

ENVIRONMENTAL ASSESSMENT

DESIGNATION OF CRITICAL HABITAT FOR THE SALT CREEK TIGER BEETLE (*Cicindela nevadica lincolniana*)

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TABLE OF CONTENTS

1.0 PURPOSE FOR THE ACTION	1
2.0 NEED FOR THE ACTION	1
2.1 Background	2
2.2 Distribution and Status	3
2.3 Endangered Species Act	5
2.3.1 Critical Habitat	5
2.3.2 Section 7 Consultation	6
2.3.3 Technical Assistance	7
2.3.4 Section 9 Prohibitions	8
2.3.5 Section 10 Permits/Habitat Conservation Plans	8
3.0 DESCRIPTION OF ALTERNATIVES	9
3.1 Alternatives Considered	9
3.2 Alternative A - No Action	10
3.3 Action Alternatives	10
3.3.1 Alternative B	10
3.3.2 Critical Habitat Units	11
3.3.3 Alternative C	13
4.0 DESCRIPTION OF THE AFFECTED ENVIRONMENT	13
4.1 Physical Environment	13
4.3 Human Environment	15
4.4 Tribal Lands	16
5.0 ENVIRONMENTAL CONSEQUENCES	16
5.1 Economic Screening Analysis	17
5.2 Economic Costs of Section 7 Consultation	17
5.3 Environmental Consequences	21
5.3.1 Physical Environment	21
5.3.2 Fish, Wildlife, and Plants	21
5.3.3 Salt Creek Tiger Beetle	21
5.3.4 Other Fish, Wildlife, and Plant Species	21
5.3.5 Human Environment	22
5.3.6 Development	23
5.3.7 Agriculture	24
5.3.8 Transportation and Public Works Operations	26
5.3.9 Conservation	27
5.3.10 Archeological and Cultural Resources	28
5.3.11 Environmental Justice	28
5.4 Cumulative Impact	30
6.0 COUNCIL ON ENVIRONMENTAL QUALITY ANALYSIS OF SIGNIFICANCE ...	30
6.1 Context	31
6.2 Intensity	31
7.0 CONTACTS AND COORDINATION WITH OTHERS	32
7.1 Copy Recipients or Contacts	32

8.0 LIST OF CONTRIBUTORS34
9.0 REFERENCES CITED.....34
10.0 APPENDIX A37

LIST OF FIGURES

Figure 2-1 Annual population surveys for the Salt Creek tiger beetle.....4
Figure A-1 Map of Designated Critical Habitat from Alternative B.....37

LIST OF TABLES

TABLE 4-1. Designated critical habitat units for Salt Creek tiger beetle.....14
TABLE 5-1: Summary of Incremental Costs by Unit.....20
TABLE 5-2. Summary of Environmental Consequences by Alternative.....29

1.0 Purpose for the Action

The purpose of the action is to designate critical habitat for the Salt Creek tiger beetle (*Cicindela nevadica lincolniana*) by utilizing provisions of the Endangered Species Act of 1973, as amended (Act). The purpose of the Act is to conserve the ecosystems upon which endangered and threatened species depend. A critical habitat designation identifies areas essential to the survival and recovery of the Salt Creek tiger beetle; critical habitat also describes physical and biological features within that habitat that require special management considerations to achieve conservation of the species.

2.0 Need for the Action

The need for this action is to comply with section 4 of the Act, which requires that critical habitat be designated for endangered and threatened species unless such a designation is not prudent. We, the Fish and Wildlife Service (USFWS), published the final rule (70 FR 58335) on October 6, 2005, listing the Salt Creek tiger beetle, a species endemic to saline wetlands in eastern Nebraska the eastern Nebraska saline wetland complex, as endangered.

We published a proposed rule to designate critical habitat on December 12, 2007 (72 FR 70716). On June 3, 2008, we published a notice in the **Federal Register** to reopen the comment period and announce a public hearing (73 FR 31665). On April 28, 2009, we published a revised proposed rule to designate critical habitat (74 FR 19167). A final rule designating approximately 1,933 acres (ac) (782 hectares [ha]) of critical habitat was published on April 6, 2010 (75 FR 17466). The Center for Native Ecosystems, the Center for Biological Diversity, and the Xerces Society (plaintiffs) filed a complaint on February 23, 2011, regarding designation of critical habitat for the species. The plaintiffs asserted that we failed to designate sufficient critical habitat to conserve and recover the species. A settlement agreement between the plaintiffs and USFWS was reached on June 7, 2011, and we agreed to reevaluate our designation of critical habitat. We reevaluated our previous designation and published a proposed rule to designate 1,110 ac (449 ha) of critical habitat for the Salt Creek tiger beetle (78 FR 33282). This proposed rule addresses our proposed revisions to the critical habitat designation for the Salt Creek tiger beetle. On March 13, 2014, we reopened the comment period and provided the public the opportunity to review the proposed critical habitat rule, draft environmental assessment, draft finding of no significant impacts, and draft economic analysis (79 FR 14206).

When the range of a species includes states within the Tenth Circuit, pursuant to the Tenth Circuit ruling in Catron County Board of Commissioners v. U.S. Fish and Wildlife Service, 75 F.3d 1429 (10th Cir. 1996), we will complete an analysis pursuant to the National Environmental Policy Act (NEPA) on critical habitat designations. The range of the Salt Creek tiger beetle includes the State of Nebraska, which is within the Eight Circuit. However, the USFWS prepared this Environmental Assessment (EA) because Denver, Colorado is within the Tenth Circuit; the Nebraska Field Office is a component of the USFWS Region 6, which is located in Denver. This EA was prepared to meet our requirements under NEPA.

Critical habitat is one of several provisions of the Act that aids in protecting the habitat of listed

species until populations have recovered and threats have been minimized so that the species can be delisted as threatened or endangered. A critical habitat designation is intended to assist in achieving the long-term protection and recovery of the Salt Creek tiger beetle and the ecosystem upon which it depends. Section 7(a)(2) of the Act requires consultation for Federal actions that may affect critical habitat in order to avoid destruction or adverse modification of this habitat. Further explanation of critical habitat and its implementation are provided below.

2.1 Background

The Salt Creek tiger beetle is an active, ground-dwelling, predatory insect that captures smaller or similar-sized arthropods in a “tiger-like” manner by grasping prey with its mandibles (mouthparts). Salt Creek tiger beetle larvae live in permanent burrows in the ground, however they are known to relocate and dig new burrows a few centimeters from their original burrow. The larvae are voracious predators, fastening themselves by means of abdominal hooks to the tops of their burrows and rapidly extending outward to seize passing prey.

The Salt Creek tiger beetle is metallic brown to dark olive green above, with a metallic dark green underside, and measures 1.3 centimeters (cm) (0.5 inch [in]) in total length. It is distinguished from other tiger beetles by its distinctive form and the color pattern on its dorsal and ventral surfaces. The elytra (wing covers) are metallic brown or dark olive green, and the head and pronotum (body segment behind the head) are dark brown (Carter 1989).

Allgeier et al. (2004) and Spomer et al. (2004) indicate that the Salt Creek tiger beetle has a two-year life cycle, not uncommon for tiger beetles. Adults are first observed as early as the end of May or as late as mid-June, and disappear by mid to late-July depending on weather conditions. Their numbers peak about two weeks after the first individuals appear and begin to feed and mate. After mating, the male rides atop the female, presumably preventing her from re-mating (a behavior known as mate-guarding). Females lay their eggs along sloping banks of creeks in areas where the salt layer is exposed in the soil horizon, in barren salt flats of saline wetlands, or along saline stream edges that are found in close association with water, near a seep or stream. Researchers from the University of Nebraska-Lincoln (UNL) speculate that, during the night, female Salt Creek tiger beetles lay approximately 50 eggs (Farrar 2003).

Spomer and Higley (2001) and Spomer et al. (2004) describe the life cycle of the Salt Creek tiger beetle in detail through egg, larval, and adult stages. A brief summary is as follows. After the egg hatches from a burrow where the female previously deposited an egg, the young larva digs a burrow and uses its head to scoop out soil. The larva takes these small mud clods to the burrow entrance and flips them outside the hole. Larval burrows can occur throughout a saline streambank and on barren salt flats of saline wetlands.

The small larva waits at the top of its burrow and ambushes prey that passes near the burrow entrance. Once it has captured its prey, the larva pulls it into the burrow with the aid of three hooks on the dorsum of the fifth abdominal segment. These hooks also function to prevent the larva from being pulled from its burrow by larger prey or predators. The larva will plug its burrow and retreat inside during periods of high water, very hot weather, very dry conditions,

and over the winter. As the larva grows, it molts to a larger instar (a life stage between molts), enlarging and lengthening its burrow. The Salt Creek tiger beetle has three instars. It probably overwinters as a third instar, pupates in May, and emerges as an adult. Before pupation, the larva seals its burrow entrance and digs a side chamber about 5 to 8 cm (2 to 3 in) below the soil surface. After the adult emerges from the pupa, it remains in the chamber until its cuticle hardens.

Eighty-five species and more than 200 subspecies of tiger beetles in the genus *Cicindela* are found in the United States (Boyd et al. 1982; Freitag 1999) and many of these are known from Nebraska. The Salt Creek tiger beetle is one of 32 species and subspecies of tiger beetles that have been recorded in Nebraska (Spomer et al. 1997; Ratcliffe and Spomer 2002; Allgeier et al. 2003; Spomer et al. 2004).

