

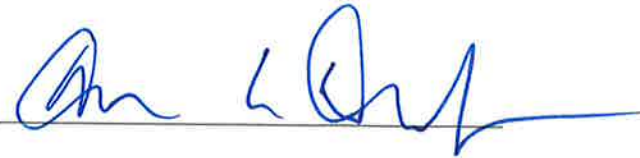
**BIOLOGICAL OPINION ON THE EFFECTS OF THE
PROPOSED KEYSTONE XL PIPELINE TO THE FEDERALLY ENDANGERED
AMERICAN BURYING BEETLE
*Nicrophorus americanus***

TAILS No. 06E22000-2020-F-0052

**Consulting Agencies:
Bureau of Land Management
Western Area Power Administration
Rural Utilities Service
U.S. Army Corps of Engineers**

**Biological Opinion Prepared by:
U.S. Fish and Wildlife Service**

Project Leader, Colorado and Nebraska Field Office

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Date DEC 23 2019

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for the Northern Long-Eared Bat and Activities Excepted from Take Prohibitions (Programmatic Biological Opinion) (Service 2016, entire).” The Programmatic Biological Opinion provides a framework for streamlined section 7 consultation for other Federal actions that may affect the NLEB and are consistent with the provisions of the 4(d) rule. The Service has determined that the Federal agencies have appropriately utilized the framework within the Programmatic Biological Opinion, and therefore does not further discuss NLEB in this BO.

This BO is based on best scientific and commercial data available including information provided in the BA (BLM 2019), the Supplemental Draft Environmental Impact Statement (SDEIS), draft HCP (Keystone 2019), telephone conversations, meetings, field investigations, and other sources of information.

CONSULTATION HISTORY

The Service’s Colorado/Nebraska Ecological Services Office in Lakewood, Colorado, is delegated the lead office to conduct the consultation with BLM. However, other Service Ecological Services Field Offices in Nebraska, Montana, North Dakota, South Dakota, and Kansas have been actively participating as part of the Project team during part or all of the informal and formal consultation, and assisted in drafting or reviewing consultation documents throughout the consultation. Consultation for the Project has been ongoing over an extended time period, and included a previous BA submitted by the Department of State in June 2012 (Department 2012), and a BO issued by the Service in 2013 (Service 2013, entire). The 2013 BO and 2012 BA on which it was based, and subsequent analysis for additional species, are no longer in effect; the Department of State and the Service withdrew the 2012 BA and 2013 Biological Opinion on May 6, 2019. For a complete list summarizing agency correspondence, species-specific survey information, and continued coordination with the Service regarding biological surveys and determination of biological effects for the Project, see section 1.3, Consultation History, and Appendix A, Letters of section 7 Consultation and Supporting Communications of the BA (BLM 2019, pp. 1-8; Appendix A).

Since May 2019, the Service, BLM, WAPA, RUS, USACE, and the Department of State has held twice weekly conference calls to discuss the consultation. A meeting with the Service, BLM, WAPA, RUS, and USACE was held on September 19-20, 2019, to discuss remaining issues associated with the development of a BA. On September 30, 2019, BLM and the additional Federal agencies submitted a BA to the Service with a letter requesting initiation of formal consultation. On November 27, 2019, BLM submitted an amended BA (BLM 2019) to the Service to update information provided in the previous BA.

Updates to the Project and Analysis

Since the 2013 BO, several issues related to the Project have been modified. The Department of State no longer has an action requiring section 7 consultation. However, Federal actions involving the BLM, WAPA, RUS, and the USACE, still require section 7 consultation. When a particular action involves more than one Federal agency, the consultation and conference responsibilities may be fulfilled through a lead agency for section 7 consultation. The Service is notified of the designation in writing by the lead agency (50 CFR 402.07). The BLM has not

regulations; (c) the granting of licenses, contracts, leases, easements, rights-of-way, permits, or grants-in-aid; or (d) actions directly or indirectly causing modifications to the land, water, or air.

Proposed Federal Actions

Several Federal agencies are involved in some capacity with the Project. The BLM, the WAPA, the RUS, and the USACE intend to rely on this document to comply with section 7 of the ESA. The following sections describe the proposed Federal actions associated with the Federal agencies described above. Figure 1 indicates the currently known approximate locations that are subject to the proposed Federal actions.

BLM

The BLM's proposed Federal action evaluated in this BO is the BLM's decision to issue a ROW grant and Temporary Use Permit to construct, operate, maintain and decommission a crude oil pipeline and related facilities on Federal lands in compliance with the Mineral Leasing Act, BLM ROW regulations, and other applicable Federal laws. In coordination and concurrence with USACE. The BLM will decide whether to approve, approve with modification, or deny issuance of a ROW grant and Temporary Use Permit for the proposed Keystone XL pipeline system, and if approved, under what terms and conditions. The proposed pipeline ROW would cross approximately 44.4 miles of BLM land in Montana and would also cross approximately 1.88 miles of USACE land at the Missouri River at Fort Peck, Montana.

WAPA

Part of WAPA's mission is to provide open access to transmission services across the Federal power transmission system so that energy producers can transmit power to their customers. Any entity requesting transmission services across the Federal grid system must submit an application for interconnection. WAPA has received interconnection applications from local power cooperatives to serve the electrical needs of Pump Station (PS)-09 through PS-13 and PS-17 through PS-19, as well as PS-21.

The proposed interconnections to WAPA's transmission system are Federal actions. As a result, WAPA must evaluate the environmental impacts of entering into an interconnection agreement and completing any necessary work to WAPA's infrastructure to accommodate the interconnections as well as any interrelated non-federal actions (e.g., construction of power lines). The following provides a summary of WAPA's Federal activities:

- PS-09—Construction and ownership of a new substation (the Bowdoin Substation) and interconnection;
- PS-10—An expansion of the existing Fort Peck Substation and interconnection;
- PS-11—Construction and ownership of a new substation and interconnection;
- PS-12—Interconnection and minimal work within the existing Circle Substation footprint to accommodate the interconnection;
- PS-13—An expansion of the existing O'Fallon Substation and interconnection;

