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# ASSESSMENT OF HABITAT FOR EASTERN MASSASAUGA AND WESTERN FOX SNAKE WITHIN THE PROPOSED KEYSTONE PIPELINE IN MISSOURI

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#### **EXECUTIVE SUMMARY**

BHE Environmental, Inc. (BHE) was contracted by ENSR Corporation (ENSR) on behalf of TransCanada Corporation and their prime contractor Trow Associates Inc., to assess habitat for protected snake species along the Keystone pipeline in Missouri. A study plan dated October 16, 2006 describing methods for the assessment was approved by the Missouri department of Conservation. BHE evaluated 78 wetland sites in four counties on the Keystone pipeline corridor which had been identified during remote assessment as potentially containing habitat suitable for eastern massasaugas and western fox snakes. Of the 78 sites assessed, six were not evaluated due to site access restrictions, 43 were categorized as *not likely to support* the protected snakes, and 29 were categorized as *likely to support*.

#### 1.0 INTRODUCTION

TransCanada is planning to construct and operate an approximately 1,845-mile-long interstate crude oil transmission system from an oil supply hub near Hardisty, Alberta, Canada to destinations in the Midwestern United States (U.S.). The proposed project would consist of approximately 1,078 miles of new pipeline constructed from the U.S.-Canada border in Cavalier County, North Dakota, to terminals and refineries in Wood River (Madison County) and Patoka (Marion County), Illinois. This pipeline is referred to as the Keystone Mainline. Approximately 283 miles of the Keystone Mainline would parallel the proposed Rockies Express Pipeline - West (REX-West) project in Kansas and Missouri. TransCanada proposes to begin construction of the Keystone Mainline in early 2008, with the system in-service by the end of 2009

This report addresses an assessment of habitat suitable for two state-protected snake species, as described in a study plan dated October 16, 2006 (BHE 2006). During preliminary discussions, the Missouri Department of Conservation (MDC) indicated Buchanan, Carroll, Chariton, and St. Charles counties in Missouri which are crossed by the Keystone Mainline may potentially contain habitat suitable for the eastern massasauga rattlesnake (Sistrurus catenatus) and the western fox snake (Elaphe vulpina vulpina).

BHE Environmental, Inc. (BHE) assessed 78 wetland areas in Buchanan, Carroll, Chariton, and St. Charles counties, Missouri, where potential habitat may exist for these species within the Keystone Mainline corridor (Table 1). Of the 78 sites assessed, 43 were categorized as *not likely to support* protected snakes, and 29 were categorized as *likely to support* protected snakes (Table 2). Access was denied to six sites. This categorization was based upon an approach developed by BHE and approved by MDC (Appendix A).

The eastern massasauga is a small rattlesnake averaging 17-24 inches in length. It ranges throughout the northeastern United States and parts of extreme southeastern Canada, extending south and west to Iowa and Missouri (Conant and Collins 1991). The species is rare throughout most of its range (Ernst and Barbour 1989); the United States Fish and Wildlife Service (USFWS) estimates the species has been extirpated from 40 percent of the 203 counties it historically occupied (Szymanski 1998). The eastern massasauga is classified as endangered or threatened by all but one of the states in which it occurs, and is currently a candidate for listing by the USFWS under the Endangered Species Act (Szymanski 1998). The primary cause of decline appears to be habitat loss and fragmentation due to human encroachment or vegetative succession (Johnson et al. 2000). Massasaugas are associated with wetlands and other moist, low-lying areas, and in winter, hibernate primarily in crayfish burrows which are used to access unfrozen, subsurface saturated soil (Johnson 1995; Kingsbury 1999).

The State of Missouri classifies the eastern massasauga as endangered. Eight counties currently support or have historically supported populations of eastern massasaugas (Szymanski 1998). USFWS records indicate that only Holt, Lynn, and Chariton counties have extant populations. The species is extirpated from four counties (Andrew, Platte, Jackson, and St. Charles) and is assumed to be extirpated from Livingston County (Szymanski 1998) (Figure 1).

and St. Charles) and is assumed to be extirpated from Livingston County (Szymanski 1998) (Figure 1).

The population of eastern massasaugas in Chariton County is located in the vicinity of the Swan Lake National Wildlife Refuge, near the town of Sumner in the northwestern corner of the county, approximately 5.5 miles north of the Keystone Mainline project area (Figure 1).

