

FINDINGS AND RECOMMENDATIONS
for the
ISSUANCE OF AN ENDANGERED SPECIES ACT SECTION 10(A)(1)(B)
INCIDENTAL TAKE PERMIT
for the
KEYSTONE XL PIPELINE HABITAT CONSERVATION PLAN

U.S. FISH AND WILDLIFE SERVICE
ECOLOGICAL SERVICES

Denver, Colorado

TABLE OF CONTENTS

INTRODUCTION 3

 Authorities..... 3

 Project Description..... 3

 Permit Area and Duration 4

 Anticipated Effects to the American Burying Beetle..... 4

 Anticipated Level of Take Covered by the Permit..... 6

 Conservation Measures 8

 Monitoring and Reporting..... 8

PUBLIC INVOLVEMENT 8

SECTION 10(a)(2)(A) HABITAT CONSERVATION PLAN REQUIREMENTS – ANALYSIS AND FINDINGS..... 8

 HCP Specifies the Impacts from the Taking..... 9

 HCP Specifies Steps to Minimize and Mitigate Impacts of the Take..... 9

 Measures to Avoid and Minimize the Impacts of the Take 9

 Measures to Mitigate the Impact of the Take..... 10

 Alternatives to the Take and Reasons Not Used 11

 No-take Alternative..... 11

SECTION 10(a)(1)(B) INCIDENTAL TAKE PERMIT ISSUANCE CRITERIA – ANALYSIS AND FINDINGS 11

 The taking will be incidental..... 12

 The applicant will, to the maximum extent practicable, minimize and mitigate the impacts of such taking..... 12

 The applicant will ensure that adequate funding for the conservation plan and procedures to deal with unforeseen circumstances will be provided..... 15

 The taking will not appreciably reduce the likelihood of the survival and recovery of the species in the wild 16

 Other measures, required by the Director of the Service, have been met and the Service has received necessary assurances that the HCP will be implemented 17

GENERAL CRITERIA AND DISQUALIFYING FACTORS – ANALYSIS AND FINDINGS 18

RECOMMENDATIONS ON PERMIT ISSUANCE 18

LITERATURE CITED 19

INTRODUCTION

Authorities

We, the U.S. Fish and Wildlife Service (Service), received an application for an incidental take permit (permit) for the federally threatened American burying beetle (*Nicrophorus americanus*) (beetle), which is listed as threatened under the Endangered Species Act (ESA). The permit would authorize take associated with TransCanada Keystone Pipeline, L.P. (Keystone) proposed Keystone XL pipeline project (Project) in Nebraska and South Dakota for 50 years. We reviewed TransCanada Keystone Pipeline, L.P.'s application for a permit under section 10(a)(1)(B) of the ESA (16 USC 1531 *et seq.*) and its implementing regulations for incidental take permits (50 CFR 17.22). Keystone's application included a required habitat conservation plan (HCP) and associated documents.

We also conducted an intra-Service consultation under section 7(a)(2) of the ESA, analyzing effects to listed species from the implementation of the approved HCP and issuance of an incidental take permit for the Project. We complied with the National Environmental Policy Act (NEPA) (42 USC 4321 *et seq.*) and its implementing regulations (40 CFR 1506.6; 43 CFR 46) for the proposed federal action of issuing an incidental take permit by preparing draft and final environmental assessments (EA) for public review and providing other opportunities for public input. We also analyzed and found our action to be in compliance with the Migratory Bird Treaty Act (16 USC 703-712), Bald and Golden Eagle Protection Act (16 USC 668), and National Historic Preservation Act (54 USC 470).

The memorandum transmitting the Service's Biological Opinion under section 7(a)(2) of the ESA details our determinations that issuance of the permit is not likely to adversely affect the federally listed endangered interior least tern (*Sterna antillarum*), whooping crane, and the federally listed threatened piping plover (*Charadrius melodus*), rufa red knot (*Calidris canutus rufa*), and western prairie fringed orchid (*Platanthera praeclara*). Additionally, we determined that the issuance of an incidental take permit to Keystone may affect the threatened Northern long-eared bat (*Myotis septentrionalis*), but rely on the Service's January 5, 2016, Programmatic Biological Opinion on Final 4(d) Rule for the Northern Long-Eared Bat and Activities Excepted from Take Prohibitions to fulfill its section 7(a)(2) consultation obligation. The memorandum provides the rationale supporting these determinations and is herein incorporated by reference.

Project Description

The Project consists of 1) pipeline construction and operation, 2) pipeline inspections, repair, and maintenance, and 3) power infrastructure construction, operation, and maintenance. The installation of the proposed 36-inch diameter pipeline would occur within a 110-foot-wide construction ROW, consisting of a 60-foot temporary construction ROW surrounding a 50-foot permanent ROW. The ROW during construction will be reduced to 85 feet in certain areas due to restrictions regarding other features (e.g., wetlands, cultural sites, shelterbelts, residential

areas, and commercial/industrial areas). Temporary workspaces, construction camps, and access roads are also required. Operation and maintenance consists of implementing the Pipeline Maintenance Program (routine maintenance and inspections). The pipeline would be inspected regularly via aerial and ground surveillance. Woody vegetation would be periodically cleared in the pipeline permanent easement.

