



**Nebraska Game and Parks Commission**

2200 N. 33rd St. • P.O. Box 30370 • Lincoln, NE 68503-0370 • Phone: 402-471-0641 • Fax: 402-471-5528

May 15, 2014

U.S. Nuclear Regulatory Commission  
ATTN: Mr. Kevin Hsueh  
Mail Stop T-8F05  
Washington, D.C. 20555

**Re: Crow Butte Resources, Inc. License Amendment Application for the Proposed Marsland Expansion Area In-situ Uranium Recovery Satellite Facility in Dawes County and Sioux County, Nebraska**

Dear Mr. Hsueh:

Please make reference to your letter dated February 5, 2014. This letter is in response to your request for information on known ecological resources in the vicinity of the proposed Marsland Expansion Area (MEA). As we understand it, the Nuclear Regulatory Commission (NRC) is preparing an Environmental Assessment (EA) for the MEA, and the information provided in this letter may be used to prepare the EA.

The Nebraska Game and Parks Commission (NGPC) has responsibility for protecting state-listed endangered and threatened species under authority of the Nongame and Endangered Species Conservation Act (NESCA) (Neb. Rev. Stat. § 37-801 to 37-811). The MEA was originally reviewed pursuant to NESCA on January 24, 2011 (enclosed). Additional information regarding the ecological resources in the project area was received on September 30, 2013, and a site visit was conducted on December 10, 2013

During the site visit, in-situ uranium recovery (ISR) and associated regulations were explained and a driving tour of the MEA was conducted to evaluate the habitat conditions and landscape. Based on the driving tour and photos taken during a previous growing season, it appears there are some areas within the MEA which could provide habitat for the state-listed endangered swift fox (*Vulpes velox*). However, in many places, the vegetation is too tall and therefore precludes swift fox from denning in those areas. As discussed during the site visit and as indicated in additional information provided on January 16, 2014 from Cameco (enclosed), MEA project development activities will be located outside of swift fox habitat to the extent possible, and surveys will be conducted as necessary according to the enclosed protocol. Implementing these measures will ensure the project will not adversely impact swift fox.

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As stated in the January 24, 2011 letter, the MEA is also within the range of the state-listed threatened finescale dace (*Phoxinus neogaeus*) and northern redbelly dace (*Phoxinus eos*), and near the range of the state-listed endangered blacknose shiner (*Notropis heterolepis*). During the site visit, Cameco explained water for ISR is extracted from a confined aquifer, which should therefore not affect the quantity of water available for these fish species. Also, the techniques, practices and procedures as described during the site visit for ISR, monitoring, and restoration should ensure water quality is not negatively impacted. Therefore, it is unlikely this project would adversely impact these state-listed fish species.

The MEA is also within the range of the northern long-eared bat (*Myotis septentrionalis*). On October 2, 2013, the U. S. Fish and Wildlife Service (USFWS) proposed listing the northern long-eared bat as endangered (78 FR 61045). A final determination on the proposed listing is currently expected in October 2014. Critical habitat is not proposed for northern long-eared bat at this time. If this species becomes listed at the federal level, it will automatically become listed for Nebraska, and further consultation with the NGPC and USFWS Nebraska Field Office (NEFO) may be needed.

In January 2014, the USFWS released a document titled *Northern Long-eared Bat Interim Conference and Planning Guidance*, and in March 2014, the USFWS NEFO issued a memo addressing Nebraska-specific guidance for northern long-eared bat. Because guidance regarding northern long-eared bat was not developed prior to the site visit, this species has not been discussed at length as it pertains to the MEA. We recommend reading the available and pertinent guidance documents for northern long-eared bat and including this species in the EA. More information about northern long-eared bat, including links to the proposed rule in the Federal Register and the January 2014 guidance document can be found at: <http://www.fws.gov/midwest/endangered/mammals/nlba/>. The Nebraska-specific guidance memo (March 2014) can be obtained by contacting Eliza Hines, Acting Field Supervisor, USFWS NEFO, at [eliza\\_hines@fws.gov](mailto:eliza_hines@fws.gov) or (308) 382-6468 ex. 18.

The USFWS NEFO provided comments on the MEA on March 7, 2013 (NRC accession number ML13080A302). Because the USFWS has regulatory authority under the Endangered Species Act, Bald and Golden Eagle Protection Act, Migratory Bird Treaty Act, and Fish and Wildlife Coordination Act, we recommend following the comments and guidance as outlined in their correspondence regarding compliance with these acts. Doing so will result in avoiding and minimizing impacts to other state trust resources and species of concern which do not receive legal protection under NESCA, but are still considered valuable for maintaining the ecological diversity within our state and are protected under federal laws.

