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(1) Monitoring

SCM will conduct periodic monitoring of vegetation, soils, wildlife and other aspects as approved or prescribed by the MDEQ.

SOILS AND VEGETATION

Soil monitoring methodologies are covered in Section 17.24.313(1)(g)(ii) and (iii). The schedule for conducting salvaged and replaced soils monitoring is dependent on mine advance and reclamation progress and varies substantially. Soil salvage depth studies are typically conducted and submitted to the Department for approval just prior to conducting the soil stripping. Soil stripping is minimized to the extent practicable to keep disturbed acreages as low as reasonably achievable.

Replaced soil monitoring studies on reclamation are generally conducted on an annual basis and reported in the annual mining report.

Revegetation monitoring methodologies are described in Section 17.24.313(1)(h)(ix). Reporting is generally conducted annually or based on field maturity and/or liability period fulfillment with results reported in the annual mining report.

If soils or vegetation monitoring indicate corrective actions are necessary, corrective actions shall be implemented to comply with applicable permit requirements.

Special Habitat Features Inventory

A special habitat feature study has been conducted at SCM. The study included features of habitual value including, but not limited to, cliffs, rock outcrops, and riparian areas. The summary of this study is located in Section 17.24.313, Addendum D of Volumes 1B and 1C.

WILDLIFE

Wildlife monitoring has been conducted at SCM annually since 1982. Periodic minor modifications to the original monitoring plan (MDEQ approved) have been approved by the MDEQ since that time. All wildlife monitoring work will be conducted by qualified wildlife biologists. Based on consultations with personnel from Montana Fish, Wildlife & Parks (MFWP) and MDEQ, SCM and

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Thunderbird Wildlife Consulting, Inc. developed the following monitoring and reporting plan:

Big Game

To determine mule deer use of, and distribution within, previously identified winter mule deer range, SCM will conduct one winter aerial survey for mule deer each year, timed to occur immediately following a significant snow event or during an extended period of extremely cold temperatures.

- This aerial survey will occur between November 1 and March 15 of the following year.
- The survey area will include the SCM permit area and its 2-mile perimeter; except in the southeast where that perimeter overlaps areas surveyed by the Decker Coal Company. Surveys will be flown in a high-wing, light plane along north-south transects spaced at 0.5-mile intervals. Surveys will start shortly after sunrise. All sightings of big game, raptors, and predators will be recorded on a 1:24000 scale map during the survey. Data recorded will include location, species, number, and habitat. Any observations of herds that appear to be bunched up against fence lines or other barriers to movement, or that exhibit other unusual behavior, will be recorded and included in the annual wildlife report for that year.
- If the targeted weather conditions have not occurred by February 21 each year, an aerial survey will be scheduled to occur by March 15 to ensure that one winter aerial count per year is maintained.

In a letter to SCM dated October 5, 2010, the MDEQ stated that “The Department no longer requires active permits to conduct the over-winter survival and fawn recruitment surveys.”

Upland Game Birds

- All known grouse leks within the permit area and 2-mile perimeter will be monitored for activity each year using aerial and/or ground surveys.
- Searches for new leks will be conducted in the permit area and 1-mile perimeter each year using aerial and/or ground surveys.

