and destroying ESA-listed plants.
- Colorado hookless cactus plants documented within 20 meters (328 feet) and suitable or potentially suitable DeBeque phacelia habitat documented within 100 meters (656 feet) of Project disturbance will be monitored annually during the appropriate flowering period for a minimum of 3 years after ground-disturbing activities.
  - Plants and/or habitat will be photographed from a staked location prior to ground-disturbing activities and annually during the appropriate flowering season.
  - Plant and/or habitat status and health will be described, including presence of weed species, if any.

- Black Hills will submit monitoring reports to BLM GJFO and FWS after each annual survey.

In areas that permission to complete surveys was not acquired, but the area could provide potential habitat for federally threatened plants (DeBeque phacelia and/or Colorado hookless cactus), Black Hills will have a biological monitor present to avoid or minimize effects to federally listed species and/or their habitat, where practicable or feasible. These efforts could include:

- Minor alteration of the pipeline alignment to avoid removal of a Colorado hookless cactus plant(s) or to avoid suitable DeBeque phacelia habitat.
- Reduce the pipeline construction corridor to minimize affects to suitable DeBeque phacelia habitat.
- Reconfigure the proposed well pad or centralized facility to avoid removal of Colorado hookless cactus plant(s) or suitable DeBeque phacelia habitat.

In addition, Black Hills will provide details of cactus plant locations and suitable DeBeque phacelia habitat, as well as actions taken to minimize effects to the plants and/or habitat to the BLM GJFO when and if Colorado hookless cactus plants or suitable DeBeque phacelia habitat are encountered.

## **11.0 Weed Control**

Black Hills will monitor and promptly control Colorado State-listed Class A and Class B noxious weeds and other undesirable plants as described within BLM's *Noxious and Invasive Weed Management Plan for Oil and Gas Operators*, (BLM, 2007). Weed infestations would be treated and monitored, and retreated, if necessary. Weeds within sensitive resource areas would be spot-treated. Reports would be provided to BLM GJFO by December 1 of each year until desired level of control is achieved.

## **12.0 References**

- Bureau of Land Management. 2007. Noxious and Invasive Weed Management Plan for Oil and Gas Operators. U.S. Department of the Interior, Bureau of Land Management. Glenwood Springs Field Office. Glenwood Springs, Colorado. March.
- U.S. Fish and Wildlife Service. 2008. Programmatic Biological Opinion for Water Depletions Associated with Bureau of Land Management's Fluid Mineral Program with the Upper Colorado River Basin in Colorado. ES/GJ-6-CO-08-F-0006. U.S. Fish and Wildlife Service, Ecological Services, Grand Junction, Colorado.
- WestWater Engineering. 2010. 2010 Homer Deep and Winter Flats Projects: Threatened, Endangered, Sensitive Species Plant Report. Prepared for Black Hills Exploration and Production. July.
- WestWater Engineering. 2011a. 2011 Biological Survey Report, Horseshoe Canyon Unit, Mesa County, Colorado. Prepared for Black Hills Exploration and Production. September.
- WestWater Engineering. 2011b. 2011 Biological Survey Report, Homer Deep Unit, Mesa and Garfield Counties, Colorado. Prepared for Black Hills Exploration and Production. November.

WestWater Engineering. 2011c. DeBeque Phacelia Habitat Assessment Report, Horseshoe Canyon Unit HSC 4-28 to HSC 4-20 Buried Pipeline, Black Hills Exploration and Production. December.

WestWater Engineering. 2012 (in preparation). 2012 Biological Survey Report, Black Hills DeBeque Exploratory Project, Mesa and Garfield Counties, Colorado. Prepared for Black Hills Exploration and Production. September.