Local, non-federal electric power providers (typically called utilities or cooperatives) will provide electrical service to the Project and will determine if a separate permit application is appropriate for their actions. Therefore, any potential take associated with electrical service to the Project is not included within the Service's analysis on Keystone's permit application. In some instances, new and/or upgraded electrical transmission and distribution lines (power lines) and substations would be needed in order to deliver power. Construction of three electrical transmission lines (115 kV) and one distribution line (69kV) along with construction or expansion of corresponding substations would be required to support Keystone XL pump stations (PS) in the Plan Area. Two of the four power lines and one of the substations have a separate Federal nexus and are therefore not evaluated in the HCP. One of the remaining transmission lines (to PS-22) would be constructed within the Permit Area. The other, to PS-23, would be constructed within the Plan Area but outside the Permit Area.

Permit Area and Duration

The HCP describes the Permit Area as "a subset of the Plan Area and includes all areas where take of Covered Species will occur and would be authorized by the ITP. As such, the Permit Area includes all Project footprint within the Plan Area that has been mapped as beetle habitat (poor or better)" (Keystone 2020, p. 2). The Permit Area within Nebraska and South Dakota is comprised of 1,754.85 acres (2.74 square miles) (Keystone 2020, p. 3).

The proposed permit duration is 50 years to provide coverage for take of the beetle that may occur over the estimated 50-year estimated life of the Project. Operation and maintenance actions, that are anticipated to result in take, may be necessary at any point throughout the life of the project. If the pipeline remains in operation at the end of the permit duration, Keystone will coordinate with the Service to renew or amend the permit as needed.

Anticipated Effects to the American Burying Beetle

Effects to beetles are anticipated from Project activities during construction and operation and are summarized below. Further details on the types and sources of take are described in section 6.2 of the HCP, section 4.7.1 of the Final EA, and in the Effects of the Action section of our Biological Opinion, which are herein incorporated by reference.

The Project is likely to result in effects to beetles through the loss of individuals, including eggs and larvae in brood-rearing chambers, due to injury and mortality caused by crushing from construction equipment and vehicle traffic after exposure during excavation. Removal and

physical alteration of vegetation and soil during excavation and grading would result in injury or mortality to beetles. Emergency repairs and other maintenance activities requiring ground disturbance will affect the beetle similar to construction activities.

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 is not already co-located with other utilities. The majority of pipeline construction access routes will be temporary and will be restored to their previous habitat condition upon completion of construction. However, prior to the completion of this restoration, temporary access routes would result in the short-term fragmentation of beetle habitat. Emergency repairs and other maintenance activities in beetle habitat would result in habitat fragmentation, similar to construction activities. Tree removal from the ROW of the pipeline would increase habitat fragmentation and may create a corridor, thus increasing vertebrate scavenger competition.

Increases in human activity, vehicle traffic, and noise as a result of Project activities are likely to cause beetles to avoid areas occupied by construction personnel and equipment that may otherwise be present in suitable habitat. Beetle avoidance of construction personnel and equipment is expected to be temporary. Construction activities may occur in limited instances at night and will require some form of artificial lighting. The beetle, like many insects, is attracted to artificial lighting (USFWS 1991, p. 29). This attraction to lighted construction areas may disrupt normal beetle feeding behavior or increase the risk of predation by attracting individuals to areas unsuitable for beetle use.

Beetles could be affected by the operating pipeline during the inactive season (October through early April). 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 beetles losing too much water because warmer temperatures result in greater desiccation risk to burying beetles.

Covered activities associated with construction, inspections, repair, and maintenance of the pipeline would temporarily disturb approximately 1,027 acres of beetle habitat, and permanently disturb 224 acres of beetle habitat over the life of the permit. All adult beetles, larvae, and eggs present in temporarily and permanently disturbed habitat are likely to be killed by crushing from equipment and desiccation through exposure from disturbed soils. The disturbed habitats would not be available for foraging, breeding, or sheltering by beetles from nearby habitats.

Assuming beetles choose an overwintering site without regard to soil temperature or other effects of the pipeline, pipeline operations may affect 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 during the beetle overwintering season.

Keystone would restore temporarily disturbed habitat to suitable beetle habitat conditions based on methods and success criteria in Section 9.3.2 of the HCP. Beetles are expected to recolonize these areas and resume normal foraging, breeding, and sheltering behavior when habitat restoration success criteria are met, approximately four years after the commencement of construction.

Anticipated Level of Take Covered by the Permit

The number of beetles anticipated to be taken by covered activities was calculated based on the number of acres that would be temporarily and permanently disturbed and the estimated density of beetles in those habitats. A full explanation of the methods used and specific calculations can be found in section 6.1 of the HCP, section 4.7.1 of the Final EA, and the *Species Response to the Proposed Action* and *Amount or Extent of Take Anticipated* sections of the Biological Opinion, which are herein incorporated by reference.