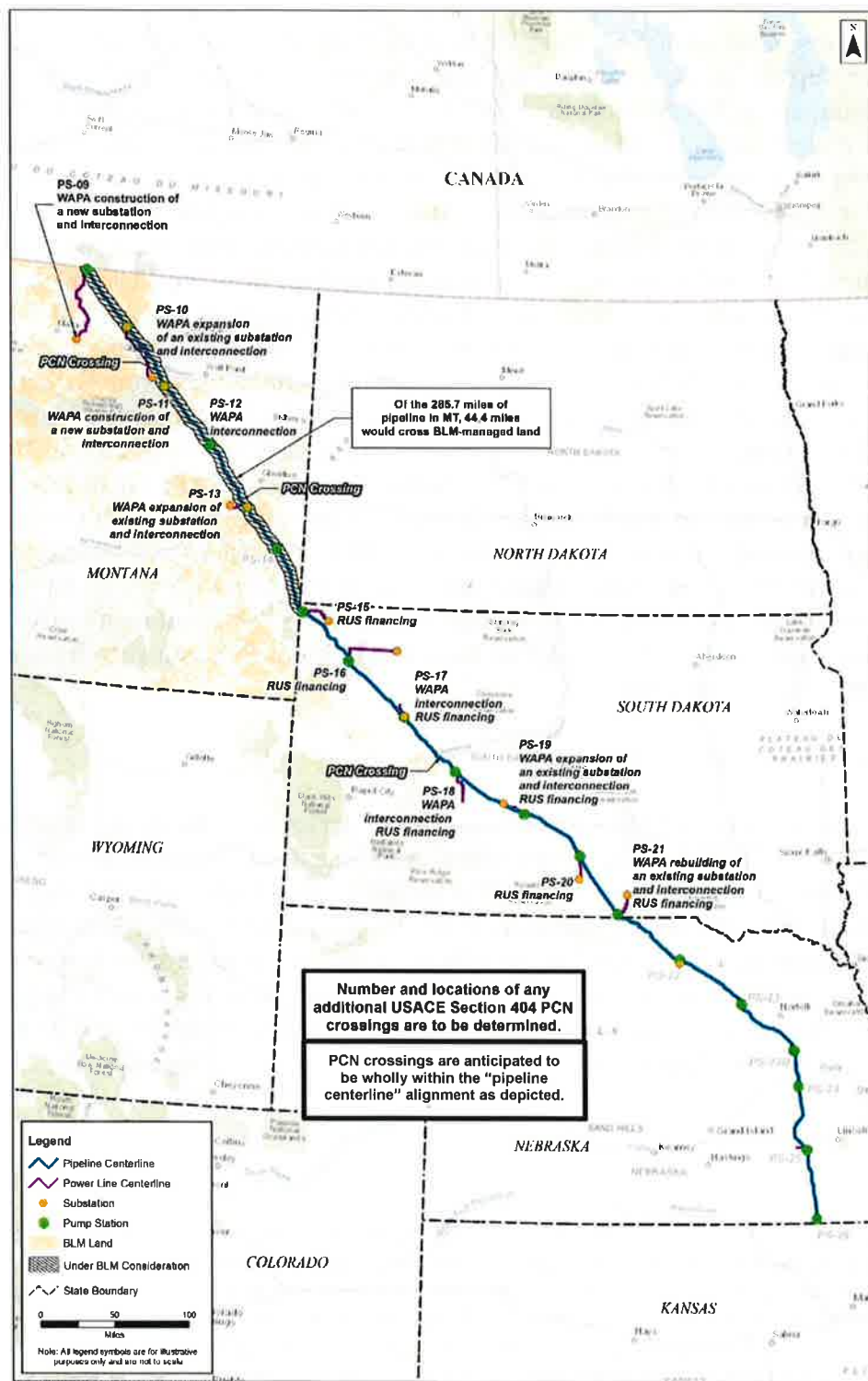


Figure 1. Location of Proposed Federal Decisions as presented in the BA (BLM 2019, p. 13)

Action Area

The action area is defined as "...all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action" (50 CFR 402.02). For the purposes of this BO, the Service determined that the action area is the pipeline ROW (temporary and permanent) and all areas encompassing the pipeline construction, operation, and maintenance activities, ancillary facilities, temporary workspaces, pipe stockpile sites, railroad sidings, contractor yards, construction camps, access roads, and other aboveground facilities, including pump stations and power lines.

The action area begins where the Project crosses the United States border from north to south near Morgan, Montana, and continues southeast to Steele City, Nebraska (Figure 2) (BLM 2019, pp. 17-20).



Figure 2- Proposed Project Overview (BLM 2019, p. 17)

Description of the Proposed Project

Keystone proposes to construct and operate a crude oil transmission system from an oil supply hub near Hardisty, Alberta, Canada, to destinations in the United States. In total, the Project would consist of approximately 882 miles of 36-inch diameter pipeline in the United States. The Project would have the capacity to deliver up to 830,000 barrels per day of crude oil.

Electrical Transmission and Distribution Lines and Substations

Local, non-federal power providers (typically called utilities or cooperatives) will provide electrical service to the Project. In some instances, new and/or upgraded electrical transmission and distribution lines (power lines) and substations would be needed in order to deliver power. The local utility or cooperative will be responsible for constructing any such power lines or substations, as well as obtaining the necessary permits, approvals, or authorizations from Federal, state, and local governments. Further coordination between local power providers and applicable resource management agencies may be required to ensure the conservation of protected species and to obtain the necessary permits and approvals to construct and operate the power lines.

WAPA may need to construct new substation facilities or upgrade existing substation facilities to support the electrical service to for the Project. This BO evaluates the conservation measures that WAPA has committed to implement, as well as potential effects of WAPA Federal actions, including construction and upgrading substation facilities, on ABB. Table 2.6-3 in the BA provides a summary of the power line and substation information (BLM 2019, pp. 24-25). See Figure 1 for the location of these pump stations. Additional details are included in Appendix C of the BA (BLM 2019). Microalignments may change the lengths of pipeline and/or power line, areas of ROW, and the number of power line support structures, but would not likely result in a meaningful increase in these aspects of the Project.

Pipeline Incident Analysis and Emergency Response Plan

The likelihood of potential accidental or unexpected oil releases from the pipeline during operation was analyzed in the 2014 Final SEIS. This analysis has subsequently been updated using more recent information. A description of the updated pipeline incident analysis can be found in Appendix C of the BA (BLM 2019). However, the potential effects on ABB from potential spills are not reasonably certain to occur (50 C.F.R. §402.17) for reasons stated below (see Exposure to Potential Oil Spill and Emergency Repairs section of this BO).

A Project-specific Emergency Response Plan (ERP) will be prepared for the Project, which would be submitted to the Pipeline and Hazardous Materials Safety Administration (PHMSA) for approval prior to commencing system operations. A comprehensive ERP for the existing Keystone Pipeline Project has been reviewed and approved by PHMSA. The publicly available portion of the Keystone Oil Pipeline System ERP is included as BA Appendix D, Spill Prevention, Control and Countermeasure Plan and Emergency Response Plan (parts of the ERP and the Pipeline Spill Response Plan are considered confidential by PHMSA and the U.S. Department of Homeland Security). As described in section 4.13 of the 2014 Final SEIS, the existing Keystone Oil Pipeline Project documents would be used as templates for the plans for the Project. Project-specific information would be inserted into the plans as it becomes available. More information on emergency response procedures is described in section 12, Emergency Response Procedures, Appendix C of the BA (BLM 2019).

and WAPA will implement for the substation that would serve PS-21 in South Dakota.