In general, it is also our understanding that baseline data is collected on a variety of items (e.g. stream quality, sediment, fish, cattle, private wells, soils, vegetation, etc.), and quarterly samples will be taken to ensure ISR operations are not causing significant deviations from certain baseline conditions. When the site is decommissioned, everything must be restored, at a minimum, to baseline conditions. Crow Butte Resources stated they would work with NGPC Northwest District staff regarding appropriate native seed mixes for re-vegetation.

In addition to wildlife resources, it does not appear the MEA will impact Nebraska Game and Parks Commission properties or the ability to manage and/or operate these properties for their intended purposes.

Based on the information provided and obtained during the site visit, it is unlikely this project will adversely impact state-listed endangered or threatened species. If the proposed project is changed or new information regarding endangered or threatened species becomes available, then we recommend further consultation with the Nebraska Game and Parks Commission Planning & Programming Division.

Thank you for the opportunity to comment. If you have any questions or need additional information, please feel free to contact me at (402) 471-5438 or [michelle.koch@nebraska.gov](mailto:michelle.koch@nebraska.gov).

Sincerely,



Michelle R. Koch  
Environmental Analyst Supervisor  
Planning & Programming Division

Enclosures (3)

ec: Mirabelle Shoemaker, U.S. Nuclear Regulatory Commission  
Eliza Hines, U.S. Fish and Wildlife Service, Nebraska Field Office  
John Cochnar, U.S. Fish and Wildlife Service, Nebraska Field Office



## Nebraska Game and Parks Commission

2200 N. 33rd St. • P.O. Box 30370 • Lincoln, NE 68503-0370 • Phone: 402-471-0641 • Fax: 402-471-5528

January 24, 2011

Chad Olson  
Hayden-Wing Associates, LLC  
2308 South 8<sup>th</sup> Street  
P.O. Box 1689  
Laramie, WY 82073

Re: Marsland Uranium Mine Expansion Project, Dawes County and Box Butte County, Nebraska

Dear Mr. Olson:

Please make reference to your emails and our phone conversations dating back to October 2010. This letter is in response to your request for a review of this project's potential impacts to threatened and endangered species and other special-status species and their habitats in Dawes and Box Butte counties in Nebraska. As we understand it, the project involves construction of an in-situ uranium mining site, which will require a permit from the Nebraska Department of Environmental Quality.

### **Threatened and Endangered Species**

Staff of the Nebraska Game and Parks Commission (Commission) have conducted a review of the proposed sites under Neb. Rev. Stat. § 37-807 (3) of the Nongame and Endangered Species Conservation Act and we offer the following comments.

This project area (including the two mile buffer as indicated on the map provided) is within the range of the state-listed threatened finescale dace (*Phoxinus neogaeus*) and northern redbelly dace (*Phoxinus eos*), and the state-listed endangered swift fox (*Vulpes velox*). Additionally, the range of state-listed endangered blacknose shiner (*Notropis heterolepis*) occurs approximately four miles downstream of the project area.

### Blacknose Shiner

The blacknose shiner is in the minnow family and is found only in clear, well-oxygenated portions of streams that are relatively undisturbed. It was once very common in Nebraska and is now extremely rare. In Nebraska it spawns in the end of June. Given its limited distribution, this species would be impacted by a reduction in flows or impairment of stream quality. The blacknose shiner is state endangered.

### Northern Redbelly Dace and Finescale Dace

Northern redbelly dace and finescale dace are state threatened and are members of the minnow family. Northern redbelly dace can reach three inches in length and have two dark side stripes with a lighter area between them. Finescale dace have a stout body, a large mouth and can reach lengths of five inches. These dace are among Nebraska's most colorful minnows. In Nebraska, these dace are often found together in the headwaters of clear, cool, high quality streams. Potential factors that influence spawning include the water temperature and photoperiod. In

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northern redbelly dace (Nebraska Game and Parks Commission 1994). Both species would be impacted by a reduction in flows or impairment of stream quality.