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- Grouse lek counts and searches will be revised to conform to MFWP protocols (current and future revisions) for aerial and ground surveys.
- Lek observations and counts will be conducted during the MFWP survey window (last week of March through the first week of May), but will focus on recommended timing for peak counts (second and third weeks of April) as weather and travel conditions allow. When possible, survey efforts will be separated by at least one week.
- All known leks will be checked at least once each spring. Aerial surveys can be used to determine presence/absence at known lek sites and to search for new leks. A minimum of two ground counts will be conducted at active leks each year; three ground counts will be conducted in years when aerial surveys are not employed.
- Lek counts can be conducted from 30 minutes before sunrise to 2 hours after sunrise, but should target the timeframe from 15 minutes before to 45 minutes after sunrise for optimum counts.
- Lek monitoring and searches will not be conducted when precipitation is falling or when wind conditions exceed 15 mph; listening routes will not be conducted when winds exceed 12 mph.
- Searches for new leks will concentrate in likely lek habitat: level to rolling sagebrush-grassland for sage grouse, and grassy knolls and ridge lines for sharp-tailed grouse. All searches will be conducted according to MFWP protocols. Ground searches will be conducted by slowly driving along existing roads and two-tracks through the area, stopping at vantage points to scan and listen for strutting and dancing birds. Lek searches will begin at first light or immediately following lek counts and last until 2.0 hours after sunrise; searches may be extended another 30 minutes if the biologist's professional judgment indicates appropriate environmental conditions are present.
- Pedestrian surveys for upland game bird broods will be conducted on two days from late July through mid-August along walking routes established in major drainages (i.e., Spring Creek, South Fork Spring Creek) in the permit area and 1-mile perimeter. Biologists will walk each drainage and watch for grouse broods and sign (feathers and scat). Any observations will be recorded, including the number of adults and young, location, and habitat.
- In addition to the annual report submitted to the MDEQ, survey results will

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be provided to the MFWP each year using that agency's preferred reporting format.

Raptors

The survey area for nesting raptors will be the SCM permit area and accessible portions of the 2-mile perimeter; except in the southeast where that perimeter overlaps areas surveyed by Decker Coal Company. Guidelines recommended by Grier and Fyfe (1987)¹ will be followed to prevent nest abandonment and injury to eggs or young.

Initial surveys for early-nesting species, such as golden eagles and great horned owls, will be conducted in March. All known raptor nests in the area will be checked at least once during the breeding season. Early in the season, nests will be observed from a distance with the aid of binoculars and a spotting scope. Nests will not be approached on foot until after May 1.

Searches for new nests will be conducted from late March through July to accommodate variability among nesting species and years. Nests will be located by traversing the study area by vehicle and on foot. Frequent vehicle stops will be made at vantage points to scan nesting substrates such as rimrocks and cliff faces, and to look for adult raptors. Areas where adults are repeatedly seen, or where defensive behavior is observed, will be thoroughly searched for nests. Because many raptors nest in trees, large stands of trees will be searched on foot. All active nests will be monitored until the pair's breeding attempt fails or young fledge.

All nests will be plotted on 1:24000 scale topographic maps using a hand-held global positioning system (GPS) receiver. Nest status (active, inactive, alternate) and production of young at nests will be documented. The presence of any bald eagle winter roost sites, seasonal concentration areas, or breeding territories will be documented and promptly reported to both MDEQ and the U.S. Fish and Wildlife Service (USFWS).

Prairie Falcon Monitoring

¹ Grier, J. W. and R. W. Fyfe. 1987. Preventing research and management disturbance. Pages 173-182 in B. A. Pendleton, B. A. Millsap, K. W. Cline, and D. M. Bird, eds. Raptor management techniques manual. Natl. Wildl. Fed., Washington, D.C.

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As a result of projected mine disturbance and potential impact to known prairie falcon nest site PF1b, SCM has committed to conducting enhanced visual monitoring for prairie falcons. The monitoring originated as a stipulation in the 2007 Environmental Assessment and subsequent FONSI for federal mineral lease MTM 94378.

To minimize negative impacts as mining approaches nest PF1b, surface disturbing activities and prolonged human activity will be restricted within 1,200 feet of the PF1b nest from 1 April through 15 July. However, if monitoring determines that the PF1b nest is not active by early May of any given year, activities can resume in the vicinity of the nest. To achieve this, SCM will conduct monitoring of the PF1b nest site between April and early May every year to document the activity of nest site PF1b. SCM will report the findings of this monitoring to MDEQ by mid-May each year to document nest activity and whether mining activities will resume within the 1,200-foot buffer zone.