- The work areas in ABB habitat will be prepared by removing any and all carcasses⁴ prior to construction, in accordance with NGPC guidance (NGPC 2019a, entire). Carcasses as small as songbirds, snakes, and rodents are ideal food for the ABB; therefore, this removal activity will be thorough. Carcass removal will occur between March 15 and October 31 or until construction is completed, whichever is earlier. Personnel will survey the ROW daily to remove carrion. Carcass removal can be done at any time throughout the day; however, the preferred timing is in the late afternoon, since the ABB is active at night. This will ensure that ABBs are not drawn to the area by roadkill caused by daytime traffic. Disposal of carcasses will be at least 0.5 miles away from the work site. For power line construction in potentially suitable ABB habitat, electric power providers will remove carrion only in construction areas with soil disturbance (pole installation), as recommended by the Service and NGPC. Carrion removal reports will be submitted as with the mowing reports. Once carrion removal procedures have been initiated, weekly reports will be kept and submitted to the Service, NGPC, and SDGFP. These reports demonstrate that the conservation measures are being implemented and become part of the records. Weekly reports are only required during the ABB active period (April 1 to October 31) while construction on the Project is active. If the number and species of carrion can be easily identified (for example, deer carcass, bull snake, mouse, etc.), this information will be included in the report. Photo documentation of carrion removed will be provided.
 - For the above carrion removal conservation measure, Keystone will implement in pipeline construction ROW, the electric power providers will implement in power line ROW, and WAPA will implement for the substation that would serve PS-21 in South Dakota.
- During the construction phase, most of Keystone's construction activity will take place in daylight hours. Construction activities taking place at night would require artificial lighting and could thereby have an effect on ABB by disruption of normal behavior patterns. Construction at night and the use of lights will be limited to specific situations requiring this activity such as critical tie-ins (connection of a pipeline to a facility, other pipeline systems, or different sections of a pipeline), Horizontal Directional Drilling (HDD) sites, and during certain weather conditions. Where such activities require lighting, the lights will be down shielded and utilize warm amber-colored lights with a color temperature of 3000 K or less and intensity no greater than 70,000 lumens. Lighting required for contractor yards and pump stations will also be down shielded (to prevent unnecessary upward illumination), except where required for safety and security, and will utilize sodium vapor or LED lighting meeting the above specifications.

⁴ Removing carrion (essential for ABB feeding and reproduction) will make the work area less attractive to the ABB. By removing carrion in areas where construction would occur, this ensures that ABB would not be feeding or burying carcasses in an area where they could encounter construction equipment.

comparable to those on adjacent undisturbed lands; 3) 70 percent of the dominant species on the ROW must be the same as those that occur on adjacent off-ROW lands.

- The Nebraska Public Power District (NPPD) and Rosebud Electric Cooperative will schedule power line and switching station construction activities during the ABB dormant or inactive time⁵ (October 31 to March 31). The power providers will coordinate with Service and NGPC to determine appropriate measures to minimize potential effects if such scheduling cannot be accomplished due to unexpected circumstances, including weather delays.

The Service previously recommended project proponents “capture and relocate” ABB near a project footprint to remove ABBs from the project area prior to project implementation and associated impacts. However, this conservation measure is no longer considered a beneficial practice for reducing harm to ABB. Hoback and Conley (2014, p. 56) found that capturing and relocating burying beetles near the project site may not remove all beetles prior to impacts, as other beetles may recolonize the project site following the capture and relocation effort. The risks associated with attracting additional ABB to a project site, as well as handling them during the trapping and relocating (can result in additional adverse effects), may outweigh the benefits (Hoback and Conley 2014, p. 61).

Mitigation Measures Proposed for the American Burying Beetle

Keystone is committing to mitigate the impacts to ABB as part of the proposed action. However, because the take of ABB will occur on private lands, Keystone has submitted a draft HCP in support of an application for an incidental take permit to minimize and mitigate the impacts to ABB to the maximum extent practicable (a permit issuance criteria). Goal 2 of Keystone’s draft HCP (Keystone 2019, p.110) is to provide permanent compensatory mitigation of ABB impacts not avoided by other conservation measures. To achieve this goal, Keystone aims to protect, in perpetuity, an amount of occupied ABB habitat based on the mitigation ratios described in the draft HCP (Keystone 2019, p. 114) via an approved conservation bank; or, if conservation banks are not available, provide funds to third-party for: (1) purchase of land to provide habitat for ABBs; and (2) restoration and long-term management of the property. Keystone agrees to mitigate impacts of the taking of ABB by acquiring and protecting suitable habitat lands in perpetuity prior to start of construction. Keystone is in the process of retaining the Conservation Fund to work with the Service and Keystone to identify lands for either a conservation easement or purchase.

ABBs are nocturnal (Service 1991, p 11) and have a limited active season (Service 2019a, p. 10), making them difficult to detect (see Status and Distribution section below in the BO). Therefore, rather than use ABB survey data to determine ABB presence, Keystone selected to use a conservative approach and assumes that ABBs may occupy all suitable habitat within the documented ABB range, for all habitats rated marginal to prime (only poor habitat rating

⁵ Construction during the dormant or inactive season minimizes impacts to ABB due to reduced frozen soils compacting less and ABB being underground, further from the soil surface. This reduces the potential for crushing and disturbing individuals.