Originally, the Salt Creek tiger beetle was described by Casey (1916) as a separate species, *C. lincolniana*. Willis (1967) identified *C. n. lincolniana* as a subspecies of *C. nevadica* which evolved from *C. n. knausii*; this is the currently accepted taxonomic classification. The evolution of *C. n. lincolniana* was a result of its isolation from the gene pool sometime after the Kansan, but possibly during the Yarmouthian glaciation. There also are spatial separations between *C. n. knausii* and *C. n. lincolniana*. *C. n. knausii* has been collected in Sheridan and Garden counties in the Nebraska Sandhills, a distance of several hundred miles from the saline wetlands and associated streams of eastern Nebraska that provide habitat for the *C. n. lincolniana*. Busby (2003) examined populations of *C. nevadica* in north-central Kansas that were among the closest known populations of those of *C. n. lincolniana* in Lancaster County to determine sub-specific affinities of those populations based on external morphology. Busby (2003) concluded that *C. n. lincolniana* is distinctive from other populations of *C. nevadica* in the central Great Plains.

2.2 Distribution and Status

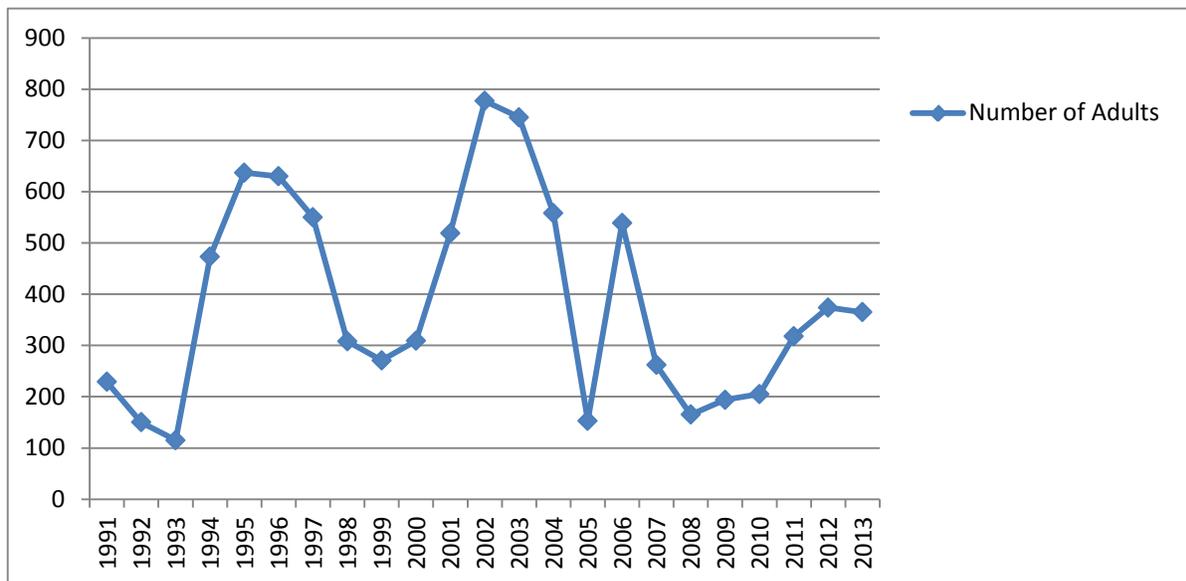
The Salt Creek tiger beetle has very narrow habitat requirements, occurring only in saline wetlands on exposed saline mud flats or along mud banks of streams and seeps that contain salt deposits and are sparsely vegetated (Carter 1989; Spomer and Higley 1993; LaGrange 1997; Nebraska Game and Parks Commission [NGPC] 1999; Spomer et al. 2004). Larvae have been found only on the moist, salt-encrusted banks of Little Salt Creek in northern Lancaster County (Spomer et al. (2004). The density of larval burrows decreases as vegetative cover increases. Spomer et al. (2004) indicates that adults show little flexibility in habitat preference. The earliest-emerging adults sometimes move from creek banks to the salt flats, presumably to hunt for prey. A week or two into emergence, however, this behavior stops and adults are found almost exclusively in the wetter areas, such as the creek edge or seeps along the creek (Spomer et al. 2004). During peak emergence, Spomer et al. (2004) states that adults often wander from their emergence sites presumably looking for new areas to colonize or search for prey. It is during this time that adults often appear on sand/gravel bars, or on less saline soils along the stream. Salt Creek tiger beetles require these open, barren areas for construction of larval burrows, thermoregulation, foraging, and dispersal corridors (Spomer and Higley 1993).

Saline wetlands in eastern Nebraska occur in swales and depressions within the floodplain of Salt

Creek and its tributaries in northern Lancaster and southern Saunders counties. LaGrange (1997) suggests that the saline wetlands of eastern Nebraska receive their salinity from groundwater passing through an underground rock formation containing salts deposited by an ancient sea that once covered Nebraska. The saline wetlands of eastern Nebraska are characterized by saline soils and halophytes (plants adapted to saline conditions). They usually have a central area that is devoid of vegetation and, when dry, exhibit salt encrusted mudflats (barren salt flats) (LaGrange 1997). These saline wetlands are used by the Salt Creek tiger beetle and numerous other saline-adapted insects.

Six populations of Salt Creek tiger beetles, distributed along Oak, Little Salt, and Rock creeks, have been identified in 1994. However, since then, half of these populations have disappeared. Only three populations of Salt Creek tiger beetles exist today, all of which are located along Little Salt Creek. Extensive loss of saline wetlands in the Eastern Nebraska Saline Wetland Complex has occurred since the late 1800s. Stream channel straightening projects in the early 1900s (Rus et al. 2003), and residential, commercial, industrial, infrastructure, and agricultural developments, have resulted in habitat degradation, loss, and fragmentation of saline streams and wetlands. These modifications have had a negative impact on the Salt Creek tiger beetle, an insect with specific habitat requirements. The two largest populations exist within one-mile of each other in an area on the north side of Lincoln, Nebraska; this area has and continues to experience extensive urban growth and development. Surveys for the Salt Creek tiger beetle have been done annually from 1991 through 2013 at several tributaries to Salt Creek (Figure 1).

Figure 2-1. Annual population surveys for the Salt Creek tiger beetle.



Additional information on the biology and status of the Salt Creek tiger beetle can be found in the October 6, 2005, final listing determination (70 FR 58335).

A recovery plan outline has been completed (USFWS 2009); a draft recovery plan has been

prepared for the Salt Creek tiger beetle and is currently under internal review. Once finalized, the recovery plan will be provided for public review and comment.

2.3 Endangered Species Act

2.3.1 Critical Habitat

Critical habitat is defined in section 3(5)(A) of the Act as – (i) the specific areas within the geographical area occupied by a species, at the time it is listed in accordance with the Act, on which are found those physical or biological features (I) essential to the conservation of the species and (II) that may require special management considerations or protection; and (ii) specific areas outside the geographical area occupied by a species at the time it is listed, upon a determination that such areas are essential for the conservation of the species. The term “conservation” as defined in section 3(3) of the Act, means “to use and the use of all methods and procedures which are necessary to bring an endangered species or threatened species to the point at which the measures provided pursuant to this Act are no longer necessary” (i.e., the species is recovered and removed from the list of threatened and endangered species).

Section 4(b)(2) of the Act requires that we base a critical habitat designation on the best available scientific and commercial data, taking into consideration the economic impact, and any other relevant impact, when designating any particular area as critical habitat. We may exclude areas from critical habitat designation if we determine that the benefits of exclusion outweigh the benefits of including the areas as critical habitat, provided the exclusion will not result in the extinction of the species. Within the geographic area occupied by the species, we will designate only areas currently known to be “essential to the conservation of the species.” Critical habitat should already have the features and habitat characteristics that are necessary to sustain the species. We will not speculate about what areas might be found to be essential if better information were available, or what areas may become essential over time. If information available at the time of designation does not show that an area provides essential support for a species at any phase of its life cycle, then the area should not be included in the critical habitat designation. Within the geographic area occupied by the species, we will not designate areas that do not now have the physical and biological features that provide essential life cycle needs for the species.

Habitat is often dynamic, and species may move from one area to another over time. Furthermore, we recognize designation of critical habitat may not include all habitat eventually determined as necessary to recover the species. For these reasons, areas outside the critical habitat designation will continue to be subject to conservation actions that may be implemented under section 7(a)(1) and the regulatory protections afforded by section 7(a)(2) jeopardy standard as well as the section 9 take prohibition, as determined on the basis of the best available information at the time of the action. We specifically anticipate that federally-funded or assisted projects affecting listed species outside their designated critical habitat areas may still result in jeopardy findings in some cases. Similarly, critical habitat designations made on the basis of the best available information at the time of designation will not control the direction and substance of future recovery plans, habitat conservation plans, or other species conservation planning

efforts if new information available to planning efforts calls for a different outcome.

In accordance with section 3(5)(A)(i) of the Act and regulations in 50 CFR 424.12 for determining which areas to propose as critical habitat, we are required to base critical habitat determinations on the best scientific and commercial data available and to consider physical and biological features that are essential to the conservation of the species, and that may require special management considerations or protection. These include, but are not limited to: (1) space for individual and population growth and for normal behavior; (2) food, water, air, light, minerals, or other nutritional or physiological requirements; (3) cover or shelter; (4) sites for breeding, reproduction, rearing (or development) of offspring; and (5) habitats protected from disturbance or that are representative of the historic geographical and ecological distributions of a species.

2.3.2 Section 7 Consultation

Section 7(a)(2) of the Act requires every Federal agency, in consultation with the assistance of the Secretary, to insure that any action it authorizes, funds, or carries out is not likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of designated critical habitat. In fulfilling these requirements, each agency is to use the best available scientific and commercial data. This section of the Act sets out the consultation process, which is further implemented by regulation (50 CFR 402).

Each Federal agency is to review its actions at the earliest possible time to determine whether any action may affect listed species or critical habitat. If the action may affect a listed species or critical habitat, consultation with the Service is required.

Informal consultation is an optional process that includes all discussions and correspondence between the Service and a Federal agency or designated non-Federal representative, designed to assist the Federal agency in determining whether formal consultation or a conference is required. If during consultation it is determined by the Federal agency, with the written concurrence of the Service, that the action is not likely to adversely affect listed species or critical habitat, the consultation process is terminated, and no further action is necessary. During informal consultation, the Service may suggest modifications to the action that the Federal agency and any applicant could implement to avoid the likelihood of adverse effects to listed species or critical habitat.