Additional time will be allocated each year between May and July to monitor known nest sites within the territory more closely. The prairie falcon territory is depicted on Figure C-1 in Appendix C of the MTM 94378 Environmental Assessment (note that this territory includes areas outside the monitoring area for all other species in this monitoring plan). When a nest is active SCM will document the presence and behavior of prairie falcons and also attempt (through visual observations) to glean some understanding of the pair's home range. To assess the effects of encroachment on nest site PF1b, SCM will monitor the status of the 10 prairie falcon territories indicated on Figure C-1. This additional monitoring will begin in 2011 and continue for a total of three years (ending after the 2013 breeding season).

Threatened and Endangered Species

Throughout the course of all field surveys, biologists will watch for and record vertebrate species that are listed as Endangered or Threatened under the Endangered Species Act of 1973, or vertebrate species that are proposed or candidates for listing under that act. Biologists will also watch for and record rare vertebrate species tracked by the Montana Natural Heritage Program (MTNHP) that could occur as permanent or seasonal residents in or within 1.0 mile of the Spring Creek Mine permit area, based on each species' range and the habitats present in that area. Habitats within the permit boundary that could support those species will also be documented. Data collected for each observation will include notes on species, number of individuals, location, habitat, sex/age (when possible), and activity. If federally listed species or their habitats are detected, both the MDEQ and the USFWS will be promptly notified, and a consultation

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with the USFWS will be arranged to determine the appropriate clearance surveys or protective measures that should be conducted/implemented. All survey results, including any observations of species that are threatened, endangered, sensitive, or of special concern will be reported in SCM Annual Wildlife Monitoring Reports.

Surveys for black-footed ferrets will be limited to those prairie dog colonies that will be disturbed by mining operations. Such colonies will be searched for ferrets at least 1 year prior to disturbance. Surveys will be directed by a biologist that is certified by the USFWS to conduct ferret clearance surveys, and will follow the most current procedures recommended by that agency. To ensure that information on prairie dog occurrence in the area is current, an inventory of all colonies in the permit area and its 1-mile perimeter will be conducted every 5 years (2001, 2006, 2011, etc.). Colony perimeters will be mapped using hand-held GPS receivers and plotted on the annual report map. Should the USFWS issue a block-clearance or otherwise determine that surveys for black-footed ferrets are no longer required in the vicinity of the Spring Creek Mine, those surveys will be discontinued immediately and that directive will be included in the annual report.

Medium-Sized Mammals and Carnivores

In a letter to SCM dated October 5, 2010, the MDEQ stated that “SCM has collected and reported this (lagomorph) information as required by the Department for many years. The Department has determined that it is not necessary to continue to collect the lagomorph data.”

Opportunistic observations of medium-sized mammals or carnivores and their sign will be made during all aerial and ground surveys conducted at the Spring Creek Mine each year. Any large burrows encountered will be examined closely to determine if they were used recently, especially as a nursery den. Such sites will be described in the annual report for that year.

Small Mammals

Based on the results of a cooperative study² completed in 2006 using survey data supplied by the SCM and other Montana coal mines, small mammal trapping will be discontinued at the Spring Creek Mine. Results from that study confirmed that

² Clayton, K. M., J. D. Berry, P. Farmer, B. Waage, C. Yde, and J. M. Gregory. 2006. Small mammal reoccupancy of reclaimed habitat: a potential indicator of reclamation success. Paper presented at the 2006 Billings Land Reclamation Symposium, June 5–8, 2006, Billings, MT, and jointly published by BLRS and ASMR, 3134 Montavesta Road, Lexington, KY.

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small mammal populations in reclaimed habitats were comparable to those in native habitats. The elimination of small mammal trapping at the Spring Creek Mine is in keeping with MDEQ-approved revisions to the wildlife monitoring program at other Montana coal mines based on this same study.

Avian (Passerine) Species

Passerine birds are good indicators of habitat diversity and quality. Breeding bird surveys were conducted during baseline studies from 1977 through 1979, and every fifth year beginning in 1996. To maintain a current database on species richness and relative abundance, and incorporate reclaimed lands, passerine surveys will be conducted in unmined habitats and permanent reclamation at the Spring Creek Mine every third year, beginning in 2011 (2011, 2014, 2017, etc.). The transition from 5-year survey intervals to 3-year intervals beginning in 2011 is based on the availability of sufficient acreage of permanent reclamation to accommodate breeding bird plots.