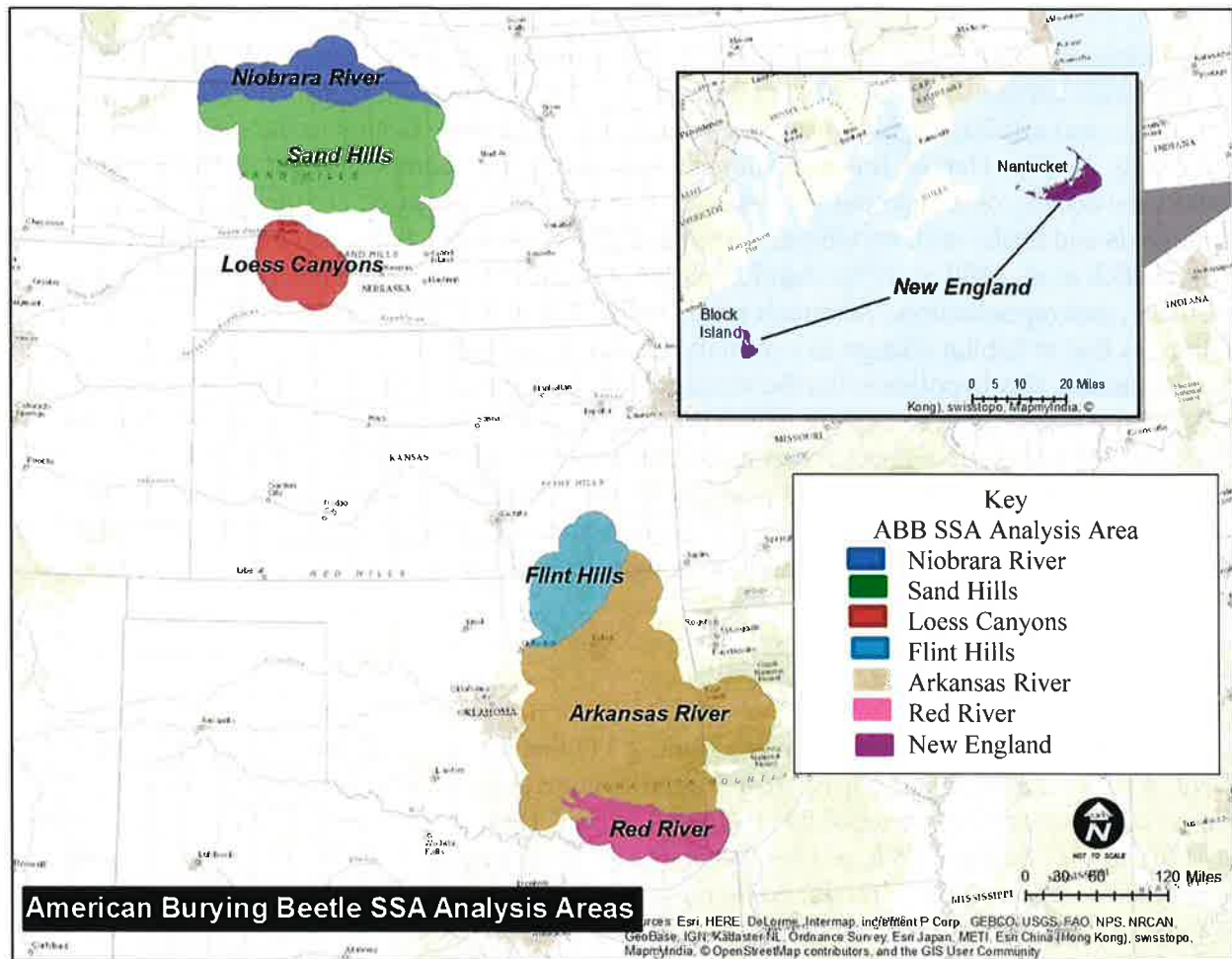


Figure 3. American Burying Beetle Species Status Assessment Analysis areas (Service 2019a, p. ES-2).

The populations in Nebraska/South Dakota, Kansas/Oklahoma, Oklahoma/Arkansas, and central Arkansas were all estimated to be greater than 1,000 individuals in 2005 with a total estimated rangewide population of approximately 50,000 individuals (Amaral et al. 2005, p. 37). However, populations of the ABB fluctuate annually due to the weather, carrion availability, and other factors; thus, these population estimates have little utility unless managers conduct consistent surveys over the course of several years so that we can evaluate trends (Service 2008, p. 14). Such rangewide surveys are not currently conducted for this species and we have limited information by which to measure ABB population abundance (Service 2019a, p. 71). Jurzenski et al. (2011, pp. 137-138) also noted that it is necessary to carefully interpret mark and recapture data due to the assumptions that emigration and immigration do not occur and that all individuals are available for recapture during the sampling timeframe. For the above reasons, the Service used the ratio of positive to negative ABB surveys to determine ABB relative abundance in the population analysis areas, rather than population estimates (Service 2019a, p. 71).

Habitat

The ABB is considered a generalist in terms of the vegetation types where it is found, as it has been successfully live-trapped in a wide range of habitats, including wet meadows, partially forested loess canyons, oak-hickory forests, shrub land and grasslands, lightly grazed pasture, riparian zones, coniferous forest, and deciduous forests with open understory (Walker 1957, entire; Service 1991, pp.14-17; Service 2008, pp.8-11; Creighton et al. 1993, entire; Lomolino et al. 1995, entire; Lomolino & Creighton 1996, entire; Jurzenski 2012, pp.47-72; Willemssens 2015, pp. 5–6). Individuals do not appear to be limited by vegetation types as long as food, shelter, and moisture are available; ABBs have been recorded moving between and among these habitat types (Holloway and Schnell 1997, entire; Creighton and Schnell 1998, entire). Trapping success was higher at sites where small mammals were abundant (Holloway and Schnell 1997, p. 151). The Service believes that preserving large areas of suitable habitat is a conservation strategy that contributes to maintaining viable ABB populations (Service 2014, entire).

A more detailed life history account of the ABB is on our website:

https://www.fws.gov/southwest/es/oklahoma/Documents/ABB/Listing/ABBSSA_Final_V1.0_Feb2019.pdf

ENVIRONMENTAL BASELINE FOR THE ACTION AREA

“Environmental baseline refers to the condition of the listed species or its designated critical habitat in the action area, without the consequences to the listed species or designated critical habitat caused by the proposed action. The environmental baseline includes the past and present impacts of all Federal, state, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early section 7 consultation, and the impact of state or private actions which are contemporaneous with the consultation in process. The consequences to listed species or designated critical habitat from ongoing agency activities or existing agency facilities that are not within the agency’s discretion to modify are part of the environmental baseline” (50 C.F.R. §402.02). The environmental baseline below describes the condition of the ABB and its habitat in the action area to provide the context for analyzing the effects of the action now under consultation.

Status of the Species within the Action Area

The ABB occurs within South Dakota and Nebraska and has been described as occurring in two, or three distinct populations, within different literature sources. In Amaral (2005, p. 27), these populations are described as only two distinct populations; a southern population centered in Lincoln and Dawson Counties (referred to as the “Loess Hills”), and a northern population in north central part of the state centered in Rock, Loup, Blaine, and Brown Counties and extending north into South Dakota. The five-year status review also discusses these two discrete areas but uses “Sand Hills” to describe the geographically larger ABB population in north central Nebraska (Service 2008, p. 25). The SSA Report identifies three analysis areas in Nebraska: Loess Canyons, Sand Hills, and Niobrara River (Service 2019a, pp. 22-23). The Loess Canyons