If the proposed action is likely to adversely affect a listed species or designated critical habitat, formal consultation with the Service is required. Formal consultation is a process between the Service and a Federal agency or applicant that: (1) determines whether a proposed Federal action is likely to jeopardize the continued existence of listed species or destroy or adversely modify designated critical habitat; (2) begins with a Federal agency's request and submittal of a complete initiation package; and (3) concludes with the issuance of a biological opinion and incidental take statement by the Service.

With the request to initiate formal consultation, the Federal agency is to include: (1) a description

of the proposed action; (2) a description of the area that may be affected; (3) a description of any listed species or critical habitat that may be affected; (4) a description of the manner in which the listed species or critical habitat may be affected and an analysis of cumulative effects; (5) relevant reports including any environmental impact statement, environmental assessment, or biological assessment; and (6) any other relevant and available information.

Formal consultation concludes 90 days after its initiation. Within 45 days after concluding formal consultation, the Service is to deliver a biological opinion (BO) to the Federal agency and any applicant. The BO will include the Service's opinion on whether the action is likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of critical habitat. If the action is likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of critical habitat, the BO will include a reasonable and prudent alternative, if any exist. A reasonable and prudent alternative is a recommended alternative action that can be implemented consistent with the scope of the Federal agency's legal authority and jurisdiction, that is economically and technologically feasible, and that would avoid the likelihood of jeopardizing the continued existence of the listed species or the destruction or adverse modification of designated critical habitat.

Additionally, in those cases where the Service concludes that an action (or the implementation of any reasonable and prudent alternatives) and the resultant incidental take of listed species will not violate section 7(a)(2), the Service will provide with the BO a statement concerning incidental take that: (1) specifies the impact of the take on the species; (2) specifies the reasonable and prudent measures to minimize the impact; (3) sets forth terms and conditions that must be complied with by the Federal agency or any applicant to implement the reasonable and prudent measures; and (4) specifies procedures to handle any individuals actually taken. Reasonable and prudent measures, along with the terms and conditions that implement them, cannot alter the basic design, location, scope, duration, or timing of the actions and may involve only minor changes. Any "taking" covered in the incidental take statement and in compliance with the terms and conditions of the statement is not a prohibited taking under the Act and no other authorization or permit under the Act is required.

2.3.3 Technical Assistance

Although it is not defined in the regulations, technical assistance includes those parts of the informal consultation that provide information to agencies, applicants, and/or consultants, but specifically stops short of concurrence on "may effect" determinations. The term is used to differentiate "informal" consultation (where a concurrence with an agency, applicant, or consultant on "may effect" is provided) and the provision of information. This differentiation is primarily made for record-keeping purposes.

A telephoned or written inquiry about the presence or absence of listed and/or proposed species in a project area usually initiates informal consultation and frequently generates technical assistance. Service biologists may respond in different ways:

- a) If species are not likely to be present, the consultation requirement is met and the Service

may advise the agency, applicant or consultant.

- b) If historical records or habitat similarities suggest the species may be in the area, then some survey work may be recommended to make a more precise determination.
- c) If the species is definitely in the project area, but the Service determines it will not be adversely affected, the Service may notify the agency of that finding.

Technical assistance from the Service may take a variety of forms. It can include information on candidate species as well as names of contacts having information on state listed species. The Service may provide correspondence to state agencies or other Service offices to alert them to a project.

As a part of technical assistance, the Service may recommend that:

- d) The action agency conduct additional studies on the species' distribution in the area affected by the action, or
- e) The action agency monitors impacts of the action on aspects of the species' life cycle. Monitoring may be recommended when incidental take is not anticipated, but might possibly occur, thus triggering the need for project changes or formal consultation.

2.3.4 Section 9 Prohibitions

Section 9 of the Act prohibits "take" of endangered species of fish and wildlife. Take is defined in section 3 of the Act as "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering. Harass is defined by the Service as actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering (50 CFR 17.3). Incidental take is the take of listed fish and wildlife species that results from, but is not the purpose of, carrying out an otherwise lawful activity conducted by a Federal agency or applicant (50 CFR 402.02).

2.3.5 Section 10 Permits/Habitat Conservation Plans

Under section 10(a)(1)(B) of the Act, permits can be issued for any taking otherwise prohibited under section 9 if such taking is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. The applicant for the permit must submit a "habitat conservation plan" that specifies, among other things, the impacts that are likely to result from the taking and the measures the permit applicant will undertake to minimize and mitigate such impacts. When processing a section 10(a)(1)(B) permit application, the Service must complete an intra-Service consultation under section 7 of the Act to ensure the issuance of the permit is not likely to jeopardize the continued existence of any endangered or threatened species or result in the

destruction or adverse modification of critical habitat.

3.0 DESCRIPTION OF ALTERNATIVES

The Service considered three alternatives in this EA, including the No Action Alternative (Alternative A). The Action Alternatives (Alternatives B and C) are all based on some measure of critical habitat designation. The Action Alternatives vary by the area of geographic range presently occupied and unoccupied.

3.1 Alternatives Considered

Each Action Alternative includes designation of critical habitat in areas believed to contain the physical and biological features upon which the Salt Creek tiger beetle depends. These habitat features provide for the physiological, behavioral, and ecological requirements essential for the conservation of the species, are described at 50 CFR 424.12, and include, but are not limited to, the following: (1) space for individual and population growth and for normal behavior; (2) food, water, or other nutritional or physiological requirements; (3) cover or shelter; (4) sites for breeding, reproduction, or rearing of offspring; and (5) habitats that are protected from disturbance or are representative of the historical, geographical, and ecological distributions of the species.

We determined the physical and biological features essential for the Salt Creek tiger beetle from research and survey observations published in peer-reviewed literature and unpublished reports across the range of the tiger beetle. We also solicited information from knowledgeable biologists and reviewed the available information pertaining to habitat requirements of the Salt Creek tiger beetle.

The physical and biological features for the Salt Creek tiger beetle include:

- a) Saline barrens and seeps found within saline wetland habitat in Little Salt, Rock, Oak, and Haines Branch Creeks. All of these areas provide suitable and potentially suitable habitat. In all but Little Salt Creek, populations of the species have been extirpated (Rock and Oak Creeks) or are presumed to be extirpated given the availability of suitable habitat and infrequent surveys but no documented species' occurrence (Haines Branch Creek). All of these drainages support the physical and biological features necessary to maintain viable populations of the species.

For our evaluation, we determined that these two habitat types (saline barrens and seeps) within suitable wetlands are required by the Salt Creek tiger beetle:

- b) Exposed mudflats associated with saline wetlands or the exposed banks and islands of streams and seeps that contain adequate soil moisture and soil salinity are essential core habitats. These habitats meet egg-laying and foraging requirements. The "Salmo" soil series is the only soil type that currently supports occupied habitat; however "Saltillo" is the other soil series that has adequate soil moisture and salinity and can also provide

suitable habitat.

- c) Vegetated wetlands adjacent to core habitats are essential to provide shade for species thermoregulation, support a source of prey for adults and larval forms of Salt Creek tiger beetles, and protect core habitats.

This critical habitat designation is designed for the conservation of areas containing the physical and biological features necessary to support the life history functions that are the basis for the critical habitat proposal. Because not all life history functions require all of the above features, not all of the critical habitat units will contain all of the physical and biological features.

3.2 Alternative A - No Action

Pursuant to NEPA and its implementing regulations (40 CFR 1502.14), we are required to consider the No Action Alternative. The No Action Alternative maintains the status quo and there would be no designation of critical habitat for the Salt Creek tiger beetle. This alternative serves to delineate the existing environment and conditions that result from the listing of the species without designation of critical habitat. Since the listing of the species as endangered, the Salt Creek tiger beetle has been protected under section 7 of the Act by prohibiting Federal agencies from implementing actions that would jeopardize the continued existence of the species. This existing protection under the Act is also considered the baseline against which we evaluate the action alternatives described below. In addition, the No Action Alternative would disregard the legal requirement to designate critical habitat, where it is prudent and determinable.

3.3 Action Alternatives

3.3.1 Alternative B

Alternative B, our preferred alternative, would designate critical habitat as described in our proposed rule that was published in the **Federal Register** on June 4, 2013 (78 FR 33282). This alternative proposes the designation of four units as critical habitat for the Salt Creek tiger beetle. The critical habitat units we describe below constitute our current best assessment of areas that meet the definition of critical habitat for the species. The four units we propose as critical habitat are: (1) Little Salt Creek Unit—under the first part or prong of the Act’s definition of critical habitat and (2) Rock Creek, Oak Creek, and Haines Branch Creek Units—under the second part or prong of the Act’s definition of critical habitat. Table 1 provides approximate areas (ac/ha) of these units determined to meet the definition of critical habitat for the Salt Creek tiger beetle as well as information about land ownership.

Below, we present brief descriptions of all unit and the reasons why they meet the definition of critical habitat for the Salt Creek tiger beetle.

3.3.2 Critical Habitat Units

Critical habitat units have been identified for the Salt Creek tiger beetle (area estimates reflect all land within critical habitat unit boundaries). The Little Salt Creek Unit is occupied by the Salt Creek tiger beetle. The Rock, Oak, and Haines Branch Creek Units are no longer occupied by the Salt Creek tiger beetle. Our most recent records of occupancy on the Rock and Oak Creek units are from 1998. The Salt Creek tiger beetle has not been found at the Haines Branch Creek Unit although suitable habitat is available for the species there. Table 1 does not include the No Action Alternative, since no areas would be designated as critical habitat.