Project effects on all life stages of individual beetles will occur through disturbance, injury, or mortality during construction and operation. These effects can be estimated using an occurrence rate and the acres of suitable habitat affected. The occurrence rate was estimated by using the results of 2018 and 2019 surveys submitted to the Service in combination with a dataset from the Service showing all other beetle survey data within 1 mile of the Project. The number of beetles affected is estimated by multiplying beetle habitat impacted (acres) by the estimated beetle density (beetles per acre). The estimate of individuals affected per acre is intended to be conservative, as it is based mostly on trapping results in high-quality habitats (prime and good), whereas impacts will occur across all habitat qualities. The estimate also factors in potential reproductive output, typically around 15 offspring per two adults. Using this approach, the estimated occurrence rates are 0.0899 beetles per acre in South Dakota, 0.0046 beetles per acre in Nebraska in Boyd County and Keya Paha County, and 0.0495 beetles per acre in Nebraska in Holt County. Thus, the beetle take was estimated by multiplying the estimated occurrence rates by the above acreages of beetle habitat temporarily and permanently disturbed by the construction, operation, and maintenance of the Project (Table 1).

Table 1- Estimated American Burying Beetle Habitat Area Affected in South Dakota and Nebraska (USFWS 2020, p. 31)

State (County)	Miles of ROW	Expected Area Affected (acres)	American Burying Beetles per Acre	American Burying Beetles Affected
Effects of Construction, Inspections, and Repairs				
Pipeline Construction				
South Dakota	31.0	509.87	0.0899	45.84
Nebraska (Boyd Co. and Keya Paha Co.)	24.4	374.28	0.0046	1.72
Nebraska (Holt Co.)	21.5	356.64	0.0495	17.65
<i>Subtotal</i>				<i>65.21</i>
Pipeline Inspections and 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>
Power Infrastructure Construction				
South Dakota	23.2	7.70	0.0899	0.6985
Nebraska (Boyd Co. and Keya Paha Co.)	0	0.00	0.0046	0.00
Nebraska (Holt Co.)	0	0.01	0.0495	0.0005
<i>Subtotal</i>				<i>0.699</i>
Effects of Construction Subtotal				66.39
Effects of Operation				
Heat Effects				
South Dakota	31.0	3796.38 ^a	0.0899	341.3
Nebraska (Boyd Co. and Keya Paha Co.)	24.4	2994.60 ^a	0.0046	13.8
Nebraska (Holt Co.)	21.5	2631.66 ^a	0.0495	130.3
<i>Subtotal</i>				<i>485.30</i>
Effects of Operation Subtotal				485.3
OVERALL PROJECT TOTAL				551.69

^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.

Therefore, the permit¹ would specify the authorized take limit to be:

- No more than 1,251 acres of American burying beetle habitat
- No more than 551 American burying beetles, estimated from:
 - 66 beetles from pipeline construction activities, and inspections/repairs
 - 485 beetles from pipeline operations.

¹ This permit includes authorized take associated with pipeline construction, operation, and repair proposed by Keystone. It does not authorize take associated with electric power infrastructure construction and operation, which would be completed by an electric power provider rather than Keystone.

Conservation Measures

Sections 9.0 – 9.3 of HCP provides several measures to avoid, minimize, and mitigate the impacts of anticipated take of the beetle. These measures are addressed in detail below in the section on *HCP Specifies Steps to Minimize and Mitigate Impacts of the Take* of this Findings document.

Monitoring and Reporting

Section 9.4 of the HCP provide details on the plans for compliance and effectiveness monitoring. Compliance monitoring will entail identifying the number of acres disturbed by the Project in the Permit Area and the number of acres restored. The monitoring program will include a combination of site visits and aerial surveillance to ensure that avoidance, minimization, and mitigation measures are being followed during construction of the Project and during restoration activities. A third-party contractor will also conduct effectiveness monitoring to evaluate effectiveness of post-construction habitat restoration. Monitoring of the mitigation lands would be done by the third-party manager, Wildwood Environmental Credit Company, LLC (Wildwood) of the mitigation lands. The Service will approve management and monitoring plans as part of their review and approval of the Conservation Plan developed by Wildwood for the Conservation Area. Management and monitoring plans will go into effect once lands are placed under the conservation easement. The conservation easement will be acquired following permit issuance and prior to Project impacts to the beetle.

Keystone's third-party contractor will provide an annual monitoring report by October 1 of each year, which will include results from the effectiveness monitoring (further detailed in section 9.4 of the HCP). The reports will document progress toward achieving the restoration criteria. The third-party contractor will also provide the Service Field Offices with a summarized monthly report during construction and an annual report in the years after construction. At the end of this Agreement, all original files and documents will be provided to the Service with copies retained by the Service.

PUBLIC INVOLVEMENT

In accordance with NEPA, we published a notice of availability of the draft EA and draft HCP on August 17, 2020 (85 FR 50043) and requested public comments on those draft documents.

SECTION 10(a)(2)(A) HABITAT CONSERVATION PLAN REQUIREMENTS – ANALYSIS AND FINDINGS

Section 10(a)(2)(A) of the ESA specifically mandates that no permit may be issued by the Secretary of the Interior, through the Service, authorizing any taking referred to in paragraph (1)(B) unless the applicant submits to the Secretary a conservation plan that specifies: (i) the impact which will likely result from such taking; (ii) the steps the applicant will take to minimize

and mitigate such impacts; (iii) what alternative actions to such taking were considered and the reasons why such alternatives are not being utilized; and (iv) such other measures as the Secretary may require as being necessary or appropriate for the purposes of the HCP. We find the HCP to be complete and in accordance with ESA section 10(a)(2)(A) application requirements as supported below.