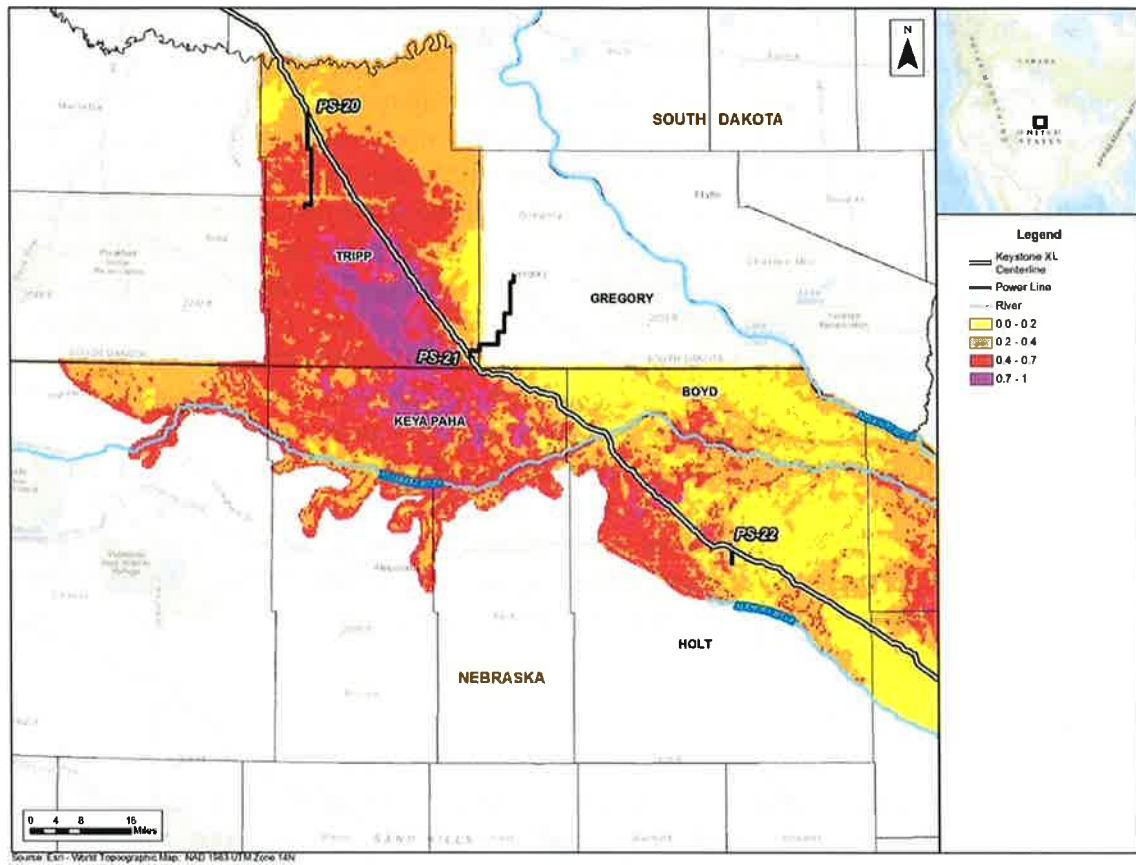


Figure 5. Predicted Distribution of American Burying Beetle near the Project, as Modeled by Jenkins et al. (2018) and Presented in the BA (BLM 2019, p. 96)

habitat quality ratings from 2013 have been re-analyzed in 2018, or, for some, 2019, to reflect current conditions. A summary of the current habitat ratings is shown on page 102 of the BA and a description of the habitat rating criteria are found on page 100 (BLM 2019). The re-analysis revealed a substantial decrease in suitable habitat in the proposed pipeline corridor in South Dakota, mostly resulting from increased development of agriculture (e.g., center-pivot corn fields). Although in 2013, 25 miles of pipeline ROW were prime habitat, only four miles of pipeline ROW remained prime habitat in 2018/2019. New agricultural developments near the ROW have reduced the habitat ratings to fair or marginal. Neither the route in South Dakota nor the rating scale has changed.

Suitability ratings of ABB habitat crossed by the Project in South Dakota are provided in Table 3.2-9 and Figure 3.2-9 on p. 100, and p. 97 of the BA, respectively (BLM 2019). The Project pipeline in South Dakota would cross approximately four miles of prime habitat, 12 miles of good habitat, 10 miles of fair habitat, and five miles of marginal habitat. Beetles are unlikely to occur in marginal and considered absent in poor habitat.

Two proposed electric power lines to pump stations in South Dakota are within range of the ABB and connect to PS-20 and PS-21. The power line to PS-20 would lie in the northwest corner of Tripp County, mostly outside of the current range of this species. While recent surveys not associated with the Project (Jenkins et al. 2018, p. 2) captured ABBs in central Tripp County south of the town of Winner, no traps were set in the northwestern part of the county. Results of only four trap sites to the north and west of Winner have been reported, none of which captured ABBs (Backlund et al. 2008, p. 12). Therefore, the power line to PS-20 is assumed to overlap the occupied range of this species only to the south of U.S. Route 18. This power line would be approximately 20.5 miles long, but only approximately 2.7 miles would lie within the range of the species, within which the approximately 16.5 acres of ROW were rated as marginal habitat (BLM 2019, Appendix W, American Burying Beetle Sampling Report June 2019).

The ROW for the power line to PS-21 would overlap approximately 56 acres of prime, 47 acres of good, 17 acres of fair, and five acres of marginal habitat (BLM 2019, pp. 100-101). No portion of the line overlaps unsuitable (“poor”) habitat or extends beyond an 18.6-mile buffer around all known capture locations since 2001 (USFWS 2019a); however, the northern portion of the line, as well as the proposed rebuild of WAPA’s Gregory substation, would lie outside of the likely occupied range of this species based on habitat modeling (Figure 4 and 5, above) (SDNHP 2019; Leasure and Hoback 2017, entire; Jenkins et al. 2018, entire). WAPA’s substation rebuild would occur within approximately 6 acres of marginal habitat, but outside the likely occupied range of the species.

Nebraska

In Nebraska, ABB’s are known to occur in Blaine, Boone, Boyd, Brown, Cherry, Custer, Dawson, Frontier, Gasper, Holt, Keya Paha, Lincoln, Loup, Rock, Thomas, Valley, and Wheeler counties, and may occur elsewhere in Nebraska (Figure 3). The Nebraska National Heritage Program database (NNHP 2019) reports documented occurrences in Boyd, Holt, and Keya Paha counties along the Project route and historic records of ABB in Antelope County, which the

resulted in losses of native prairie rangeland where ABBs occur. Most of the potential conversion of ABB habitat to cropland requires irrigation in Nebraska and South Dakota. Increased irrigation or other uses of ground water are a risk if they exceed recharge rates and lower the water table. This could reduce habitat suitability by declining aquifer levels and decreasing soil moisture near the surface (Service 2019a, p. 64). Additionally, developed and converted land leads to declines in grassland nesting birds and rodents, which probably historically provided a large portion of the carrion available to the ABB. Species in this land type (developed agriculture) are often replaced by scavenging mammals and birds that compete with burying ABBs for carrion. Fire suppression in prairie habitats in Nebraska allows the encroachment of woody plant species, particularly the eastern red cedar, which is thought to degrade habitat for burying ABBs by limiting their ability to forage for carrion (Walker and Hoback 2007, p. 297). Urban expansion remains a risk and wind energy development has increased in recent years and may become a larger risk in the future (Service 2019a, p. 64). Other potential threats listed in the SSA (Service 2019a, p. 25) include inter and intra-specific competition, loss of genetic diversity, in isolated populations, disease/pathogens, DDT, and invasive species. Climate Change is also discussed and is described in greater detail below.