Unit 1: Little Salt Creek Unit

This unit consists of 284 ac (115 ha) of barren salt flats and three stream segments on Little Salt Creek in Lancaster County, from near its junction with Salt Creek to approximately 7 miles (mi) (11 kilometers [km]) upstream. It includes the three existing populations of Salt Creek tiger beetles (Upper Little Salt Creek-North, Arbor Lake, and Little Salt Creek-Roper) present at the time of listing, and an additional site with an extirpated population (Upper Little Salt Creek-South). This Unit contains the physical or biological features essential to the Salt Creek tiger beetle.

Approximately 50 percent of the unit is either owned by entities that will protect or restore saline wetland habitat (see Table 1) or is part of an easement that protects saline wetland habitat in perpetuity. This unit is largely protected from future urban development (e.g., commercial and residential development, road construction, and stream channelization) and future agricultural development (e.g., over-grazing and cultivation) by participation of landowners or easement holders in the *Implementation Plan for the Conservation of Nebraska's Eastern Saline Wetlands* (LaGrange et al. 2003) and their membership in the Saline Wetlands Conservation Partnership (SWCP). At least two tracts (owned by the City of Lincoln) have been restored (Arbor Lake and Frank Shoemaker Marsh) (Malmstrom 2013) and other areas are in the process of being restored or are managed to conserve saline wetlands. However, without continued management, impacts from development will continue to adversely affect much of the habitat. The remaining 50 percent of the Little Salt Creek Unit that is not currently being managed for protection and restoration of saline wetland habitat, remains vulnerable to both historical and ongoing impacts from development. The lower reaches of Little Salt Creek are in or near the City of Lincoln and consequently, are most vulnerable to impacts related to urban development; upper stream reaches are more likely impacted by agricultural development.

Unit 2: Rock Creek Unit

The unit consists of 526 ac (213 ha) of barren salt flats and a stream segment of Rock Creek from approximately two mi (3 km) above its confluence with Salt Creek to approximately 12 mi (19 km) upstream. Most of this stream reach is in Lancaster County, but a tributary to Rock Creek located as the northernmost portion is in southern Saunders County. This unit was not occupied at the time of listing; however, one population was present there until 1998. Unit 2 contains the physical or biological features essential to the Salt Creek tiger beetle. It is essential to the conservation of the species because any population established on Rock Creek would provide redundancy, in the event of a natural or manmade disaster on Little Salt Creek.

Approximately 29 percent of the unit is either owned by an entity that will protect or restore saline wetland habitat (see Table 1) or is part of an easement that protects the saline wetland habitat in perpetuity. Approximately 152 ac (61 ha) of barren salt flats and the stream segment are part of the Jack Sinn Wildlife Management Area (WMA), which is owned and managed by the Nebraska Game & Parks Commission (NGPC) and located in southern Saunders and northern Lancaster counties. Several projects have been done on this tract to restore saline wetlands. However, without protection and restoration, impacts from development will continue to adversely affect much of the habitat. The 71 percent of the Rock Creek Unit that is not currently being managed for protection and restoration of saline wetland habitat remains vulnerable to both historical and ongoing impacts from development. This unit is further removed from Lincoln; therefore, it faces fewer threats from urban development (e.g., commercial and residential development, road construction, and stream channelization) and more threats from agricultural development (e.g., over-grazing and cultivation) than the Little Salt Creek Unit.

Unit 3: Oak Creek Unit

The Oak Creek Unit consists of 208 ac (84 ha) of barren salt flats and a saline seep complex located within the historic floodplain of Oak Creek. The unit is located along Interstate 80 in the northwest part of Lincoln and within the southeast boundary of the Lincoln Airport in Lancaster County. This unit was not occupied at the time of listing; however, one population was present until 1998. This Unit contains the physical or biological features essential to the Salt Creek tiger beetle and is essential to the conservation of the species because any population established on Oak Creek would provide redundancy in the event of a natural or manmade disaster on Little Salt Creek.

Approximately 86 percent of the unit is owned by the City of Lincoln and 14 percent by the Nebraska Department of Roads (NDOR) (see Table 1). This unit is largely protected from future urban development (e.g., commercial and residential development, road construction, and stream channelization) and future agricultural development (e.g., over-grazing and cultivation). Barren salt flats including the saline seep complex along Interstate 80 and within the boundaries of the Lincoln Airport are part of this unit. This tract was once a part of a large saline wetland complex and is the type locality for the Salt Creek tiger beetle. However, a substantial amount of development has resulted in the loss of the once large saline wetland in that area. This unit is near the City of Lincoln; however, it faces fewer threats from urban development (e.g., commercial and residential development, road construction, and stream channelization) than the Little Salt Creek Unit given the limitations on development along the Interstate and within the boundaries of the Lincoln Airport.

Unit 4: Haines Branch Creek Unit

The unit consists of 92 ac (37 ha) of barren salt flats and 2.8-mile segment of the Haines Branch Creek. Haines Branch Creek is located on the west side of Lincoln, upstream from Pioneers Park in Lancaster County. This unit was not occupied at the time of listing, but suitable habitat in the form of saline seeps and wetlands are available for the Salt Creek tiger beetle there. This unit contains the physical or biological features essential to the Salt Creek tiger beetle and is essential

to the conservation of the species because any population established on Haines Branch Creek would provide redundancy, in the event of a natural or human-caused disaster on Little Salt Creek.

Approximately half of the unit is owned by private entities while the balance is owned by the City of Lincoln/State of Nebraska (Table 1). This unit is not protected from future urban development (e.g., commercial and residential development, road construction, and stream channelization) and future agricultural development (e.g., over-grazing and cultivation).

3.3.3 Alternative C

This alternative action proposes the designation of one unit as critical habitat for the Salt Creek tiger beetle. In this case, only the occupied unit, Little Salt Creek Unit, would be proposed for designation as critical habitat. Table 1 provides approximate areas (ac/ha) and ownership of the Little Salt Creek Unit.

4.0 DESCRIPTION OF THE AFFECTED ENVIRONMENT

The geographic area for Alternative B, our preferred alternative, includes 1,110 acres (449 ha) of critical habitat for the Salt Creek tiger beetle. The critical habitat is located in and along Little Salt, Rock, Oak, and Haines Branch Creeks in Lancaster and Saunders counties in Nebraska. The geographic area for Alternative C includes 284 acres (115 ha) that would be designated as critical habitat. Critical habitat under Alternative C is entirely located in Lancaster County in Nebraska in and along Little Salt Creek.

4.1 Physical Environment

Areas of critical habitat for Alternatives B and C occur within the eastern Nebraska saline wetlands complex (LaGrange 1997). Areas identified for designation include saline wetlands that occur in swales and depressions and portions of Little Salt, Rock, Oak, and Haines Branch Creeks under Alternative B and Little Salt Creek only for Alternative C.

The landscapes within the eastern Nebraska saline wetland complex are predominantly a mosaic of cropland and pasture. Little row crop agriculture has occurred in the floodplain areas located along Little Salt, Rock, Oak, and Haines Branch Creeks because high soil salinity inhibits growth of crops. Salinity in these areas originates from groundwater inflow that passes through an underground rock formation containing salts deposited by an ancient sea that once covered Nebraska (LaGrange 1997). Urban development has occurred in some areas located on the lower reaches of Little Salt and Oak Creeks, near the City of Lincoln, Nebraska. Transportation infrastructure and aviation use are the primary land uses near the Oak Creek Unit.

TABLE 4-1. Designated critical habitat units for Salt Creek tiger beetle (Area estimates reflect all land within critical habitat unit boundaries.).

Critical Habitat Unit	Land Ownership by Type	Estimated Quantity of Critical Habitat	Percent of Critical Habitat Unit
Little Salt Creek Unit	City of Lincoln	40 ac (16 ha)	14
	Lower Platte South Natural Resources District	19 ac (8 ha)	7
	Nebraska Game & Parks Commission	41 ac (17 ha)	14
	The Nature Conservancy	29 ac (12 ha)	10
	Pheasants Forever	11 ac (4 ha)	4
	Private*	144 ac (58 ha)	51
	Subtotal	284 ac (115 ha)	
Rock Creek Unit	Nebraska Game & Parks Commission	152 ac (62 ha)	29
	Private*	374 ac (152 ha)	71
	Subtotal	526 ac (213 ha)	
Oak Creek Unit	Nebraska Department of Roads	30 ac (12 ha)	14
	City of Lincoln (Lincoln Airport Authority)	178 ac (72 ha)	86
	Subtotal	208 ac (84 ha)	
Haines Branch Unit	BNSF Railway	7 ac (3 ha)	8
	City of Lincoln/State of Nebraska	45 ac (18 ha)	49
	Private	40 ac (16 ha)	43
	Subtotal	92 ac (37 ha)	
Total	City of Lincoln	263 ac (106 ha)	24
	Lower Platte South Natural Resources District	19 ac (8 ha)	1.7
	Nebraska Game & Parks Commission	193 ac (78 ha)	17.4
	Nebraska Department of Roads	30 ac (12 ha)	2.7
	BNSF Railway	7 ac (3ac)	0.6
	The Nature Conservancy	29 ac (12 ha)	2.6
	Pheasants Forever	11 ac (4 ha)	1.0
	Private*	558 ac (226 ha)	50.0
	Total	1,110 ac (449 ha)	

* Several private tracts are protected by easements

4.2 Fish and Wildlife

The federally endangered interior least tern (*Sterna antillarum athalassos*) and threatened piping plover (*Charadrius melodus*) occasionally use saline wetland habitat within the overall range of the area identified as critical habitat. These species would use saline wetlands primarily during their spring and fall migrations. Additionally, the Saltwort (*Salicornia rubra*), a state-listed threatened plant species, is found within portions of the critical habitat action area. In addition, many species of birds, waterfowl, fishes, mammals, amphibians, reptiles and insects also use habitat within the action area.