HCP Specifies the Impacts from the Taking

Sections 6 and 8.7 of the HCP specifies the types of anticipated take, quantifies temporary and permanent habitat disturbance, and calculates the amount of take anticipated for each type of covered activity in both numbers of habitat acres and beetles. Section 6.3 describes the impacts anticipated from the estimated impacts on beetle habitat and take of beetles. Table 14 of the HCP provides figures of disturbed acres for each covered activity.

Estimating population numbers of the beetle is difficult, because numbers fluctuate annually due to precipitation and temperature, carrion availability, and other factors (USFWS 2008). Thus, population estimates should be based on evaluations of trends from surveys conducted over several years (USFWS 2008, p. 14). Section 3.3 of the HCP describes beetle occurrence in the Plan Area and Section 6.1 assesses the impact that will likely result from the anticipated take of beetles. The Service defined the beetle Sandhills analysis area as the highest condition category of “good,” with the highest ratio of positive to negative surveys compared to other analysis areas (USFWS 2019, p. 95). The Niobrara analysis area had the second highest proportion of positive to negative surveys (USFWS 2019, p. 72). The Project will not impact the long-term persistence of the Sandhills or Niobrara beetle populations because the 551 individuals (one-time take of 66 beetles from construction, annual take of less than 11 beetles/year for 46-years of operation and maintenance) the Project is anticipated to take within the Permit Area represent only a small percentage of the estimated Sandhills and Niobrara beetle populations; the estimated take level does not represent a catastrophic event. With little to no impact on the Sandhills and Niobrara population, no effect on the range wide population is expected.

HCP Specifies Steps to Minimize and Mitigate Impacts of the Take

Section 9.1 of the HCP provides a conservation plan with two overarching biological goals and the objectives to achieve those goals. The HCP’s conservation plan further stipulates several measures to avoid, minimize, and mitigate the impacts of the anticipated take of beetles.

Measures to Avoid and Minimize the Impacts of the Take

The avoidance and minimization measures to be implemented by Keystone were designed to meet the objectives for Goal 1 of the HCP’s conservation plan (section 9.1 of the HCP), which is to avoid or minimize potential impacts to the beetle during performance of the covered activities. The identified objectives to achieve this goal are: 1) during project construction, ensure permanent loss of beetle habitat does not exceed 232² acres and temporary disturbance of beetle

habitat does not exceed 1,027² acres from the Covered Activities, and 2) within four years from commencement of construction, establish vegetation on disturbed areas such that 70 percent of the dominant species on the ROW are the same as those that occur on adjacent off-ROW lands. The avoidance and minimization measures are listed below, and details of each measure are described in section 9.2 of the HCP, which is herein incorporated by reference.

- Mowing the ROW to ensure beetles are not attracted to the active construction site.
- Removal of carrion from the ROW prior to disturbance to make the construction site less attractive to beetles.
- Limit clearing in temporary work areas.
- Limit use of artificial lighting and when required, use down shielded lighting and warm, amber colored lights to decrease attraction of beetles.
- Implement educational program for construction personnel.
- Re-establish vegetation immediately following construction.
- Relieve soil compaction in disturbed areas immediately following construction.

Measures to Mitigate the Impact of the Take

Goal 2 of the HCP's Conservation Plan in section 9.1 is to provide permanent mitigation of beetle impacts not avoided by other conservation measures. The objective identified to achieve this goal is to, prior to the impacts of the Project, by protecting, in perpetuity, a minimum of approximately 1,082 acres of beetle habitat in Nebraska and/or South Dakota, based on the mitigation ratios described in Section 9.3.3 via a Service-approved conservation easement.³ This measure is intended to offset the impacts of take from the Project, including temporary and permanent loss and degradation of beetle habitat. The mitigation ratios for the number of acres of habitat conserved to the number of impacted acres is based on the impact duration and habitat quality in the area impacted, as described in Table 23 of the HCP. The calculated total mitigation acres based on these ratios is approximately 1,082 acres (Section 9.3.5). Tables 24

² Goal 1 in the HCP, as described here, encompasses all beetle habitat impacted by the Project, including electric infrastructure. Keystone's permit application does not include actions by the electric power providers, and therefore does not include the 7.7 acres of permanent impacts and 0.01 acres of temporary impacts potentially associated with the electric infrastructure.

³ Keystone has committed to provide all mitigation associated with the Project, for impacts associated with both the pipeline and electric infrastructure. Therefore, if an electric power provider applies for an incidental take permit under the HCP, the electric power provider would have no additional mitigation requirements.

and 25 of the HCP details the number of impacted and mitigation acres for each category and is herein incorporated by reference.