#### Swift Fox

The swift fox is a state-listed endangered species. Swift fox is the smallest of the North American canines, and they utilize burrows more than any other canine. They are typically found in topographically flat (slopes <20%), arid regions. In Nebraska, suitable habitat is in the shortgrass prairie ecoregion where vegetation is less than 40 cm tall. They can be found in large expanses of prairie as well as prairie intermixed with agriculture. Dens are also found in anthropogenic areas such as near roads and trails, and in agricultural fields, culverts, pipes and buildings (Tannerfeldt et al. 2003). Swift fox den entrances have a diameter of 17-23 cm. Swift fox are highly mobile and will use a variety of dens throughout the year. However, a female swift fox with young pups will typically be tied to one den during the denning season, which is from April through August in Nebraska. Pups do not leave the den until they are at least 6 – 7 weeks old, and sometimes older. During both breeding and non-breeding seasons, they are susceptible to any activities that disturb the ground and may destroy their dens. These activities include, but are not limited to, digging, trenching, drilling, and directional boring. If construction activity will occur in suitable habitat during the denning season, a survey for swift fox dens should be conducted by a qualified biologist, prior to construction. Results of the survey should be sent to the Nebraska Game and Parks Commission to determine if actions are needed to avoid impacts to the swift fox.

At this time, the information we have received regarding the uranium mining operation is insufficient. Therefore, we are unable to determine if this project will impact the aforementioned state listed threatened or endangered species. It is unclear whether or not the facility would affect water quality or quantity in the streams and rivers that provide habitat for state-listed species. Is there potential for large-scale contamination events, and is there a contingency plan in place for such events? What types of activities will occur within the project area and what impact will they have on native habitats? Is there potential for the site to expand in the future?

Answers to these and other questions will allow us to make an informed decision as to whether or not this project will impact state-listed species and if any type of mitigation is needed for loss of habitat for these species. If possible, it would be very helpful to tour an active in-situ uranium mining operation and the proposed site. If this is not possible, I would recommend a meeting to discuss the project in detail and to gain a better understanding of mining operations.

#### **Other Species of Concern**

As requested, the following information is being provided regarding non-listed special status species. The Nebraska Natural Legacy Project (NNLP) (Schneider et al. 2005) identifies numerous "at-risk" species within the state. The NNLP Tier 1 at-risk species are those that are globally or nationally most imperiled. Threatened and endangered species are among those classified as Tier 1 at-risk species. However, there are several other Tier 1 at-risk species that are not currently on the threatened and endangered species list. At-risk species that are not listed as threatened or endangered are not afforded legal protection under the federal Endangered Species Act or the Nebraska Nongame and Endangered Species Conservation Act. Regardless of whether or not they receive legal protection, all at-risk species are considered a valuable state resource worthy of ensuring their continued existence in Nebraska. It is prudent to implement appropriate conservation measures for at-risk species that are not listed as threatened or endangered in order to maintain the biological diversity of the ecosystems within our state, and to avoid accelerating their decline to the point where they need to be listed. One of the goals of the NNLP is to ensure

at-risk species do not decline to the point where they warrant listing. Therefore, it is common for the environmental review to include information on these species.

There are records of the following Tier 1 at-risk species within approximately five miles of the project area: burrowing owl, ferruginous hawk, long-billed curlew, plains topminnow, pearl dace, long-legged myotis, fringe-tailed myotis, and tawny crescent. There are also numerous records of Tier 2 at-risk species within five miles of the project area, including golden eagle, Swainson's hawk, prairie falcon, and a variety of other birds, mammals, fish, reptiles, and plants. A copy of the NNLP and a complete listing of Tier 1 and Tier 2 at-risk species are available online at <http://outdoornebraska.ne.gov/wildlife/programs/legacy/review.asp>.

#### **Bald and Golden Eagle Protection Act and Migratory Bird Treaty Act**

The following recommendations are being made in order to help the project proponent comply with federal laws, such as the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act (16 U.S.C. 703-712; Ch. 128 as amended). For more information regarding these laws, please contact Jeanine Lackey, Nebraska Field Office, U.S. Fish and Wildlife Service, 203 W. Second St., Grand Island, NE 68801