As in the past, four unmined habitat types will be surveyed during each sampling period as long as sufficient undisturbed acreages remain intact: sagebrush-grassland, seeded grassland, bottomland, and ponderosa pine. Four plots will also be surveyed in reclaimed grassland, and four plots will be added in reclaimed shrubland once sufficient acreage is established. Each plot will have a 100-meter radius and will be separated by an adequate distance to prevent overlap between adjacent plots. Each plot will be surveyed on three consecutive mornings in late May or early June. In addition, biologists will maintain species lists during each site visit to document the occurrence of passerine and all other birds.

Waterfowl and Shorebirds

All water sources in the permit area will be surveyed once in spring and once in summer to assess areas of waterfowl and shorebird use. Incidental observations will also be used to gather data on the occurrence of these species. Throughout the course of field studies, personnel will be particularly attentive to identifying high-use ponds and temporary water sources, such as depressions, in the permit area and 1-mile perimeter. Such sites will be plotted on field maps and their physical characteristics will be described in the annual report.

Bats

Several bats were collected during baseline studies conducted at the Spring Creek Mine. Historically (through 2012) and as part of annual monitoring, visual and/or electronic surveys have been used to locate bat use areas and roosts in the permit

Revised 10/03/2013; Reference – MR192

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area. Efforts were concentrated at likely foraging sites (i.e. ponds and reservoirs) and consisted of nocturnal surveys conducted in the early evening at least once each summer.

In 2012, MDEQ installed an electronic bat monitoring system adjacent to the South Fork Spring Creek Flood Control Reservoir. The monitor consists of a microphone and recording device. The data is periodically downloaded by MDEQ staff. Beginning in 2013, MDEQ agreed the annual bat monitoring could be discontinued and the new electronic system (operated and maintained by MDEQ) will be used to monitor bat presence at the mine. MDEQ has agreed to provide summary reports of the data which will be referenced in the appropriate annual wildlife report.

If during other wildlife monitoring activities a bat roost is located, the MDEQ will be notified; details will be provided in the annual wildlife report for that year.

Reptiles and Amphibians

Surveys for reptiles and amphibians will be combined with those for waterfowl and upland game bird broods. Up to two additional searches for amphibians will be conducted as soon as possible after late spring and summer precipitation events. At those times, biologists will look for amphibians around permanent and temporary water sources within the permit area. Opportunistic observations made throughout the course of other field studies will also be used to gather data on the occurrence of these species.

Data Presentation and Reporting

For reporting purposes, data will be collected and analyzed on the basis of a biological year that runs from January 1 through December 31. Data will be analyzed and presented following commonly accepted scientific procedures. The current year's data will be compared to data from previous years to determine trends and evaluate impacts (if any). If compatible regional data are available from the MFWP for big game, grouse, and other species, that information will be compared to results from the Spring Creek Mine. Similarities or differences between the regional and mine-specific data will be discussed.

Maps depicting the current year's big game aerial survey results, existing and historical raptor nest sites, occupied and unoccupied grouse leks, survey routes, and sampling plot locations will be submitted every year. To the extent possible, data will also be presented in a format compatible with Geographic Information Systems and electronic data processing.

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Vertebrate species observed within the Spring Creek Mine survey area (permit and 2-mile perimeter) for the life of the mine will be listed in appendices to the annual wildlife report. Species observed within the permit area each year will be identified.

(2) Report Submittal of Monitoring Results

Results of monitoring studies will be submitted annually to the MDEQ by March 31. Included in the annual report will be an introduction; a description of survey area boundaries and habitats; methods by animal group with discussion of any approved changes from previous procedures; and results and discussion by animal group.

(3) Corrective Measures

If the data indicate that corrective measures are necessary, such measures will be proposed to the MDEQ. SCM will implement the corrective measures subsequent to MDEQ approval.

(4) Discontinuation of Periodic Monitoring

SCM may request a revision or discontinuation of the monitoring program for one or more species if supporting documentation is approved by the MDEQ.