Keystone has identified a parcel within Cherry County as the Conservation Area to be known as the E.L. Spencer Jr. (ELSJ) Conservation Area. The parcel encompasses 1,200 acres and therefore exceeds the required acreages identified in Section 9.3.5. The lands consist of unaltered prairie with a combination of wet meadows, sandhills, and riparian habitat. The current owner owns the lands in fee simple, with no known easements or other pre-existing rights that would affect use of the property. The parcel has no active management or protections that would interfere with the conservation of beetles and would meet Objective 2 of this HCP. Beetle presence has been documented on the parcel. The parcel has been managed with cattle grazing and preservation of native prairie and according to records has never been plowed. Wildwood will acquire a conservation easement on the 1,200 acres of mitigation lands to be held by Nebraska Land Trust prior to impacts of the Project, per agreements in place between the property owner, Wildwood, and Keystone. Wildwood will manage the lands under a USFWS-approved Conservation Plan. Funding for the management activities will come from a permanent stewardship endowment established by Keystone and held by a third party non-profit entity for the ELSJ Conservation Area.

Beetle habitat temporarily disturbed in the Project Permit Area will be restored to its previous vegetation condition after construction is complete as described in the Section 9.3.2 of the HCP, herein incorporated by reference. The goal of the restoration is to meet the success criteria for restoration of beetle habitat within four years post-construction. Keystone has included an additional mitigation of five percent of the temporarily impacted acreage to account for areas of failed restoration after five years.

Alternatives to the Take and Reasons Not Used

Section 1.4 of the HCP describes the alternative to the take anticipated under Keystone's proposed Project and HCP.

No-take Alternative

Under this alternative, Keystone would not construct the Project and, therefore, no take of the beetle would occur. This alternative would not require an HCP or ITP and would result in the increased transportation of oil supplies by rail, barge, truck and/or a different entity proposing a pipeline to move the supplies to market.

SECTION 10(a)(1)(B) INCIDENTAL TAKE PERMIT ISSUANCE CRITERIA – ANALYSIS AND FINDINGS

Section 10(a)(2)(B) of the ESA requires the following criteria to be met before the Service may issue an incidental take permit. If these criteria are met and there are no disqualifying factors,

we must issue the incidental take permit (ESA section 10(a)(2)(B)(v)). The Service's findings and recommendations document must provide the rationale and results of the analyses used to determine if the applicant and HCP meet all permit issuance criteria.

The taking will be incidental

Take of beetles will be incidental to the otherwise lawful activities associated with the construction, operations, repairs, and maintenance, for the Project. As described above in *Anticipated Effects to the American Burying Beetle* of this Findings document, all anticipated forms of take are unintentional and not the purpose of the covered activities, which are to construct, operate, and maintain the Project.

The applicant will, to the maximum extent practicable, minimize and mitigate the impacts of such taking

The statutory standard of minimizing and mitigating the impacts of the take "to the maximum extent practicable" under ESA section 10(a)(2)(B)(ii) will always be met if it is demonstrated that the impacts of the taking will be fully offset by implementation of the measures in the HCP (USFWS and NMFS 2016). The Service has determined that the HCP's conservation strategy and Keystone's fulfillment of protection of mitigation habitat will, to the maximum extent practicable, minimize and mitigate the impacts of the anticipated take of beetles from the Project. We anticipate that construction of the Project will result in the temporary loss of 1,027 acres of beetle habitat and permanent loss of 224 acres of beetle habitat over the life of the permit. To keep direct take of beetles as low as possible, Keystone would implement several avoidance and minimization measures, as described above and in detail in section 9.2 of the HCP. Similar to most HCPs, Keystone's mitigation strategy is based on habitat rather than the number of beetles taken, because detection of beetle take is difficult due to their size and underground location during the day. To offset the impacts of the take from the permanent loss of habitat, the HCP commits to mitigation ratios of conserved acres of high-quality habitat occupied by beetles to impacted acres of habitat based on habitat quality in the area impacted, as described in Table 23 of the HCP.

Temporarily disturbed beetle habitat will be restored to its previous vegetation condition after construction is complete as described in section 9.3.2 of the HCP. Beetles would not be able to forage and breed on temporarily disturbed habitat until restoration success criteria are achieved and habitat becomes suitable again, estimated to be four years from the start of construction. To offset the impacts of the take from the temporary loss of habitat, the HCP commits to mitigation ratios of conserved acres of high-quality habitat occupied by beetles to impacted acres of habitat based on habitat quality in the area impacted, as described in Table 23 of the HCP.

The calculations for mitigation acres using these ratios results in a minimum of approximately 1,082 acres to fully offset all beetle impacts from the Project (Section 9.3.5).

The mitigation calculations for the Project is similar to other projects in the beetle range, including those used in other HCPs for the beetle in Nebraska, Oklahoma, Texas, and Arkansas in the southern portion of the beetle range. The mitigation strategies use a hierarchical process that increases mitigation correspondingly to the quality of beetle habitat in relation to the duration of impact. The slight differences in mitigation strategies differ between the northern and southern portions of the beetle range due to differences in 1) beetle habitat use and 2) dominant land cover types.

In the northern portion of the beetle range, research of beetle habitat allowed the categorization of habitat quality as prime, good, fair, marginal, or poor for the beetle (Hoback 2011, USFWS 2013). The Service determined that this habitat quality rating method (Hoback 2011) remains the best available science to evaluate the quality of beetle habitat in Nebraska and used the quality categories as the basis for the determination of mitigation to offset impacts to beetle habitat.