The Bald and Golden Eagle Protection Act provides for the protection of the bald eagle (*Haliaeetus leucocephalus*) and golden eagle (*Aquila chrysaetos*). Bald eagles utilize mature, forested riparian areas near rivers, streams, lakes, and wetlands and occur along all the major river systems in Nebraska. The bald eagle southward migration begins as early as October and the wintering period extends from December-March. The golden eagle is found in arid open country with grassland for foraging in western Nebraska and usually near buttes or canyons which serve as nesting sites. Golden eagles are often a permanent resident in the Pine Ridge area of Nebraska. Both bald and golden eagles frequent river systems in Nebraska during the winter where open water and forested corridors provide feeding, perching, and roosting habitats, respectively. The frequency and duration of eagle use of these habitats in the winter depends upon ice and weather conditions. Human disturbances and loss of wintering habitat can cause undue stress leading to cessation of feeding and failure to meet winter thermoregulatory requirements. These affects can reduce the carrying capacity of preferred wintering habitat and reproductive success for the species. Many bald and golden eagles nest in Nebraska from mid-February through mid-July. Disturbances within 0.5-mile of an active nest or within line-of-sight of the nest could cause adult eagles to discontinue nest building or to abandon eggs. We recommend conducting a habitat assessment to determine if bald and/or golden eagles could use the project area (including the two mile buffer) during wintering and/or nesting periods. If wintering or nesting habitat is present, a survey for individuals and nests (both active and inactive) should be conducted.

Under the Migratory Bird Treaty Act (MBTA) construction activities in grassland, wetland, stream, woodland, and river bank habitats that would otherwise result in the taking of migratory birds, eggs, young, and/or active nests should be avoided. Although the provisions of MBTA are applicable year-round, most migratory bird nesting activity in Nebraska occurs during the period of April 1 to July 15. However, some migratory birds are known to nest outside of the aforementioned primary nesting season period. For example, raptors can be expected to nest in woodland habitats during February 1 through July 15, whereas sedge wrens, which occur in some wetland habitats, normally nest from July 15 to September 10. If development in this area is planned to occur during the primary nesting season or at any other time which may result in the take of nesting migratory birds, the Commission would request that the project proponent arrange to have a qualified biologist conduct a field survey of the affected habitats to determine the absence or presence of nesting migratory birds. Surveys must be conducted during the nesting season. The Commission should

be contacted immediately for further guidance if a field survey identifies the existence of one or more active bird nests that cannot be avoided by the planned construction activities. Adherence to these guidelines will help avoid the unnecessary take of migratory birds.

#### **Nebraska Game and Parks Commission Properties**

The Commission owns two wildlife management areas and one state recreation area within 5 miles of the project area, and Fort Robinson State Park is within 10 miles of the project area. Once again, further discussion on this project would be helpful in determining if mining operations would impact these areas.

At this time, we cannot make a determination as to whether or not this project will impact state listed threatened or endangered species. As previously suggested, it would be very helpful to tour an active in-situ uranium mining operation and the proposed site. If this is not possible, I would recommend a meeting to discuss the project in detail and to gain a better understanding of mining operations so we can make an accurate determination.

All federally listed threatened and endangered species are also state listed. For assessment of potential impacts on federally listed, candidate or proposed threatened or endangered species, please contact John Cochnar, Nebraska Field Office, U.S. Fish and Wildlife Service, 203 W. Second St., Grand Island, NE 68801.

Thank you for the opportunity to comment. If you have any questions or need additional information, please feel free to contact me at (402) 471-5438 or michelle.koch@nebraska.gov.

Sincerely,



Michelle R. Koch  
Environmental Analyst Supervisor  
Nebraska Natural Heritage Program  
Nebraska Game and Parks Commission

CC: John Cochnar, USFWS  
Jeanine Lackey, USFWS  
Jennifer Abrahamson, NDEQ

#### *References*

Nebraska Game and Parks Commission. 1994. *Nebraska's Threatened and Endangered Species: Pearl, Northern Redbelly and Finescale Dace*. Nebraska Game and Parks Commission, Lincoln, Nebraska.

Schneider, R., M. Humpert, K. Stoner, G. Steinauer. 2005. *The Nebraska Natural Legacy Project -- A Comprehensive Wildlife Conservation Strategy*. Nebraska Game and Parks Commission, Lincoln, Nebraska.

Tannerfeldt, M., A. Moehrensclager and A. Angerbjorn. 2003. *Den ecology of swift, kit and arctic foxes: A review*. In *The Swift Fox: Ecology and conservation of swift foxes in a changing world*, M. Sovada and L. Carbyn editors. Canadian Plains Research Center, University of Regina.