Climate Change

Climate has always limited the ABB range to some degree. Populations at the northern edge of the historic range were limited by cool night time temperatures and shorter growing seasons and could potentially expand north as climates warm. However, there are no current populations near the northern edges of the historic range and habitat limitations, rather than climate may prevent existing populations from moving north (Service 2019a, p. 44). Within the Great Plains, including Nebraska and South Dakota, the number of days with the hottest temperatures and the number of nights with the warmest temperatures are projected to increase dramatically for both lower emissions and higher emissions scenario (Shafer et al., 2014, pp. 442–445). Future precipitation is much more challenging to model and therefore projections of it have more uncertainty as compared to temperature (Service 2019a, p. 39).

Climate change could affect habitat suitability and potentially reduce or expand ABB use of portions of Nebraska and South Dakota. Increasing temperatures and dryer conditions potentially associated with climate change could cause reductions in the species' reproduction and numbers. Similarly, milder winters could disrupt hibernation cycles if freezing temperatures don't occur until later in the year or if temperatures consistently reach 55°F to 60°F earlier in the year. Portions of the Sandhills and Niobrara populations are near the northern and western edge of the known ABB range and changes in temperature and moisture could affect suitable habitat in future years (Service 2019a, p. 64). Beetles in the areas may have a longer time period for potential reproduction than ABBs in the southern portion of their range. Beetles in Nebraska and South Dakota could emerge from overwintering by late May or June and be ready to reproduce at that time. From June to August, ABBs could have suitable conditions for reproduction in northern areas and that timeframe could be nearly twice as long as the southern portion of the ABB range (Service 2019a, pp. 47–48).

maintenance activities requiring ground disturbance will affect the ABB similar to construction activities.

Activities involving physically altering soils is likely to expose ABB adults, larvae, and eggs, which would result in desiccation, leading to injury or mortality. For the purposes of this analysis, it is assumed that any ABB occupying an area physically disturbed by the Project will suffer mortality via crushing from construction equipment or desiccation as a result of exposure. It is unlikely that ABB would use any temporarily disturbed areas after the initial disturbance. Therefore, ABB would not be at an elevated risk of crushing or desiccation from the repeated use of a temporarily disturbed area by construction equipment.

Vehicle use and the minor, infrequent vegetation maintenance during operation of the pipeline or power lines, without soil disturbance and excavation, is unlikely to crush or expose individuals, as these activities would occur while ABBs are buried, either during the day or during the ABB inactive season, when risk of impacts to ABBs from these activities is very low (Hoback 2016, p. 26).

Habitat disturbance/loss - Construction activities would also lead to effects on the species through effects on its habitat, namely temporary habitat loss, permanent alteration of suitable habitat to unsuitable habitat, and habitat fragmentation where the pipeline and power lines are not already co-located with other utilities. The ABB is also sensitive to soil moisture and dies when desiccated (Bedick et al. 2006, pp. 27-28). Beetles seek soils containing high moisture levels when they are inactive and soil moisture would be reduced across the ROW as the site is prepared by removing vegetation and topsoil, and grading. Equipment operations within the pipeline ROW would compact the substrate; however, as described above under conservation measures, sub-soil and soil would be de-compacted and vegetation cover would be re-established within both the temporary and permanent pipeline ROW. Native vegetation seed would generally be used, unless otherwise directed by the landowner, or as required by USACE conditions if within wetlands. As stated in the Project CMRP (BLM 2019, Appendix B), restoration and revegetation will return the disturbed areas to approximate pre-construction vegetation, use, and capability. This involves soil treatment, monitoring at least every three weeks, and repair by Keystone where unsuccessful seed germination or erosion has occurred, and topsoil replacement and contour restoration in wetlands. Wetland edges and adjacent upland areas would be stabilized by establishing permanent erosion control measures and revegetation, as applicable, during final cleanup. Breeding, feeding, and sheltering activities will be affected by any activities that occur in the active season. Prey and carrion availability are likely to be affected by the temporary and permanent loss of habitat since prey will move out of the disturbed areas and not return until those temporarily disturbed areas are restored, in approximately four years. Emergency repairs and other maintenance activities in ABB habitat would result in habitat disturbance and loss, similar to construction activities.

Construction of power lines would not permanently remove ABB habitat except where pole structures would be installed. For substations or switching stations, it is assumed that all areas within a proposed development site would no longer provide habitat for the ABB after construction begins.

Temporary disruption of behavior - Increases in human activity, vehicle traffic, and noise as a result of Project activities are likely to cause ABBs to avoid areas occupied by construction personnel and equipment that may otherwise be present in suitable habitat. ABB avoidance of construction personnel and equipment is expected to be temporary.

Overwintering impacts - ABBs could be affected by the operating pipeline during the inactive season (October through early April). As previously discussed, active periods are correlated to night air temperatures. Oil transport through the pipeline releases heat that is dissipated through the soil to the ground surface. Geothermal models indicate the potential for the pipeline to warm surface areas by as much as 10°F in northern regions (South Dakota and Nebraska) (BLM 2019, Appendix E). It is unknown whether the ABB would be attracted, repelled, or neither, to soil that is artificially warmed. ABBs in Nebraska and South Dakota likely have a slowed metabolism during months where temperatures are below zero (BLM 2019, p. 116). It is unknown whether ABBs would suffer mortality from starvation if they were kept from freezing, but substantial decreases in length of time soil temperatures are below freezing would likely cause the ABBs to use too much fat energy during the winter months when they are underground. While they are underground, warming of the soil from the pipeline may also cue the ABBs to emerge prematurely (i.e., prior to late May or early June) when midnight air temperatures have not yet reached 60 °F. This may result in ABBs above ground without the ability to feed appropriately, or it may cause them to use more energy resources to rebury themselves in the soil, assuming temperatures permit such an activity. The existing literature suggests varying depths at which the ABBs overwinter (Service 2019a, p. 9), further complicating an evaluation of thermal effects. The Pipeline Temperature Effects Study conducted by Keystone in 2009 evaluated potential temperature changes at varying depths (i.e. 6, 12, 24 inches), and various distances from the pipeline (BLM 2019, Appendix E). The study predicted a reduction in the incidence of frozen soils at a depth of 12 inches and a distance of 11 feet from the pipeline centerline. The estimated total duration of unfrozen soils would likely be sufficient to affect ABBs overwintering within 11 feet from the pipeline centerline. While uncertainties were noted, temperature shifts above background levels substantial enough to influence habitat out to 11 feet from the pipeline (i.e., a 22-foot sub-corridor) were determined to make habitat unsuitable for ABB overwintering. Temperature related effects from pipeline operations to overwintering ABBs would be anticipated to occur annually once habitat restoration is complete (within four years) for the remaining duration of the Project life (46 years).

In summary, effects from the Project operations that modify soil temperature could increase overwintering mortality by (1) triggering early emergence when prey is not available and when cold temperatures could result in adult mortality; (2) causing higher metabolism for these insects resulting in starvation prior to emergence; or (3) causing mortality from the ABBs losing too much water because warmer temperatures result in greater desiccation risk to burying ABBs (Bedick et al. 2006, pp. 27-28).