Table 2. Mitigation Ratios for Beetle Habitat Impacts for the Keystone XL Project

Impact Duration	Quality of Beetle Habitat Impacted			
	Prime Habitat	Good Habitat	Fair Habitat	Marginal Habitat
Temporary Impacts	0.75:1	0.5:1	0.25:1	0.125:1
Permanent Impacts	3:1	2:1	1:1	0.5:1

* Ratios are conserved acres: affected acres (i.e., for each acre of prime habitat temporarily affected, 0.75 acres will be conserved).

Table 3. Mitigation Ratios for American Burying Beetle Impacts for the R-Project HCP (NPPD 2018) in Nebraska (Ratios are Conserved: Impacted Acres)

Impact Duration	Quality of Beetle Habitat Impacted			
	Prime Habitat	Good Habitat	Fair Habitat	Marginal Habitat
Temporary*	0.3:1	0.2:1	0.1:1	0.05:1
Permanent	3:1	2:1	1:1	0.5:1

* scaled to the duration of impacts over the life of the project (10% that of permanent impacts)

Table 4. Mitigation Ratios for American Burying Beetle Impacts in the Southern Portion of the Beetle Range (Ratios are Conserved: Impacted Acres)

Impact Duration	Location of Impact		
	Conservation Priority Area (CPA)	Beetle Range outside of CPA	Mitigation Land ¹
Temporary ²	0.5:1	0.25:1	1.5:1
Permanent Cover Change ³	1:1	0.5:1	2:1
Permanent ⁴	2:1	1:1	3:1

¹Mitigation Land Ratio = CPA ratio plus replacement of lost mitigation value

²Temporary Impacts include any habitat impact less than 5 years in duration

³Permanent Cover Change Impacts change the successional stage of an area to a different stage (e.g., forest or shrubland to grassland; grassland to forest)

⁴Permanent Impacts include any habitat impacts more than 5 years in duration

In the southern portion of the beetle range, beetles have been successfully live-captured in several vegetation types, including native grasslands, grazed pasture, riparian zones, coniferous forests, mature forest, oak-hickory forest (USFWS 1991, pp.14-17, 2008, pp.8-11; Creighton et al. 1993, entire; Lomolino et al. 1995, entire; Lomolino & Creighton 1996, entire; Jurzenski 2012, pp. 47-72). Rather than delineating habitat suitability across the diverse ecosystems used by the beetle in the southern portion of the range, the Service instead developed mitigation ratios based on location within Conservation Priority Areas (CPAs), outside CPAs, or on beetle mitigation lands (Table 3). The Service delineated CPAs in the southern portion of the range using documented beetle presence within the last 10 years.

Available land cover differs between the northern and southern portions of the range (Leasure and Hoback 2017). In the northern portion of the range, beetles can be found throughout the Nebraska Sandhills Ecoregion in mesic areas such as wet meadows and wetlands, semi-arid sandhills, loam grasslands, and tree-lined shelterbelts. The dominant land cover in beetle habitat in the northern portion of the range is native grassland and almost no forests (Leasure and Hoback 2017). Trees located in narrow riparian areas and planted windrows and shelterbelts generally do not provide large contiguous blocks of forested habitat in the northern portion of their range.

In the southern portion of the range, beetle habitat includes larger amounts of deciduous and evergreen forests (Leasure and Hoback 2017). These forested areas may be fragmented, impacting the beetle even if converted to usable grassland habitat (USFWS 2016). Therefore, the Service's mitigation strategy in the southern part of the range includes a higher mitigation ratio for impacts causing "permanent cover change," while the northern portion, including the mitigation calculations for the Project, does not.

To fulfill the HCP's mitigation commitment to protect at least 1,082 acres of high-quality beetle habitat, Keystone identified a parcel approximately 1,200 acres of mitigation lands to be put under a conservation easement, in Cherry County, Nebraska. This mitigation parcel is approximately 118 acres greater than the mitigation calculated in the HCP and is a continuous tract of land that has documented beetle presence. Prior to Project impacts, Wildwood will acquire a conservation easement from a voluntary seller on at least 1,082 acres of mitigation lands to be held by Nebraska Land Trust. Wildwood will manage the lands under a USFWS-approved Conservation Plan. Funding for the management activities will come from a permanent stewardship endowment established by Keystone and held by a third party non-profit entity for the ESLJ Conservation Area. For these reasons and because the number of acres exceeds by 11 percent the amount calculated based on the Service mitigation strategy for the beetle, the Service determines that this mitigation will more than fully offset the impacts of take from the Project.

The applicant will ensure that adequate funding for the conservation plan and procedures to deal with unforeseen circumstances will be provided

The Service has determined that adequate funding is ensured for Keystone to fully implement the HCP and procedures are in place to deal with unforeseen circumstances. Section 11 and Appendix E of the HCP provides details on the funding mechanisms Keystone will use to ensure adequate funding for costs related to the implementation of the HCP. Keystone's financial processes are the (1) Operating budget (2) Corporate Credit Facility, and (3) Permanent Stewardship Endowment for the operation and management of the mitigation lands, prior to Project impacts.