4.3 Human Environment

A variety of human activities and land uses occur throughout or adjacent to the areas identified for designation as critical habitat in Lancaster and Saunders Counties. Uses and activities include: (1) farming, including both row crop agriculture and livestock grazing; (2) urban development and aviation use (especially in the lower reaches of Little Salt and Oak creeks); (3) transportation infrastructure, including road and bridge construction and maintenance; (4) utility infrastructure; (5) dam construction and rehabilitation; and (6) streambank stabilization and channelization. Additionally, there are a variety of conservation activities that have been completed or are currently ongoing on the Little Salt and Rock creek drainages. The goal of these conservation projects is to restore saline wetland and streams for the benefit of wildlife, including the Salt Creek tiger beetle. These projects involve restoring hydrology to saline wetlands by utilizing in-stream weirs, excavating sediment from linear saline depressions, and sloping-back stream banks to re-expose saline seeps. Management activities in these areas involve prescribed burning, managing water levels, and grazing by cattle to control infestations of undesirable plant species. Recreational activities that occur in the restored saline stream and wetland areas include bird watching, hiking, and hunting. Private and state lands are included in the action area.

The designation of critical habitat directly affects only Federal agencies. The Act requires Federal agencies to ensure that actions they fund, authorize, or carry out do not destroy or adversely modify critical habitat to the extent that the action appreciably diminishes the value of the critical habitat for the survival and recovery of the species. Individuals, organizations, states, local and Tribal governments, and other non-Federal entities are only affected by the designation of critical habitat if their actions occur on Federal lands, require a Federal permit, license, or other authorization. For example, a Department of the Army (DA) permit under section 404 of the Clean Water Act may be required by a non-federal project proponent to place fill material into water under federal jurisdiction from the U.S. Army Corps of Engineers (Corps). The Natural Resource Conservation Service (NRCS) may choose to provide federal cost share to a private landowner who wishes to enroll his or her land into the Wetland Reserve Program (WRP). The Federal Highway Administration (FHWA) may provide federal funds for support of transportation infrastructure. The Federal Aviation Administration (FAA) may provide funds for support and upgrade of infrastructure at or authorize various land use modifications planned within the boundaries of the Lincoln Airport.

4.4 Tribal Lands

We have identified that no tribal lands will be included in the area designated as critical habitat. Additionally, there are no tribal lands located adjacent to the area identified for the critical habitat designation.

5.0 ENVIRONMENTAL CONSEQUENCES

This section reviews the expected environmental consequences of designating critical habitat for the Salt Creek tiger beetle under each of the action alternatives and the environmental consequences of the No Action Alternative. This section also includes a comparison of the anticipated economic costs of designating critical habitat under all three alternatives. The impacts of a critical habitat designation involve evaluating the “without critical habitat” baseline versus the “with critical habitat” scenario. Impacts of a designation equal the difference, or the increment, between the two scenarios. Measured differences between the baseline and the scenario in which critical habitat is designated may include, but are not limited to, changes in land use, environmental quality, property values, or time and effort expended on consultations and other activities by Federal landowners, Federal action agencies, and in some instances, state and local governments and private third parties. These incremental changes may be either positive or negative.

In accordance with section 7(a) (2) of the Act, Federal agencies are required to review actions they authorize, fund, or carry out to determine the effects of their proposed actions on federally listed species. If the Federal agency determines that its action may adversely affect a listed species, it must enter into formal consultation with the Service. This consultation may result in the preparation of a BO issued by the Service as to whether the proposed action is likely to jeopardize the continued existence of the species, which is prohibited under the Act.

A similar process is required for designated critical habitat. While reviewing their actions to determine the effect on the listed species, Federal agencies would also review their action for the effects on critical habitat and would enter into section 7 consultations with us on actions they determine may affect critical habitat. If the proposed action was determined to be likely to adversely affect the species or the critical habitat, the consultation may result in the preparation of a BO as to whether the proposed action is likely to destroy or adversely modify designated critical habitat, which also is prohibited under the Act.

Activities that would destroy or adversely modify critical habitat are defined as those actions that “appreciably diminish the value of critical habitat for both the survival and recovery” of the species (50 CFR 401.02). Activities that would jeopardize the continued existence of a species are defined as those actions that “reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery” of the listed species (50 CFR 402.02). Given the similarity of these definitions, activities that would likely destroy or adversely modify critical habitat would almost always result in jeopardy to the species.

Individuals, organizations, states, local and Tribal governments, and other non-Federal entities

are only affected by the designation of critical habitat if their actions occur on Federal lands, require a Federal permit, license, or other authorization, or involve Federal funding (e.g., DA permits from the Corps, funding of activities by the NRCS, funding of transportation infrastructure by the FHWA, funds or authorizations by FAA).

5.1 Economic Screening Analysis

Economic costs associated with the designation of critical habitat were determined by the preparation of an economic screening analysis (IEc 2014). The economic screening analysis measured the costs and benefits of a regulatory action (i.e., designation of critical habitat for the Salt Creek tiger beetle) against a baseline (i.e., costs and benefits that are “incremental” to the baseline (IEc 2014). The baseline included any existing regulatory and socio-economic burden imposed on landowners, managers, or other resource users affected by the designation of critical habitat for the Salt Creek tiger beetle. The baseline includes the economic impacts of listing the species under the Act. Impacts that are incremental to the baseline (i.e., occurring over and above existing constraints) are those that are solely attributable to the designation of critical habitat and these are the impacts evaluated in the economic screening analysis (IEc 2014). The economic screening analysis concluded that incremental costs of section 7 consultation are likely to be less than \$540,000 (2013 dollars) in a given year under the Alternative B scenario (IEc 2014). These costs include both administrative and project modification costs. Three units (Oak Creek, Rock Creek, and Haines Branch) are designated as critical habitat under Alternative B, but are not currently occupied by the Salt Creek tiger beetle. In these units, project proponents are unlikely to initiate section 7 consultation absent the designation of critical habitat. As a result, all costs of consultation for activities with a Federal nexus in these units, including both administrative and project modification costs, are incremental impacts of the designation. Designation of critical habitat along Little Salt Creek under Alternative C would not trigger project modifications to avoid adverse modification that would be above and beyond any modifications triggered by adverse effects to the species itself because this unit is already occupied by the Salt Creek tiger beetle. Incremental costs under Alternative C would most likely be limited to administrative costs already recognized through section 7 consultations.

5.2 Economic Costs of Section 7 Consultation

Multiple data sources were considered to estimate the likely magnitude of incremental costs including: (1) the consultation history for the Salt Creek tiger beetle; (2) the results of stakeholder interviews; (3) information regarding historical expenditures on insect conservation provided by the Corps; and information provided by the Lincoln Airport Authority and FAA. We projected the intensity of future consultation activity based on this information and the historical rate of consultation (IEc 2014). The consultation history includes 28 informal consultations on activities such as bridge repair and replacement, highway improvements, habitat restoration, commercial development, pipeline operations, and creation of WRP conservation easements. In addition, the Service participated in one statewide programmatic consultation with the NDOR in 2012.

Overall, the number of projects and activities requiring consultation across the designation is expected to be relatively low. The economic screening analysis concluded that the annual number of future informal consultations is most likely to be fewer than 12 (IEc 2014). Each of these consultations will result in administrative costs and some will result in project modification costs as described by critical habitat unit (Table 2). Although the designation is located near the City of Lincoln, trends in future development, as projected in the Lincoln-Lancaster County Comprehensive Plan (LPlan 2040 2011), indicate that development is most likely to occur to the south and east of the City of Lincoln, away from critical habitat. Additionally, the saline and wetland nature of the designation makes the land unattractive for a variety of economic activities, including development, agriculture, and water projects. Road crossings and limited grazing occur within the designation, as reflected in the consultation history. The economic analysis for each unit is included below.

Little Salt Creek Unit

Because Little Salt Creek is occupied by the Salt Creek tiger beetle, we assume that the historical rate of consultation will continue similarly into the future. Since 2005, there have been 21 informal consultations in the Little Salt Creek Unit, 16 of which occurred since the designation of critical habitat in 2010. We estimate a future consultation rate of four informal consultations per year based on the consultation rate since 2010 (IEc 2014). We estimate a total cost of \$9,500 for the designation of critical habitat for the Little Salt Creek Unit (Table 2).

Rock Creek Unit

The Rock Creek Unit is not currently occupied by the beetle, but approximately 83 acres were previously designated as critical habitat in 2010. This unit consists of the Jack Sinn WMA, which is owned and managed by the NGPC, and several privately-owned parcels. The consultation history for this unit indicates that there have been four informal consultations since 2010, or approximately one per year. These consultations addressed drainage modification, bridge replacement, bank stabilization, and creation of a conservation easement projects. The previous designation of critical habitat in the Rock Creek Unit encompassed a larger geographic area than the current proposal. Based on both the consultation history and the additional consultations associated with the possible conservation easements created, we estimate that up to five consultations may occur in a single year in the Rock Creek Unit. We estimate a total cost of \$140,000 for the designation of critical habitat for the Rock Creek Unit. This estimate includes \$36,000 in administrative costs and \$110,000 in project modification costs primarily due to potential WRP conservation easements and land value losses due to possible grazing enclosures (Table 2).

Oak Creek Unit

The Oak Creek Unit consists of lands managed by the Lincoln Airport Authority and the corridor along Interstate 80, which is owned by the NDOR. Communication with the Lincoln Airport Authority and Lincoln/Lancaster County Planning Department indicated that future development of the lands managed by the Lincoln Airport is unlikely, as these lands fall entirely within the floodplain. Thus, no consultations are projected for these lands. Airport upgrades and land use modifications may require funds and authorizations from FAA. However, these federal actions are unlikely to have an effect on critical habitat for the Salt Creek tiger beetle because they are at

least 0.25-mile or greater distance from the relatively isolated Oak Creek Unit. The lands owned by the NDOR extend along Interstate 80 and may require consultation for highway maintenance and construction projects. These types of projects are likely to involve Federal funding, and would therefore have a nexus for section 7 consultation. Communication with the NDOR and a review of the consultation history indicates that these consultations are typically conducted informally. The screening analysis conservatively estimated one informal consultation in a given year for highway projects in this unit with an estimated a total cost of \$370,000 (IEc 2014). This estimate included \$7,100 in administrative costs and \$360,000 in project modification costs primarily due to highway modifications (Table 2).