Exposure to Potential Oil Spill - Under 50 C.F.R. §402.02, an effect or activity is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Under 50 C.F.R. §402.17(b), the conclusion of reasonably certain to occur must be based

good, and prime) will be affected. In South Dakota and Nebraska, total habitat affected is 1,245.12 acres (Table 1 below in Summary of Effects). The Restoration Management Plan will ensure that the temporary impacts to habitat are restored to provide suitable habitat for the ABB and its carrion within four years post construction of the pipeline.

Based on the occurrence rates and the acres of suitable habitat that would be affected, total beetles affected by the proposed pipeline construction in Nebraska and South Dakota is estimated at 65 ABBs (see Table 1 below and BLM 2019, p. 115 for detailed calculations).

Pipeline Operations - It is not known whether the ABB considers surface soil temperature when selecting an overwintering site, although it is known that burying ABBs typically remain just below the frost line (Hoback and Conley 2014, pp. 22-24). However, assuming the ABB chooses an overwintering site without regard to soil temperature or other effects of the pipeline, approximately 83 acres of potentially suitable habitat in South Dakota, 65 acres of potentially suitable habitat in Nebraska in Boyd County and Keya Paha County, and 57 acres of potentially suitable habitat in Nebraska in Holt County would be affected during the ABB overwintering season during pipeline operation. Construction would remove suitable habitat for an estimated four years (construction followed by restoration), so approximately 46 seasons of ROW temperature increase from pipeline operation may impact overwintering ABBs. Using the same density estimates (ABBs per acre) as described above, and assuming that heat from the pipeline would affect any adult or teneral ABB that overwintered each inactive season within 11 feet of the pipeline, the total ABBs affected by heat produced from pipeline operations in Nebraska and South Dakota is estimated at 485 ABBs (see Table 1 below and BLM 2019, p. 118, for a detailed calculations).

Pipeline Repair and Maintenance - Emergency repairs and other maintenance activities are also anticipated to affect all life stages of the ABB, particularly when such activities involve excavation (BLM 2019, p.118). Emergency repairs may be completed at location and times that ABBs are active. This could lead to effects on individuals as described above for pipeline construction. Keystone estimates that less than 10 acres of suitable habitat would be affected by such activities. This is based on the following assumptions: (1) there will be 10 surveys over the 50 years to look for any locations needing maintenance, (2) history of similar pipeline operations indicates that there will be 0.05 location per mile per survey that would require some kind of maintenance, (3) each maintenance location will involve an area measuring approximately 110 feet wide by 50 feet long, totaling approximately 0.13 acre per location, and (4) all locations would occur in suitable habitat. Factoring these assumptions with the length of the proposed pipeline system within the range of the ABB leads to an estimate of somewhat less than 10 acres affected. Rounding up to 10 acres and apportioning these 10 acres across the counties according to the length of pipeline system within each county and factoring the affected area with the estimated number of individuals per acre, total beetles affected by emergency pipeline repair and maintenance in Nebraska and South Dakota combined is estimated at one ABB (see Table 1 below and BLM 2019, p. 119 for a breakdown of calculations).

Potential Oil Spill - As explained above, effects from oil spills are not reasonably certain to occur. Any injury to natural resources, including the ABB, associated with a release of oil or

Summary of Adverse Effects from All Activities

Overall, pipeline construction is estimated to affect approximately 65 ABBs, power line construction is estimated to affect approximately one ABB, heat impacts from pipeline operations are estimated to affect approximately 485 ABBs, and pipeline repairs are estimated to affect approximately one ABB. The Project is estimated to affect approximately 552 ABBs (Table 1).

Table 1- Estimated American Burying Beetle Habitat Area Affected in South Dakota (BLM 2019, p. 123-124)

State (County)	Miles of ROW	Expected Area Affected (acres)	American Burying Beetles per Acre	American Burying Beetles Affected
Effects of Construction				
Pipeline Construction				
South Dakota	31.0	511.56	0.0899	45.99
Nebraska (Boyd Co. and Keya Paha Co.)	24.4	383.02	0.0046	1.76
Nebraska (Holt Co.)	21.5	350.54	0.0495	17.35
<i>Subtotal</i>				<i>65.10</i>
Power Infrastructure Construction				
South Dakota	23.2	6.04	0.0899	0.54
Nebraska (Boyd Co. and Keya Paha Co.)	0	0.00	0.0046	0.00
Nebraska (Holt Co.)	2.5	3.50	0.0495	0.17
<i>Subtotal</i>				<i>0.71</i>
Effects of Construction Subtotal				65.81
Effects of Operation				
Heat Effects				
South Dakota	31.0	3795.92 ^a	0.0899	341.25
Nebraska (Boyd Co. and Keya Paha Co.)	24.4	2994.60 ^a	0.0046	13.78
Nebraska (Holt Co.)	21.5	2631.66 ^a	0.0495	130.27
<i>Subtotal</i>				<i>485.30</i>
Pipeline Repairs				
South Dakota	31.0	3.00 ^b	0.0899	0.27
Nebraska (Boyd Co. and Keya Paha Co.)	24.4	3.00 ^b	0.0046	0.01
Nebraska (Holt Co.)	21.5	4.00 ^b	0.0495	0.20
<i>Subtotal</i>				<i>0.48</i>
Effects of Operation Subtotal				485.78
OVERALL PROJECT TOTAL				551.59

^a Given that heat effects could recur in the same places every winter for the 46 years in the life of the Project that the pipeline is expected to operate in potentially suitable, recovered habitat, the number shown represents 46 times the area affected at any one time.

^b This area is the total expected to be affected during the life of the proposed Project.

Conservation Measures and Mitigation - As described in the DESCRIPTION OF THE PROPOSED ACTION of this BO, the Project proponents (Keystone, the electrical power providers, or WAPA) have committed to several conservation measures that will minimize

the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species” (50 C.F.R. §402.02).

Reproduction – We anticipate that habitat disturbances from Project activities during the construction, emergency repairs, and maintenance would prevent ABB reproduction in the action area. Areas with permanent impacts would not be used for ABB reproduction for the life of the Project. For areas with temporary impacts, reproduction is not likely to resume until the disturbed habitat is successfully restored in four years. When construction begins, all ABBs present would be killed and therefore removed from the reproducing population. ABBs would not colonize the area until restored habitat is suitable. Therefore, no reproduction would occur for approximately four years in each area disturbed by construction. Once habitat is restored and prey re-inhabit the area, ABBs in nearby habitat would likely recolonize and begin reproducing. As habitat generalist in terms of vegetation types, if food, moisture, and shelter are present, ABBs should recolonize disturbed areas. Areas temporarily disturbed by construction activities will be used more than one time by Keystone for various activities throughout the construction process and will not be restored until construction is complete. We do not expect ABBs to inhabit the disturbed areas during construction due to the lack of habitat and prey species. Keystone will stabilize, revegetate, and restore temporarily disturbed areas within four years after construction and monitor to ensure successful restoration. The ABB and other disturbed wildlife species, including prey species, are likely to return to the area following construction when personnel and equipment are no longer present and suitable habitat has been restored (within four years of initial disturbance). ABBs returning to the area are expected to resume reproduction within successfully restored habitat. In addition, Keystone has committed to protect and manage a large block, approximately 1,034 acres, of occupied ABB habitat in perpetuity (Keystone 2019, p. 116). This will provide reproductive habitat for the ABB population.