Keystone has estimated the Implementation Costs and will use funds within the Project's operating budget to pay for the Implementation Costs. Keystone's parent company, TC Energy Corporation, for the year ended December 31, 2019, reported net income attributable to common shares of \$4 billion and net cash provided by operations of \$7.1 billion. TC Energy holds assets valued at over \$100 billion.

TC Energy has the capacity to fund the Project through internally generated cash flow, access to capital markets (e.g., through the sale of stock or the issuance of bonds), and the ability to borrow funds through committed credit facilities that currently total more than \$4 billion. Should Keystone's cash from operations somehow become insufficient to fund the Implementation Costs, TC Energy expects to maintain access to credit facilities sufficient to assure funding of the Implementation Costs.

Unforeseen circumstances are changes in circumstances that affect a species or geographic area covered by an HCP, were not or could not be anticipated, and result in a substantial and adverse change in the status of a covered species (50 CFR 17.3). Changed circumstances are changes that affect a species or geographical area covered by an HCP, the applicant and Service can

reasonably anticipate, and can be planned for during development of the HCP (50 CFR 17.3). To the extent these changed circumstances are provided for in the HCP's operating program, the permittee is required to implement the appropriate measures identified in the HCP to respond to the changed circumstances. The "No Surprises" rule, codified at 50 CFR 17.22(b)(5), provides assurances to permittees that, as long as a permittee is properly implementing the HCP and the permit, the Service will not require any additional commitment of land, water, or financial compensation for species that are adequately covered, nor will it impose additional restrictions on the use of land, water, or other natural resources beyond those specified in the HCP without the consent of the permittee. The "No Surprises" assurances apply to only species adequately covered in the HCP and when changed or unforeseen circumstances occur.

Section 10 of the HCP identifies several changed circumstances, including but not limited to restoration failure, emergency repairs, drought, wildfire, severe storms, changes in status or distribution of the beetle, and responses to spills and releases. The HCP describes provisions to address the identified changed circumstances.

Changes in circumstances not identified as a changed circumstance in Section 10 of the HCP and that substantially alter the status of the beetle are considered unforeseen circumstances. In the event that unforeseen circumstances occur, the Service would notify Keystone to coordinate potential procedures to address them. The Service may require additional measures of Keystone where the HCP is being properly implemented only if such measures are limited to modifications within the conserved habitat areas, or to the HCP's operating conservation program for the affected species, and maintain the original terms of the HCP to the maximum extent possible.

The taking will not appreciably reduce the likelihood of the survival and recovery of the species in the wild

The Service finds that the taking to be authorized under the proposed permit will not appreciably reduce the likelihood of the survival and recovery of the beetle in the wild. The ESA's legislative history establishes the intent of Congress that this issuance criterion be identical to a finding of "no jeopardy" pursuant to section 7(a)(2) of the ESA and its implementing regulations (50 CFR 402.02). Consequently, the Service reviewed the HCP in accordance with ESA section 7 procedures and determined in its Biological Opinion, herein incorporated by reference, that the beetle would not be jeopardized by the issuance of the permit and implementation of the HCP. The Service further found that critical habitat would not be adversely modified because no critical habitat for the beetle is designated in the action area.

The majority of the impacts to the beetle and its habitat will be temporary, but permanent loss of habitat will also occur. Combined, the impacts to approximately 1,251 acres (excluding habitat rated as "poor") for the entire Project represents approximately 0.011 percent of the estimated Sandhills and Niobrara occupied range (combined 11,595,154 acres of potential habitat in the Sandhills and Niobrara areas). All beetle habitat impacts will be more than fully offset with

restoration of temporarily impacted habitat and protection and management of 1,200 acres of suitable beetle habitat in Nebraska in perpetuity.

We estimate that 552 beetles (one-time take of 66 beetles from construction, annual take of less than 11 beetles/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. The population viability analysis by Amaral et al. (2005, p. 40) concluded that beetle 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 beetles 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 beetle surveys to determine beetle relative abundance in population analysis areas (USFWS 2019, p. 71). The ratio of positive to negative beetle 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 (USFWS 2019, p. 95). The Niobrara unit had the second highest proportion of positive to negative surveys (USFWS 2019, p. 72). The Project will not impact the long-term persistence of the Sandhills or Niobrara beetle populations because the 552 individuals (one-time take of 66 beetles from construction, annual take of less than 11 beetles/year for 46-years of operation and maintenance) we expect the Project to take in the form of harm, injury, and mortality within the Permit Area represent only a small percentage of the estimated Sandhills and Niobrara populations; this level of population loss does not represent a catastrophic event. With little to no impact on the Sandhills and Niobrara population, we do not expect there would be any effect on the range wide population. Therefore, the take that would be covered by the permit would not affect the species’ long-term persistence within its current range.

Based on the analyses and rationale in the Biological Opinion, the Service determined that the described change to the beetle’s reproduction, abundance, or distribution from issuance of the permit is not likely to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild.