## G.6 Wildlife

### G.6.1 Introduction

Baseline studies were performed by CBR's ecological consultant during 2011 to determine the presence or absence of federally or state listed species as well as regional species of concern deemed by the state. Surveys were conducted in accordance with approved protocols established by state and federal agencies. The results of the MEA survey are presented in an ecological resources summary prepared by Hayden-Wing Associates, LLC (HWA 2011). The ecological study area encompassed a 2.5-mile area around the MEA permit boundary.

As per Title 122, Chapter 11, 006.15 of the Nebraska Administrative Code, this section provides a narrative of wildlife, fish, and other aquatic life within the AOR. More detailed information is presented in the above-referenced ecological resources summary report.

#### G.6.1.1 Mammals

##### Big Game

Six big game species occur or potentially occur in the vicinity of the MEA, including pronghorn (*Antilocapra americana*), mule deer (*Odocoileus hemionus*), white-tailed deer (*Odocoileus virginianus*), elk (*Cervus elaphus*), bighorn sheep (*Ovis canadensis*), and bison (*Bison bison*). Appropriate escape terrain habitat for bighorn sheep is not present within the Marsland permit area, and it is therefore extremely unlikely that bighorn sheep would occur within the MEA itself.

##### Carnivores

The following species have been documented or are expected to be present within the MEA: coyotes (*Canis latrans*) and red foxes (*Vulpes vulpes*) typically occupy grassland, shrub-steppe, and agricultural habitats; long-tailed weasels (*Mustela frenata*) are habitat generalists and can be found in a wide variety of habitats; bobcats (*Lynx rufus*) tend to occupy woodland and shrubland habitat; badgers (*Taxidea taxus*) inhabit areas with loose soils that are suitable for digging burrows which frequently includes roadsides, prairie dog colonies, and areas near surface disturbance; and mountain lions (*Puma concolor*) prey upon mule and white-tailed deer and tend to occupy wooded habitats.

##### Small Mammals

Small mammals occupy a wide variety of habitats within the region but most are considered common and widespread. Species known to occur or potentially present in the MEA include the deer mouse (*Peromyscus maniculatus*), white-footed mouse (*Peromyscus leucopus*), thirteen-lined ground squirrel (*Spermophilus tridecemlineatus*), meadow jumping mouse (*Zapus hudsonius*), plains pocket gopher (*Geomys bursarius*), least chipmunk (*Tamias minimus*), and meadow vole (*Microtus pennsylvanicus*). Muskrat (*Ondatra zibethicus*) and beaver (*Castor canadensis*) are known to occur in or near the MEA, especially near the Niobrara River along the southern edge of the permit boundary. Porcupine (*Erethizon dorsatum*) occurs in the wooded areas of the MEA, as does the eastern fox squirrel (*Sciurus*



niger). Four rabbit species are known or suspected to occur within the permit boundary, including the white-tailed jackrabbit (*Lepus townsendii*), black-tailed jackrabbit (*Lepus californicus*), eastern cottontail (*Sylvilagus floridanus*), and desert cottontail (*Sylvilagus auduboni*) (HWA 2011).

Two bat species have been recorded within a few miles of the MEA: the fringe-tailed myotis (*Myotis thysanodes pahasapensis*) and the long-legged myotis (*Myotis volans*). Both bat species are listed at Tier I At-Risk species by Nebraska Natural Legacy Project (NNLP), and the fringe-tailed myotis is listed as Sensitive in the nearby Pine Ridge Ranger District by the U.S. Forest Service (USFS) Nebraska National Forest. According to the USFS (Abegglen 2011), the fringe-tailed myotis is known to occur in the ponderosa pine habitat near the permit boundary. Both species may be present in the MEA if suitable hibernacula exist (e.g., caves, mines, buildings, cliff crevices, hollows in snags, or hollow areas under the bark of trees). Also, it is likely that these and other bat species use the MEA for foraging.

Black-tailed prairie dogs, listed as Sensitive in the Pine Ridge Ranger District by the USFS, are known to occur in the vicinity of the MEA. Four colonies were found during aerial surveys; two are situated along the permit boundary border and two are located within the 2.5-mile ecological study area (HWA 2011). All four are occupied with prairie dogs. Prairie dog colonies provide habitat for several other at-risk or sensitive species, such as swift foxes, long-billed curlews (*Numenius americanus*), ferruginous hawks (*Buteo regalis*), and burrowing owls.