Haines Branch Unit

The Haines Branch Unit includes approximately 44 acres of Pioneers Park, a nature center, and wildlife sanctuary managed by the City of Lincoln Parks & Recreation Department. The City intends to use funds from the Federal Recreational Trails Program for the construction of a nature trail through Pioneers Park. This project may therefore have a nexus for section 7 consultation. The Haines Branch Unit also includes lands owned by Burlington Northern Santa Fe (BNSF) Railway. The railroad crosses Haines Branch Creek in one location and overlaps approximately seven acres of the designation. The remaining acres in this unit are privately owned. We conservatively forecast up to two informal consultations in a single year for trail creation in Pioneers Park and the creation of one conservation easement for the Haines Branch Unit for a total cost of \$14,500 (Table 2).

TABLE 5-1: Summary of Incremental Costs by Unit (2013 dollars) (from IEC 2014).

Unit	Consultations per given year	Admin. Costs	Project Modification Costs	Total Costs	Description
Little Salt Creek	4	\$9,500	\$0	\$9,500	<ul style="list-style-type: none"> • Consultations based on historical consultation rate • Possible perceptual effects on private lands
Rock Creek	5	\$36,000	\$110,000	\$140,000	<ul style="list-style-type: none"> • Consultations based on historical consultation rate and possible NRCS easements • Land value losses due to possible grazing exclosures • Possible perceptual effects on private lands
Oak Creek	1	\$7,100	\$360,000	\$370,000	<ul style="list-style-type: none"> • Consultation and project modifications for one highway project
Haines Branch	2	\$14,000	\$0	\$14,000	<ul style="list-style-type: none"> • Consultations for city park and possible NRCS easement • Possible perceptual effects on private lands
Total	<ul style="list-style-type: none"> • 4 in occupied habitat • 8 in unoccupied habitat 	\$67,000	\$470,000	\$540,000	

Notes:

1. Estimates are rounded to two significant digits and may not sum due to rounding.
2. For additional detail describing our identification of acres most likely to be subject to perceptual effects and the value of these acres, see Industrial Economics, Incorporated. Memorandum to the U.S. Fish and Wildlife Service on "Supplemental Information on Perceptual Effects – Critical Habitat Designation for the Salt Creek Tiger Beetle." January 20, 2014.

5.3 Environmental Consequences

Potential environmental consequences, including economic impacts that may result from implementation of the No Action and Action Alternatives are discussed below and shown in Table 3. All impacts are expected to be indirect, as a critical habitat designation does not in itself directly result in any alteration of the environment. As required by NEPA, this document is in part intended to disclose the programmatic goals and objectives of the Act. The goals and objectives of the Act are to conserve threatened and endangered species and the ecosystems upon which they depend, and to carry out applicable treaties and conventions.

5.3.1 Physical Environment

None of the alternatives will impact the physical environment.

5.3.2 Fish, Wildlife, and Plants

5.3.3 Salt Creek Tiger Beetle

The No Action Alternative would have no impacts on the Salt Creek tiger beetle because the protections resulting from its listing in 2005 and the associated requirements of section 7 of the Act are already in place.

Implementation of Alternative B would convey benefits to the Salt Creek tiger beetle and its saline wetland habitats. Designation of additional unoccupied units provides redundant saline wetland and stream habitats for the species. Currently, the species is only found on Little Salt Creek and is at greater risk of extinction than it would be if there were multiple populations of the species in multiple drainages. Designation of critical habitat also may provide some benefits by alerting Federal agencies to situations when section 7 consultation is required. Thus, a benefit of critical habitat would be the requirement under section 7 of the Act that Federal agencies review their actions to assess their effects on critical habitat. Another potential benefit is that critical habitat may help to focus Federal, state, and private conservation and management efforts by identifying the areas of most importance to the species. Critical habitat also can be a catalyst for long-term project planning, in relation to species conservation.

Implementation of Alternative C would have little effect on the Salt Creek tiger beetle. Project modifications to avoid adverse modification and destruction of critical habitat would be similar to those that have been provided and will continue to be provided since the Salt Creek tiger beetle was listed in 2005.

5.3.4 Other Fish, Wildlife, and Plant Species

The No Action Alternative would have no significant impacts on fish, wildlife, or plants beyond those protections already in place as a result of listing of the Salt Creek tiger beetle in 2005 and associated requirements of section 7 of the Act.

Fish, wildlife, and plants are likely to accrue greater benefits under implementation of Alternative B than they would under Alternative C; this would be a result of ecosystem protections provided through conservation of the Salt Creek tiger beetle and the associated requirements of section 7(a)(2) of the Act. These benefits would be most widespread under Alternative B, as it would designate the most critical habitat over the widest area. The critical habitat designation also may assist state and Federal agencies in prioritizing their conservation and land-management programs. For example, state and Federal agencies may be able to prioritize landowner incentive programs such as the Wildlife Habitat Incentives Program, Environmental Quality Incentives Program, WRP enrollment, riparian easements, and private landowner agreements that benefit the Salt Creek tiger beetle, as well as other fish, wildlife, and plant species.

5.3.5 Human Environment

As discussed above, individuals, organizations, states, local governments, and other non-Federal entities are only affected by the designation of critical habitat if their actions occur on Federal lands, require a Federal permit, license, or authorization, or involve Federal funding. Since 2005, Federal agencies have been required to consider the effects of their actions on the Salt Creek tiger beetle and consult with the Service as appropriate. While a similar process is required for critical habitat, analysis of effects to critical habitat is not expected to cause large increases in the number or complexity of consultations under any alternative.

We recognize a perception may exist within the public that any of the action alternatives designating critical habitat will severely limit property rights; critical habitat designation has no effect on private actions on private land that do not involve Federal approval or action. We recognize that there are private actions on private lands that involve Federal actions; however, there should already be section 7 consultations taking place in these situations.

As previously discussed, the economic screening analysis measured the costs and benefits of a regulatory action (i.e., designation of critical habitat for the Salt Creek tiger beetle) against a baseline (i.e., costs and benefits that are “incremental” to the baseline (IEc 2014)). The baseline included any existing regulatory and socio-economic burden imposed on landowners, managers, or other resource users affected by the designation of critical habitat for the Salt Creek tiger beetle. The baseline includes the economic impacts of listing the species under the Act. Impacts that are incremental to the baseline (i.e., occurring over and above existing constraints) are those that are solely attributable to the designation of critical habitat (IEc 2014). The following discussion will disclose the potential impacts associated with all future anticipated section 7 consultations in or near critical habitat, and also will describe how much of this cost is attributable to the current critical habitat designation.

5.3.6 Development

The No Action Alternative would have no impacts on development activities beyond those already resulting from the 2005 listing of the Salt Creek tiger beetle and the associated requirements of section 7 of the Act. Under this alternative, critical habitat would not be designated and thus there would be no incremental costs associated with a critical habitat designation.

For Alternatives B and C, development activities will be affected by critical habitat only minimally, because development projects typically do not involve a Federal nexus, as most are not authorized, permitted, or funded by a Federal agency. Furthermore, the number of projects and activities requiring consultation across the designation is expected to be relatively low. Although the designation is located near the City of Lincoln, trends in future development, as projected in the Lincoln-Lancaster County Comprehensive Plan, indicate that development is most likely to occur to the south and east of the City, away from critical habitat units (LPlan 2040 2011). Additionally, the saline and wetland nature of the designation makes the land unattractive for a variety of economic activities, including development (IEc 2014).

There is the potential for incremental costs to occur outside of the section 7 consultation process from the designation of critical habitat under Alternatives B and C. Economic costs include triggering additional requirements or project modifications under state laws or regulations, and perceptual effects on markets. These types of costs may occur even when activities in critical habitat units do not have a Federal nexus for consultation. For example, incremental costs may occur outside of the section 7 consultation process if the designation of critical habitat triggers additional requirements or project modifications under state or local laws, regulations, or management strategies (IEc2014). These types of costs typically result if the critical habitat designation increases awareness of the presence of the species or the need for protection of its habitat.

The Salt Creek tiger beetle has been listed under the Act since 2005. In occupied areas, we assume that the designation of critical habitat will not provide new information about the need to conserve the species and its habitat. Thus, under Alternative C there is limited potential for additional requirements or project modifications under state or local laws, regulations, or management strategies that may result in an increase in economic cost. However, designation of critical habitat in unoccupied units under Alternative B may now inform the need to conserve the species and its habitat and result in the generation of such costs.

Comments received regarding designations of critical habitat in various locations throughout the United States indicate that the public perceives a critical habitat designation as possibly resulting in incremental changes to private property values, above and beyond those associated with specific forecasted project modifications under section 7 of the Act (see IEc 1999; IEc 2012). These commenters believe that, all else being equal, a property that is inhabited by a threatened or endangered species, or that lies within a critical habitat designation, will have a lower market value than an identical property that is not inhabited by the species or that lies outside of critical habitat. This lower value results from the perception that critical habitat will preclude, limit, or

slow development, or somehow alter the highest and best use of the property. Public attitudes about the limits and costs that the Act may impose can cause real economic effects to the owners of property, regardless of whether such limits are actually imposed. Over time, as public awareness grows about the actual regulatory burden placed on designated lands, particularly where no Federal nexus compelling section 7 consultation exists, the effect of a critical habitat designation on properties may subside.

In the case of critical habitat for the Salt Creek tiger beetle, the habitat is located in areas where development pressure is low, and where land use activities are limited by the saline wetland nature of the lands. Thus, the value of private lands within the designation is likely to be driven by their next best use (i.e., grazing) and not by the designation of critical habitat.