Numbers – We estimate that 552 ABBs (one-time take of 66 ABB from construction, annual take of less than 11 ABBs/year for 46-years of operation and maintenance) will be disturbed, injured or killed as part of the Project during the anticipated 50-year Project lifetime (Table 1, above). ABB population estimates are available for the Sandhills and Niobrara analysis areas (combined into one population estimate) in which the Project passes through. As described above, Amaral et al. (2005, p. 75) did not distinguish or split the two populations and estimated the combined population to be about 10,000 ABBs. Population estimates are not available for the individual analysis areas (Sandhills and Niobrara). The population viability analysis by Amaral et al. (2005, p. 40) concluded that ABB populations of 1,000 or more individuals are viable long-term in the absence of severe catastrophic events or reduction in carrying capacity through a reduction in carcass availability, habitat loss, or fragmentation. Amaral et al. (2005, p. 38) indicates that populations of greater than 10,000 ABB can persist even through catastrophic events. Recently, the Sandhills population was estimated to be 55,743 (NPPD 2018, p. 113). The Service used the ratio of positive to negative ABB surveys to determine ABB relative abundance in population analysis areas (Service 2019a, p. 71). The ratio of positive to negative ABB surveys in the Sandhills analysis area was defined as the highest condition category of “good,” with the highest ratio of positive to negative surveys compared to other analysis areas (Service 2019a, p. 95). The Niobrara unit had the second highest proportion of positive to negative surveys (Service

INCIDENTAL TAKE STATEMENT

Section 9 of the ESA and Federal regulation pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened species, respectively, without a special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is defined by regulation as “an act which actually kills or injures wildlife. Such act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering” (50 C.F.R. §17.3). Harass is defined by regulation as “... an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding or sheltering” (50 C.F.R. §17.3). Incidental take is defined as “takings that result from, but are not the purpose of, carrying out an otherwise lawful activity conducted by the Federal agency or applicant” (50 C.F.R. §402.02). Under the terms of section 7(b)(4) and section 7(o)(2), such taking is not considered to be prohibited taking under the ESA provided that such taking is in compliance with the terms and conditions of this incidental take statement (ITS).

The ITS serves to enumerate or identify the amount or extent of take “caused by” all the effects of the action and exempts the action agencies from the prohibitions against that take under section 9 of the ESA. Here, take of ABB would not occur “but for” the proposed Federal actions. Given the scope of the effects of the Federal actions, it follows that the majority of the take exempted for the Federal agencies is occurring on lands that are outside the jurisdiction of the Federal agencies, or is related to activities undertaken by the applicant not under the authority of a Federal agency, with exception of the rebuilding of the WAPA substation within ABB habitat and RUS financing of power infrastructure. Therefore, this ITS does not extend the Federal agencies’ take exemption to Keystone for the take caused by the Project’s actions. Instead, Keystone is developing a HCP to support its application to the Service for a section 10(a)(1)(B) incidental take permit for the ABB for their activities on non-federal lands.

For the exemption in ESA section 7(o)(2) to apply to the Federal actions considered in this BO, Federal agencies must undertake the commitments to species’ conservation measures under their jurisdiction that are described in the BA and BO, particularly in: 1) the DESCRIPTION OF PROPOSED ACTION section of this BO⁶, and 2) the Species Conservation Measures in the EFFECT EVALUATION section of the BA (BLM 2019, pp. 30-164). These species’ conservation measure commitments are non-discretionary measures and must become binding conditions of any permit, contract, or grant issued for implementing the action. Consistent with ESA section 7(b)(4)(C)(iv), the Federal agencies have a continuing duty to regulate the action components covered by this ITS that are under its jurisdiction. The protective coverage of §7(o)(2) may lapse if the Federal agencies fails to:

⁶ Some conservation measures for the ABB were updated since the submission of the BA (BLM 2019), based on review and discussion with Federal agencies. Therefore, the Service is relying on the conservation measures for the ABB in this BO rather than the ABB conservation measures in the BA.

EFFECT OF THE TAKE

In this BO, the Service determines that this level of anticipated take is not likely to result in jeopardy to the ABB.

REASONABLE AND PRUDENT MEASURES

The Service believes that all conservation measures necessary and appropriate to minimize take of ABB have been incorporated into the proposed action (See DESCRIPTION OF PROPOSED ACTION). The Service has given appropriate consideration to the beneficial actions proposed by the Federal agencies and Keystone (50 C.F.R. §402.14(g)(8)). Therefore, no RPMs are necessary for this ITS.

TERMS AND CONDITIONS

No reasonable and prudent measures to minimize the impacts of incidental take caused by the action are provided in this ITS; therefore, no terms and conditions for carrying out such measures are necessary.

MONITORING AND REPORTING REQUIREMENTS

In order to monitor the impacts of incidental take, the Federal agencies must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement (50 C.F.R. §402.14(i)(3)). This section provides the specific instructions for such monitoring and reporting (M&R). As necessary and appropriate to fulfill this responsibility to monitor and report the progress of the action and its impact on the species, the Federal agencies must require any permittee, contractor, or grantee to accomplish the monitoring and reporting requirements that apply to action components under its jurisdiction through terms that are added to the permit, contract, or grant document. Such terms must include a requirement to immediately notify the Federal Agencies and the Service if the amount or extent of incidental take specified in this ITS is exceeded during action implementation or if the action and its impact on the listed species has changed.

M&R #1. Annual Report. The Federal agencies are responsible for ensuring that the Project activities under their jurisdiction are implemented as described in the Project description. Upon initiation of activities, each Federal agency will provide the Service with an annual report that describes all activities that were covered under the biological opinion under each Federal agency's respective jurisdiction. The report will include a summary of completed construction activities and the conservation measures that were implemented for that year. Annual reporting for each agency will continue until activities under their jurisdiction have been completed

Procedures for Handling and Disposing of American Burying Beetles

If a dead or impaired ABB is found, care should be taken in its handling to preserve biological materials in the best possible state for later analysis of cause of death. In conjunction with the care of injured endangered or threatened species or preservation of biological materials from a dead animal, the finder has the responsibility to ensure that evidence associated with the specimen is not unnecessarily disturbed. The dead or impaired ABB should be photographed prior to disturbing it or the site. The Service is to be notified within three (3) calendar days upon locating a dead or injured ABB. Initial notification must be made to the applicable Service

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