#### G.6.1.2 Birds

The Nebraska Ornithologists Union lists 291 bird species occurring in Dawes County and 455 species recorded in the state (NOU 2011). Of the 455 species in the state, 329 occur regularly (reported 9 out of the past 10 years); 78 are accidental (occurring less than two times in the past 10 years); 42 are casual (occurring between four and seven times in the past 10 years); four are extirpated, and two are extinct (NOU 2011). A total of 73 bird species were documented in and around the MEA in 2011, the majority of which are believed to breed locally (HWA 2011).

#### G.6.1.3 Reptiles and Amphibians

Several species of herptiles have been documented in the MEA, including plains spadefoot toad (larval stage) (*Spea bombifrons*), northern leopard frog (*Rana pipiens*), and common snapping turtle (*Chelydra serpentina*). Only the spadefoot toads were found within the MEA; the other two species were found along the Niobrara River corridor near the MEA.

#### G.6.1.4 Threatened, Endangered or Candidate Species

Under the Federal Endangered Species Act (ESA) of 1973 and the Nongame and Endangered Species Conservation Act (Neb. Rev. Stat. §37-430 et seq.), several species receive unique protections due largely to their rarity, population declines, and/or habitat loss. The likelihood of such species to occur on the MEA site can be summarized as follows: black-footed ferret, gray fox, and whooping crane are unlikely to occur; the swift fox is the only species likely to occur on the MEA site. However, much of the habitat within the MEA appears marginal, and previous site-specific surveys in the area have failed to

detect the species. Grass height in particular appears to create unsuitable conditions for swift fox throughout the majority of the MEA (HWA 2011).

Because swift fox may occur in the MEA, CBR will avoid impacting the swift fox species by selecting planned areas of disturbance (including wellfields and drills sites) that are not in suitable habitat and by avoiding certain locations during specific times of the year. Surveys shall be conducted that are consistent with the NGPC standard protocol included in CBR's Mineral Exploration Permit Number NE0210824 as Attachment 1, issued by the NDEQ on August 19, 2009 (NDEQ 2009). The procedures in Attachment 1 are specific to drilling of boreholes; therefore, these procedures have been expanded to include MEA project development activities, including construction, operational activities (e.g., wellfield development, satellite facility facilities, and access roadways), and decommissioning. The modified survey protocol to be used for the swift fox at the MEA is presented in Appendix 9 of Volume II of this application.

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## UIC Permit Application Marmland Expansion Area

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### APPENDIX 9 MARSLAND EXPANSION AREA SWIFT FOX SURVEY PROTOOL

The following protocol is a modification of a swift fox protocol included in Mineral Exploration Permit Number NE0210824 (dated August 19, 2009) issued by the Department of Environmental Quality (NDEQ) to Crow Butte Resources, Inc (NDEQ 2009). This permit primarily addresses impacts associated with drilling of boreholes for purposes of mineral exploration. The primary modification of the Appendix 10 protocol is expanding the type of activities potentially impacting the swift fox to include, in addition to drilling of boreholes, uranium in situ satellite project development activities. Satellite "project development" includes construction of satellite facilities (process building and associated storage structures, evaporation ponds, wellfield development (surface preparation, monitor and injection/recovery wells, wellhouses, and trunklines/piping), well workover, boreholes outside of wellfields, and project roadways. Reference to "project development" in this protocol refers to these activities. Project development activities apply to initial construction/wellfield development, operations and decommissioning. Decommissioning includes decontaminating, dismantling, and removing satellite facilities and associated wellfield buildings/equipment/wells and, site reclamation and groundwater restoration.

Swift fox are typically found in topographically flat (slopes <20%) arid regions. In Nebraska, suitable habitat is in the short-grass prairie ecoregion where vegetation is less than 40 cm tall. They can be found in large expanses of prairie as well as prairie intermixed with agriculture. Dens are also found in anthropogenic areas such as near roads and trails, and in agricultural fields, culverts pipes and buildings (Tannerfeldt et al 2003). Swift fox are highly mobile and will use a variety of dens throughout the year. However, a female swift fox with young pups will typically be tied to one den until the pups are old enough to disperse from the den. Swift fox den entrances have a diameter of 17 to 23 cm.

#### **Required Surveys:**

CBR will avoid impacting the swift fox species by selecting project development areas that are not in suitable habitat and by avoiding certain locations during specific times of the year. Surveys shall be conducted that are consistent with the Nebraska Game and Parks Commission (NG&PC) standard protocol included in CBR's Mineral Exploration Permit Number NE0210824 as Attachment 1.

The survey form to be used for swift fox surveys is attached to this protocol.