Other measures, required by the Director of the Service, have been met and the Service has received necessary assurances that the HCP will be implemented

The Service finds that the HCP incorporates all the elements we determined necessary for its approval and issuance of the permit. No other measures are necessary for the issuance of the permit under the HCP. The Service finds that the HCP, combined with the permit conditions, provides the necessary assurances the HCP will be implemented.

GENERAL CRITERIA AND DISQUALIFYING FACTORS – ANALYSIS AND FINDINGS

We have no evidence that Keystone’s permit application should be denied on the basis of the criteria and conditions set forth in the regulations for General Permit Requirements (50 CFR 13.21 (b) –(c)). The applicant has met all the criteria for issuance of the permit and does not have any disqualifying factors that would prevent the permit from being issued under current regulations.

RECOMMENDATIONS ON PERMIT ISSUANCE

Based on the foregoing findings with respect to the proposed action, I recommend the issuance of the permit to Keystone, in accordance with the HCP.



Noreen Walsh
Regional Director, Interior Regions 5 & 7
U.S. Fish and Wildlife Service
Denver, CO



Date

LITERATURE CITED

- Amaral M., Morgan R, Davidson C, Dikeman H, Holzer K, Byers O (eds.). 2005. American burying beetle (*Nicrophorus americanus*) population and habitat viability assessment: Final Report. IUCN/SSC Conservation Breeding Specialist Group, Apple Valley, MN. 80 pp.
- Creighton JC, Vaughn CC, Chapman BR. 1993. Habitat preference of the endangered American burying beetle (*Nicrophorus americanus*) in Oklahoma. *The Southwestern Naturalist* 38:275–277.
- Hoback, W.W. 2011. American Burying Beetle Habitat Assessment Model and Field Survey Results for Nebraska and Texas along the Keystone XL Pipeline Project and Habitat Assessment for South Dakota and Oklahoma. Revision 3. Prepared for Keystone XL Pipeline Project. February 2011.
- Jurzenski J. 2012. Factors affecting the distribution and survival of endangered American burying beetles, *Nicrophorus americanus* Olivier. Dissertations and Student Research in Entomology. University of Nebraska – Kearney. Kearney, NE.
- Leasure, D. & Hoback, W. 2017. Distribution and habitat of endangered American burying beetle in northern and southern regions. *Journal of Insect Conservation*. 10.1007/s10841-017-9955-5.
- Lomolino MV, Creighton JC, Schnell GD, Certain DL. 1995. Ecology and conservation of the endangered American burying beetle, *Nicrophorus americanus*. *Conservation Biology* 9:605–614.
- Lomolino MV, and JC Creighton. 1996. Habitat selection, breeding success and conservation of the endangered American burying beetle, *Nicrophorus americanus*. *Biological Conservation* 77:235–241
- Nebraska Public Power District (NPPD). 2018. R-Project Final Habitat Conservation Plan. Prepared for Nebraska Public Power District, Norfolk, NE. Prepared by POWER Engineers. December 5, 2018. Available at: <https://www.fws.gov/mountain-prairie/es/nebraska/library/R-Project-Final-HCP.pdf>.
- TransCanada Keystone Pipeline, LP. (Keystone) 2020. Habitat Conservation Plan. Submitted by EXP Energy Services, Inc., dated April 22, 2020.
- United States Fish and Wildlife Service (USFWS). 1991. American Burying Beetle (*Nicrophorus americanus*) Recovery Plan. Newton Corner, Massachusetts. 80 pp. Available at: https://ecos.fws.gov/docs/recovery_plan/910927.pdf.
- United States Fish and Wildlife Service (USFWS). 2008. Five-year review of the status of the American Burying Beetle. June 16, 2008. Southwest Regional Office, Albuquerque, New Mexico. Available at: https://ecos.fws.gov/docs/five_year_review/doc1968.pdf.

- United States Fish and Wildlife Service (USFWS). 2013. American Burying Beetle (*Nicrophorus americanus*) Range Wide Presence/Absence Live-trapping Survey Guidance. USFWS, Oklahoma Ecological Services Field Office, Tulsa, OK.
- United States Fish and Wildlife Service (USFWS). 2016. Programmatic Biological Opinion on the “Final 4(d) Rule for the Northern Long-Eared Bat and Activities Excepted from Take Prohibitions, January 5, 2016. Available at:
https://www.fws.gov/midwest/endangered/section7/batbo/16_NLEBRange_Final4d0105_2016.pdf
- United States Fish and Wildlife Service (USFWS). 2019. Species Status Assessment Report for the American Burying Beetle (*Nicrophorus americanus*). Version 1.0. February 2019. Available at:
https://www.fws.gov/southwest/es/oklahoma/Documents/ABB/Listing/ABBSSA_Final_V1.0_Feb2019.pdf
- United States Fish and Wildlife Service (USFWS). 2020. Biological Opinion on the U.S. Fish and Service’s Proposed Issuance of an Incidental Take Permit for the Federally Threatened American Burying Beetle *Nicrophorus americanus*. TC Energy Keystone XL Pipeline, LP. 42 pp.
- USFWS and National Marine Fisheries Service (NMFS). 2016. Habitat Conservation Planning and Incidental Take Permit Processing Handbook. 405 pp. Available at:
https://www.fws.gov/endangered/esa-library/pdf/HCP_Handbook.pdf.