5.3.7 Agriculture

The No Action Alternative would have no impacts on agricultural activities, including farming and grazing, beyond those already resulting from the 2005 listing of the Salt Creek tiger beetle and the associated requirements of section 7 of the Act. Under this alternative, critical habitat would not be designated and thus there would be no incremental costs associated with a critical habitat designation.

It is unlikely that the designation of critical habitat under Alternative B would have an effect on row crop agriculture given that saline soils within the designated units inhibits the growth of crops. Implementation of Alternative B, however, could have an effect on land values due to the potential need for grazing exclosures that may be required to prevent negative impacts to Salt Creek tiger beetle habitat. A bounding analysis was conducted to determine the costs associated with installation of grazing exclosures (IEc 2014). We estimated the economic costs of precluding grazing on all lands that are available for grazing and that may be subject to partnership agreements with the Service (i.e., agency and conservation group lands).

In our analysis, we identified 152 acres at the Rock Creek Unit on the Jack Sinn WMA (owned and managed by the NGPC) where grazing restrictions could be implemented. Assuming this land is or may be leased for the purposes of grazing, our bounding analysis estimated land value losses because the exclosures would preclude grazing from occurring in Salt Creek tiger beetle habitat. These land value losses serve as a proxy for the possible impact to the farmers and ranchers that would otherwise lease the land for grazing.

We used data from the U.S. Department of Agriculture's 2013 report on agricultural land values for this analysis (USDA 2013). The average value of pastureland in Nebraska is \$700 per acre. Given that the entirety of the designation is located within wetlands and riparian areas, which are generally less desirable for grazing than an upland grassland area, the statewide average is likely a conservative estimate of actual grazing land value. Multiplying this per-acre land value by 152 acres indicates that the upper cost of grazing restrictions in the Rock Creek Unit (\$106,400) is considerably less than \$100 million and almost certainly over estimates the true cost of grazing exclosures. In practice, habitat that is protected from grazing is generally less than an acre and typically consists of small salt flats, not the entire parcel as was used in this analysis.

Implementation of an Alternative B scenario could result in the creation of a federal nexus involving administration of WRP by NRCS at the unoccupied areas including Rock Creek and Haines Branch Units (IEc 2014). WRP conservation easements are established voluntarily by private landowners through enrollment in the WRP. As part of their enrollment in the WRP, landowners receive federal funds to implement conservation and restoration activities on their lands. Thus, the creation of a federal easement typically requires informal section 7 consultation with the Service.

It is possible that landowners will enroll additional agricultural lands into the WRP. To inform an estimate of the number of landowners that may enroll in the WRP in the Rock Creek and Haines Branch Units, we first determined the total number of privately owned parcels in each unit. We then assumed that the percent of privately owned parcels that may participate is comparable to the percent that currently participate in easements in the occupied Little Salt Creek Unit. Accordingly, as 22 percent of privately owned parcels in the Little Salt Creek Unit are subject to existing easements, we assume that, in total, 22 percent of private parcels in the Rock Creek and Haines Branch units will be subject to WRP easements in the future.

Accounting for existing easements in the unoccupied units, we forecast the creation of four new WRP easements following the designation of Salt Creek tiger beetle critical habitat in the Rock Creek unit (IEc 2014). We therefore forecast four informal consultations for these easements. Applying the method described above for the Rock Creek Unit, we forecast the creation of one new WRP conservation easement for the Haines Branch Unit (IEc 2014). We therefore forecast one informal consultation for this easement. The total estimated cost for additional WRP easements at the Rock Creek and Haines Branch Units is \$35,500.

The designation of critical habitat may provide new information that will help NRCS prioritize the establishment of conservation easements on private parcels in unoccupied habitat; this is a benefit that would be reasonably expected but difficult to quantify. Conservation easements are established voluntarily by private landowners through enrollment in the WRP, but they can be highly dependent on unpredictable commodity prices and other factors that influence land value.

Despite the fact that a section 7 nexus is unlikely for grazing activities conducted on privately owned land, the farming and ranching community may perceive that the designation of certain parcels as critical habitat will limit future grazing activities in those areas. We conducted a bounding analysis to evaluate the possible magnitude of such costs (IEc 2014). Our analysis estimated the market value for privately owned grazing lands within the designation. Public perception may diminish land values by some percent of these total values. While data limitations prevent us from estimating the size of this percent reduction or its attenuation rate, any perceptual effects on a property cannot reduce the value of the property by more than its total market value. Assuming the entire value of the parcel is lost will likely overstate costs because many properties may have alternative uses that the public would not construe as “lost” (e.g., land that is currently used for grazing could be used for recreational purposes). The total market value of grazing lands represents the upper bound on possible costs rather than a best estimate of likely costs. Assuming the entire value of these lands (i.e., all economic activity

associated with the parcel) is lost would likely overstate impacts and is not supported by the limited, existing academic literature investigating endangered species-related public perception effects (IEc 2014). In addition, these properties may experience similar perception-related effects for other reasons, including the presence of the listed beetle and the state-listed saltwort, reducing the incremental portion of the impact attributable to Salt Creek tiger beetle critical habitat.

To estimate the value of privately owned grazing lands within the designation, we first identified the number and location of acres within critical habitat that could be reasonably subject to perceptual effects (IEc 2014). Then, we estimated the current market value of these acres using state-level pastureland valuation data from the U.S. Department of Agriculture (\$700 per acre) (USDA 2013). We identify 519 acres of privately-owned land within the designation (occupied and unoccupied habitat) that are not currently held in conservation easements. This excludes those acres that may support grazing on lands potentially subject to conservation partnerships (i.e., grazing exclosures), as described and quantified above. We conclude that the total value of these lands (\$363,300) is unlikely to exceed \$100 million (IEc 2014).

It is unlikely that Alternative C would have an impact on agricultural activities because project modifications to avoid adverse modification and destruction of critical habitat would be similar to those that have been provided and will continue to be provided since the Salt Creek tiger beetle was listed in 2005. Further, agricultural activities will be affected by critical habitat only minimally, because they typically do not involve a Federal nexus, as most are not authorized, permitted, or funded by a Federal agency.

5.3.8 Transportation and Public Works Operations

The No Action Alternative would have no impacts on transportation, including road and bridge construction and maintenance and public works operations (utility) projects, beyond those already resulting from the 2005 listing of the Salt Creek tiger beetle and the associated requirements of section 7 of the Act. Under this alternative, critical habitat would not be designated and thus there would be no incremental costs associated with a critical habitat designation.

Under Alternative B, there is the potential for impacts to highway maintenance and construction projects to occur and these costs would primarily be recognized at the Oak Creek Unit. The typical Federal nexus for these activities is through funding from the FHWA. We forecast one informal consultation in the Oak Creek Unit in a given year. This consultation considers construction or maintenance projects associated with Interstate 80. As reported in the 2010 Final Economic Analysis of Critical Habitat Designation for Salt Creek Tiger Beetle (Entrix 2010), the 2007 widening of Interstate 80 over Little Salt Creek resulted in approximately \$360,000 in project modifications for the purpose of Salt Creek tiger beetle conservation (BEA 2014). These project modifications included construction of a temporary shoring wall for erosion control along the creek, biological monitoring, addition of silt fences, modifications to the highway median design to reduce project footprint, and changes to lighting design (Entrix 2010). We assume that a similar suite of modifications may be incurred for highway construction projects along

Interstate 80 in the Oak Creek Unit. Because the 2007 bridge widening was a major construction project, and a relatively small stretch of highway intersects the Oak Creek Unit, we expect that the cost of modifications to that project represents a high-end cost of project modifications that could be requested for the forecasted transportation consultation. We therefore forecast incremental costs of less than \$360,000 in a single year for highway projects in the Oak Creek unit.

Various facility upgrades and routine maintenance activities are expected at the Lincoln Airport and the Nebraska National Guard's Lincoln Airbase in the area of the Oak Creek Unit. However, anticipated facility upgrades and routine maintenance activities are not expected to be modified as the Oak Creek Unit is located at least 0.25-mile or more away from the locations where these actions would occur.

It is unlikely that Alternative C would have an economic impact on transportation and public works operations because recommended project modifications to avoid adverse modification and destruction of critical habitat would be similar to those that have been provided and will continue to be provided since the Salt Creek tiger beetle was listed in 2005.

5.3.9 Conservation

The No Action Alternative would have no impacts on conservation actions beyond those already resulting from the 2005 listing of the Salt Creek tiger beetle and the associated requirements of section 7 of the Act. Under this alternative, critical habitat would not be designated and thus there would be no incremental costs associated with a critical habitat designation.

For Alternative B, conservation projects anticipated to occur in critical habitat units may include management on state, private, and Federal lands and conservation projects funded through the NGPC, Lower Platte South Natural Resource District, SWCP, USFWS, NRCS, and other Federal agencies, including the development of conservation and species management plans. Federal funds and/or authorizations would create a federal nexus resulting in the need for section 7 consultation. Additionally, given the nature of such projects in and near wetlands, a section 404 permit from the Corps may also be required and would establish a federal nexus for section 7 consultation. The costs for such consultations are difficult to quantify, but are likely to be minimal.

Implementation of Alternative B may result in an elevated interest in conducting land acquisition and land restoration projects in the Haines Branch and Oak Creek Units, a likely benefit to the Salt Creek tiger beetle. However, the level of interest is difficult to quantify. A considerable amount of conservation activity is already occurring in the Rock Creek and Little Salt Creek Units given the large area of public land ownership and/or presence of Salt Creek tiger beetles. It is unlikely that Alternative C would have an economic impact on conservation actions because recommended project modifications to avoid adverse modification and destruction of critical habitat would be similar to those that have been provided and will continue to be provided since the Salt Creek tiger beetle was listed in 2005.