Project development activities will occur within a designated permit boundary. If project development activities within this permit boundary are such that specific protocol requirements (e.g., designated distances from swift fox dens) cannot be avoided as stated in this protocol, CBR will consult with the NDEQ and NG&PC as to the feasibility of

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## **UIC Permit Application Marsland Expansion Area**

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alternate actions. No work will be conducted until any such issue has been resolved with the NDEQ and NG&PC.

### **Surveyors:**

Surveys shall be conducted by a qualified individual who has experience working with the species or has been trained to identify swift fox burrows, dens and sign (scat, tracks, etc.).

### **Location:**

Surveys shall be conducted at project development sites discussed above where suitable habitat is present within the range of the species.

### **Season:**

Surveys shall be conducted year-around in areas of suitable habitat where project development activities are planned.

### **Timing:**

Surveys shall be conducted within one week of initiating project development activities described above under Location.

### **Survey Technique:**

The "denning season" is defined as the period of time when adult swift fox give birth and raise pups. In Nebraska, the swift fox denning season is from April 1 through August 31.

During the denning season, the area that must be surveyed for dens includes project development activities plus an additional 230 meters around the affected areas. When developing wellfields, numerous boreholes will initially be drilled. In this situation, the "affected area" will be the perimeter of the wellfield for the addition of 230 meters to the survey area, as opposed to each drill site. Under such conditions (i.e. work over multiple days or months), only one survey shall be submitted for that period indicating the duration of planned activities in the survey area. During other periods of time (e.g., operations), when individual boreholes are drilled at one time or a workover rig is used for well maintenance, then the additional 230 meters will be applied to the drill site. The above procedures will allow the operator the option of the most effective type of survey to use - wellfield boundary or individual drill site. The satellite facilities will be located within a 30-acre fenced-in site. The swift fox survey will be conducted prior to construction using an additional 230 meters around the fence boundary.

During the non-denning season (September 1 through March 31), the area that must be surveyed for dens includes the project development activities plus an additional 100 meters around the affected areas. When developing wellfields, numerous boreholes will initially be drilled. In this situation, the "affected area" will be the perimeter of the

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## UIC Permit Application Marmland Expansion Area

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wellfield for the addition of 100 meters to the survey area, as opposed to each drill site. Under such conditions (i.e. work over multiple days or months), only one survey shall be submitted for that period indicating the duration of planned activities in the survey area. During other periods of time (e.g., operations), when individual boreholes are drilled at one time or a workover rig is used for well maintenance, then the additional 100 meters will be applied to the drill site. The above procedures will allow the operator the option of the most effective type of survey to use - wellfield boundary or individual drill site. The satellite facilities will be located within a 30-acre fenced-in site. The swift fox survey will be conducted using an additional 100 meters around the fence boundary.

The survey will consist of walking transects and searching for dens within the survey area. Transects will be no more than 50 meters apart in order to thoroughly cover the area.

An active den may have fresh digging at the entrance, although this is not always the case (Jackson and Choate 2000). Sign, such as scat or tracks, can also indicate an active den. Swift fox tracks are approximately 2.54 cm wide and 3.8 cm long. Although this is the smallest canid species, tracks can be confused with other species, especially young coyotes. Inactive dens may be overgrown with vegetation, have spider webs over the entrance, or be caving in.

### **Conservative Measures:**

If a potentially active swift fox den is identified, one of two conservation measures should be implemented:

1. The area of project development activities shall be done so activities are at least 230 meters from the den during the denning season, or 100 meters from the den during the non-denning season. For drilling sites, these can be moved to an appropriate distance from the den. A survey around any of these new activities must be conducted.
2. A track or scent station can be set up to determine if the den is being used by swift fox. If track or scent stations indicate swift fox are using the den, then project development activities within a minimum of 100 meters or 230 meters (whichever is appropriate for the season) of the den would be postponed until the den is abandoned. For drilling sites, they can be moved as outlined in #1 above. If track or scent stations indicate swift fox are not using the den, then drilling activities may proceed if there are not any other dens or swift fox within the survey area.

**Track Station:** Den use can be determined by clearing vegetation around the den and sifting a mixture of fine dry sand and unscented glycerin in a circular pattern (~1 m in diameter) around the den hole, approximately 0.5 inches thick. Tracks of the animal using the den can then be identified the following morning as most animals using underground dens are nocturnal and will exit the den at night. Track stations are only

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## UIC Permit Application Marsland Expansion Area

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good for one night. If the track station cannot be checked the following morning, a new sand and glycerin mixture should be applied to the area around the den hole and surveyed the next morning.

**Scent Station:** Swift fox scent station surveys can be conducted any time of the year, although tracks will not show on bare, frozen ground. However, snow can be used as a tracking medium in winter. Scent stations are created by clearing any vegetation in an area and sifting a mixture of fine dry sand and unscented glycerin in a circular patten (~1 m in diameter) approximately 0.5 inches thick. A plaster tablet soaked in cod/salmon oil mixture (or either) is placed in the center of the station. Scent stations are then placed at locations selected based on the suitability of the surrounding habitat and the presence of certain structures (fence rows, gates, intersections, trails, etc.) that facilitate movement. Weather permitting, they are reset for 3 consecutive days or until at least one station shows sign of swift fox visitation (tracks, feces). Scent stations should not be used within 300 meters of a known or suspected active den as these methods may attract predators.

### Survey Reports

A monthly survey report shall be submitted to Nebraska Game and Parks Commission (NG&PC) and Nebraska Department of Environmental Quality (NDEQ) describing all surveys for the swift fox that were conducted during the previous month in connection with project development activities. The survey report shall include the names of the surveyors and their credentials, date and time of the survey, weather conditions, locations surveyed, methods, results, and a discussion of applicable conservation measures implemented. If the swift fox is not identified, the above information must be recorded and included in the report to be submitted at the end of the month. If a species is identified within the survey area, NG&PC must be notified by telephone within twenty-four (24) hours of identification. Written documentation of identification and the survey report shall be submitted with five (5) days of species identification, along with indication of conservation measures. All survey reports shall be submitted no later than the 28<sup>th</sup> day of the month following the end of the reporting period, even if the species being surveyed are not detected at a particular site. Copies of the reports shall be kept on site for inspection by the NDEQ.

### References:

- Jackson, V.I. and J.R. Chaote. 2000. *Dens and den sites of the swift fox, Vulpes velox*. The Southwestern Naturalist 45(2):212:220).
- Nebraska Department of Environmental Quality (NDEQ). 2009. *Mineral Exploration Permit Number NE0210824*. August 19, 2009.
- Tannerfeldt, M., A. Moehrensclager and A. Angerbjorn. 2003. *Den ecology of swift, kit, and arctic foxes. A review. In the Swift Fox: Ecology and conservation of swift*

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Marshland Expansion Area**

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*foxes in a changing world*, M. Sovada and L. Carbyn editors. Canadian Plains  
Research Center, University of Regina.



August 2009

Nebraska Department of Environmental Quality

Threatened and Endangered Species Survey Report

Surveyor' Name(s) \_\_\_\_\_

Credentials: (e.g., who certified the surveyor and date of certification or surveyor's knowledge of surveyed species)

\_\_\_\_\_

\_\_\_\_\_

Date of Survey: \_\_\_\_\_ Time of Survey: \_\_\_\_\_

Weather Condition:

Temperature: \_\_\_\_\_ °F Wind Speed & Direction: \_\_\_\_\_

Other



Sunny



Partly Cloudy



Cloudy



Snowing



Raining

\_\_\_\_\_

Legal Location or GPS coordinates (Lat/Long or UTM) of survey area (include datum, i.e., NAD83, WGS84: \_\_\_\_\_

County: \_\_\_\_\_

Vegetative Cover (i.e. corn stubble, plowed field, wetland, short grass prairie 10-20 cm tall

Methods used to survey affected area (i.e. Mountain Plover Survey Protocol, 5 transects 50 ft apart)

\_\_\_\_\_

\_\_\_\_\_

Were any of the following species identified in the area?

Mountain Plover	Yes/No
River Otter	Yes/No
Swift Fox	Yes/No

If so, what conservation measures were taken? (Attach if necessary)

\_\_\_\_\_

\_\_\_\_\_

If species is identified, record the location of the species in GPS coordinates. Also indicate locational certainty (i.e. 3 birds were flushed 50 yards NW from this point). Photographs may be sent with survey reports to aid in site description and species identification.

Submit survey reports monthly to:

Nebraska Game & Parks Commission  
Attn: Env. Analyst Supervisor  
Nebraska Natural Heritage Program  
2200 N 33<sup>rd</sup> Street  
Lincoln, NE 68503

Nebraska Dept. of Env. Quality  
Attn: Mineral Exploration Program  
P.O. Box 98922  
Lincoln, NE 68509