5.3.10 Archeological and Cultural Resources

The No Action Alternative would have no impacts on archaeological and cultural resource areas beyond those already resulting from the 2005 listing of the Salt Creek tiger beetle and the associated requirements of section 7 of the Act. Both Action Alternatives B and C would have similar effects on archeological and cultural sites, in that there are not likely to be any additional impacts beyond what we have already considered in section 7 consultation since the 2005 listing. While designation of critical habitat is expected to have no direct impacts on these resources, an indirect beneficial effect may be the potential increased protection of archeological and cultural resources sites that are located within critical habitat.

5.3.11 Environmental Justice

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, 59 FR 7629 (1994), directs Federal agencies to incorporate environmental justice into their decision making process. Federal agencies are directed to identify and address as appropriate, any disproportionately high and adverse environmental effects of their programs, policies, and activities on minority or low-income populations. This assessment has not identified any adverse or beneficial effects unique to minority or low-income human populations that might occur under any of the alternatives being considered.

TABLE 5-2. Summary of Environmental Consequences by Alternative

Impacts	Alternative A (No Action)	Alternative B (Preferred Alternative)	Alternative C
Salt Creek tiger beetle	No change to existing situation.	Beneficial impacts expected through habitat redundancy and focused conservation activities and increased awareness on Little Salt, Rock, Oak and Haines Branch Creeks Units.	May be minimal beneficial impacts beyond those associated with the 2005 listing. Designation of critical habitat can help focus conservation activities for listed species and increase awareness.
Fish, Wildlife, and Plants	No change to existing situation.	Conservation activities on Little Salt, Rock, Oak and Haines Branch Creeks Units will benefit other fish, wildlife, and plant species. A greater level of protection for the state listed Saltwort is expected.	May be minimal beneficial impacts beyond those associated with the 2005 listing. Focusing conservation actions may benefit other species and increase awareness.
Agriculture	No change to existing situation.	Minimal impact expected given saline nature of soil. Total estimated costs associated with designation of critical habitat are less than \$110,000 representing land values due to installation of grazing exclosures.	Total estimated costs are not expected to change because recommendations for project modifications would be similar to recommendations made for a critical habitat designation in occupied Little Salt Creek Unit.
Transportation, Public Works Projects (Utilities), and aviation activities	No change to existing situation.	Total estimated costs are \$370,000 due to highway modification at the Oak Creek Unit. No impact expected on airport facility upgrades and routine maintenance, or aviation operations at the Oak Creek Unit	Total estimated costs are not expected to change because recommendations for project modifications would be similar to recommendations made for a critical habitat designation in occupied Little Salt Creek Unit.
Conservation	No change to existing situation.	Focused conservation activities on Little Salt, Rock, Oak and Haines Branch Creeks Units will benefit other fish, wildlife, and plant species through implementation of conservation actions.	May be minimal beneficial impacts beyond those associated with the 2005 listing. Focusing conservation actions may benefit other species and increase awareness.
Archaeological and Cultural	No change to existing situation.	No likely additional impacts beyond those associated with the 2005 listing.	No likely additional impacts beyond those associated with the 2005 listing.
Environmental Justice	No change to existing situation.	No impacts.	No impacts.

5.4 Cumulative Impact

The designation of critical habitat for the Salt Creek tiger beetle will add minimal incremental impacts when added to other past, present, and reasonably foreseeable future actions.

We expect the impacts to be relatively small because, in addition to the Salt Creek tiger beetle, other Federal and state listed species also are known to occur in the area. These include the endangered Interior Least Tern and threatened Piping Plover. Federal agencies are required to ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of the listed species, or destroy or adversely modify designated critical habitat in accordance with section 7(a) (2) of the Act. Additionally, a state-listed plant, the saltwort, also occurs in the area identified for critical habitat designation. The threatened saltwort is protected by the Nebraska Nongame and Endangered Species Conservation Act. State agencies are required to ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of State-listed species.

Activities that adversely modify critical habitat are defined as those actions that “appreciably diminish the value of critical habitat for both the survival and recovery” of the species (50 CFR 401.02). Activities that jeopardize a species are defined as those actions that “reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery” of the listed species (50 CFR 402.02). According to these definitions, activities that destroy or adversely modify critical habitat would almost always jeopardize the species. Therefore, designation of critical habitat has rarely resulted in greater protection than that already afforded under section 7 by the listing of a species. Section 7 consultations apply only to actions with Federal involvement (i.e., activities authorized, funded, or conducted by Federal agencies), and do not impact activities strictly under State or private authority. In practice, the designation of critical habitat for the Salt Creek tiger beetle will likely provide little additional benefits to the species because there are functioning program activities already alerting Federal agencies and the public of endangered species concerns. However, we recognize that Federal agencies may not carry out their section 7 responsibilities in all cases.

Section 4(B) (2) of the Act requires us to designate critical habitat on the basis of the best available scientific and commercial information and to consider the economic and other relevant impacts of designating a particular area as critical habitat. We may exclude areas from critical habitat upon a determination that the benefits of such exclusions outweigh the benefits of specifying such areas as part of critical habitat. We cannot exclude such areas from critical habitat if such exclusion would result in the extinction of the species concerned. Based on our analysis including information obtained during the comment period and information about the economic impact of designation, we have not excluded any areas from critical habitat.

6.0 COUNCIL ON ENVIRONMENTAL QUALITY ANALYSIS OF SIGNIFICANCE

Under CEQ 40 CFR Part 1508.27, the determination of “significantly” requires consideration of

both context and intensity.

6.1 Context

Long-term impacts of the action will not be national, but regional and mostly local in context; and any impacts that would occur are expected to be small.

6.2 Intensity

Intensity is defined by CEQ as referring to the severity of impact. The following 10 points identified by CEQ were considered in evaluating intensity:

- 1) We foresee minimal additional negative impacts beyond what we have already considered in section 7 consultation since the 2005 listing. There may be perceived negative impacts, but our public outreach program should address and minimize most of those misconceptions. There may be some beneficial impacts to the environment.
- 2) This designation will not have a discernible impact on human safety.
- 3) Although several areas designated as critical habitat are in proximity to historic and cultural sites, parklands, farmland, wetlands, and ecologically critical areas, minimal adverse impacts will occur to these areas; in fact, the ecologically critical areas are expected to only benefit from some of the perceptions attached to this designation.
- 4) There is a perception by the public that a critical habitat designation will severely limit property rights; however, a critical habitat designation has no effect on private actions on private land that do not involve Federal approval or action. Therefore, we conclude that this misconception will be clarified by the Final Rule and will result in this designation not being highly controversial.
- 5) The Service has designated critical habitat for other species in the recent past and we are familiar with the associated effects. Therefore, we anticipate minimal effects to the human environment and we are certain this action does not involve any unique or unknown risks.
- 6) This designation of critical habitat is not expected to set any precedents for future actions with significant effects or represent a decision in principle about a future consideration because critical habitat has been designated before for other species, as required by law.
- 7) This designation of critical habitat will be additive (cumulative) to critical habitat that has been, and will be, designated for other species. However, it is the Service's conclusion that the beneficial and adverse impacts of any and all critical habitat designations are small and, therefore, insignificant due to the existing impacts, both beneficial and adverse, already resulting from the listing of the species involved.

- 8) This designation will have no adverse effect to sites included in the National Register of Historic Places or other cultural sites.
- 9) Most impacts from this designation of critical habitat will be beneficial to endangered and threatened species, particularly the Salt Creek tiger beetle. Designation of critical habitat can help focus conservation activities for listed species by identifying areas essential to conserve for the species. Designation of critical habitat also alerts the public, as well as land-managing agencies, to the importance of these areas. These benefits are minimal, as most occurred at the time of listing.
- 10) This designation of critical habitat will not violate any Federal, state, or local laws or requirements imposed for the protection of the environment.

7.0 CONTACTS AND COORDINATION WITH OTHERS

This critical habitat designation has and will continue to be coordinated through the State of Nebraska, Federal Agencies, and other Interested Parties through letters, post cards, formal and informal presentations, and telephone calls. The Service's Nebraska Ecological Services Field Office has contacted the Nebraska governor, congressional delegation, Lancaster and Saunders Counties, and various interest groups. Other important contacts included the: NGPC, Lower Platte South Natural Resource District, NRCS, FHWA, Lincoln Airport Authority, and the Corps.

7.1 Copy Recipients or Contacts

The following is a list of individuals, organizations, and public agencies contacted concerning development of this EA and the final rule to designate critical habitat for the Salt Creek tiger beetle. Each of these entities also will be notified of the publication of the final rule:

Federal Agencies

Department of Defense

U.S. Army Corps of Engineers, Omaha District

Department of the Interior

Fish and Wildlife Service

Nebraska Private Lands Coordinator

Nebraska Law Enforcement Division

Department of Agriculture

Natural Resources Conservation Service, Nebraska State Office

Farm Service Agency

Animal and Plant Health Inspection Service

Department of Transportation

Federal Highway Administration

Federal Aviation Administration

Federal Emergency Management Agency

U.S. Environmental Protection Agency

Federal Congressional Delegation

Nebraska

Office of Senator Mike Johanns
Office of Senator Deb Fischer
Office of Representative Jeff Fortenbury
Office of Representative Lee Terry
Office of Representative Adrian Smith

State Agencies

Nebraska Department of Environmental Quality
Nebraska Department of Natural Resources
Nebraska Department of Roads
Nebraska Game and Parks Commission

Governor

Nebraska – Dave Heineman

County Commissioners

Lancaster County Commissioners

City of Lincoln

Mayor- Chris Beutler
City Council
City of Lincoln and Lancaster County Planning Commission

Lincoln Airport Authority

Private Groups

National Audubon Society
Wachiska Chapter
The Nature Conservancy
Nebraska Chapter
Sierra Club
Nebraska Chapter
The Wildlife Federation
Nebraska Chapter
The Wildlife Society
Nebraska Chapter
Saline Wetlands Conservation Partnership

8.0 LIST OF CONTRIBUTORS

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10.0 APPENDIX A

Figure A-1. Map of Designated Critical Habitat from Alternative B (Preferred Alternative).