The western fox snake, named for a musky odor it produces when disturbed, is a medium-sized (35-54 inches in length) constricting snake of the genus *Elaphe*. The species' range includes the Upper Peninsula of Michigan, and extends south to northern Missouri, eastern Nebraska, and southeastern South Dakota (Conant and Collins 1998). The species shares many habitat requirements with the eastern massasauga, and is primarily found in wetlands and adjacent fields.

The State of Missouri classifies the western fox snake as an endangered species; populations in other states appear to be stable (Natureserve 2006). The species is not a candidate for listing, nor listed as threatened or endangered by the federal government. Historically, the western fox snake ranged throughout northern Missouri, but its numbers have declined due primarily to loss of habitat. Natureserve natural heritage database records (2006) indicate the western fox snake is known from eight Missouri counties: Andrew, Atchison, Clark, Gentry, Holt, Lewis, Lincoln, and St. Charles (Figure 2). In St. Charles County, the MDC reports a western fox snake population in Marais Temps Clair Conservation Area (Sexton 1993), approximately 0.3 mile north of the Keystone pipeline.

The massasauga and western fox snake are both associated with wetlands, and habitat requirements for the two species are very similar. An MDC-issued presence/absence survey protocol for the two species treats their habitat requirements as identical, an approach adopted herein. Both species are typically found in wet prairies, wet meadows, and open areas at the margins of wetlands. Presence and density of crayfish burrows, which are used as hibernacula, are important indicators of habitat suitability. Massasaugas do not appear to be evenly distributed across available wetland habitat during hibernation and spring emergence, suggesting that crayfish burrow density and distribution heavily influence massasauga occurrence. An empirical study of massasauga hibernation habitat at Squaw Creek National Wildlife Refuge in Holt County, Missouri, conducted by students at Missouri Western State University, found mean densities of 0.1 to 0.8 crayfish burrows per square meter (Carmack et al. 2004). Other recent research indicates that eastern massasaugas range widely during the warm season but tend to overwinter in relatively small areas (Harvey and Weatherhead 2006). These studies suggest suitable hibernacula for these snakes are scarce, and presence of appropriate hibernation sites may be a limiting factor in the snakes' distribution and occurrence. Both species have been found to avoid areas of inundated soil, and expanses of open water. Closed forests and dense woody vegetation are also typically avoided (Wright 1941, Weatherhead and Prior 1992).

The purpose of the investigation was to identify areas within the Keystone Mainline survey corridor that provide habitat suitable for these species during winter hibernation. Results of the survey will be used to focus future survey and/or monitoring efforts for the eastern massasauga and western fox snake during construction phases of the Keystone Mainline in Missouri.

#### 2.0 METHODS

#### 2.1 MAP REVIEW AND REMOTE HABITAT ASSESSMENT

USGS topographic maps, aerial photography, National Wetlands Inventory (NWI) maps, and maps of wetlands delineated by ENSR were used in autumn 2006 to identify regions of the Keystone pipeline corridor in Buchanan, Carroll, Chariton, and St. Charles counties, Missouri, where suitable habitat for the eastern massasauga and western fox snake may occur. For purposes of the remote habitat assessment, potential habitat was defined as any part of the construction corridor, a 200 foot wide survey corridor centered on the proposed centerline, in which a wetland is known to occur in association with an open area, e.g., a field next to a wetland. In areas where the Keystone Mainline parallels the REX-West pipeline right-of-way, the edge of the survey corridor is 65 feet on the side co-located with REX-West, and 100 feet on the greenfield side. In all other areas along the project route, the survey corridor is 200 feet centered on the proposed centerline (Figure 3). Wetlands that are completely forested were eliminated as potential habitat, as were areas of prolonged inundation or year-round open water.

Pipeline mileposts were used to delineate boundaries of potential habitat areas, each occurrence of potentially suitable habitat was assigned a unique alpha-numeric identifier (Table 1). Feature ID numbers adhered to one of two naming conventions.

#### Feature ID protocol for sites located on stand-alone Keystone survey corridor:

- FCCNNSCCCXXX
  - F = Feature Type ("NAT" for natural feature)
  - CC = Contractor Code
    - BHE (BH)
  - NN = Team Number
    - Team 1 Becky Braeutigam and Drew Carson (BHE)
    - Team 2 Chad Kinney (BHE) and Laura Vrabel (SCI)
    - Team 3 Samantha Williams and Dave Norcross (BHE)
    - Team 4 Lisa Winhold and John Alexander (BHE)
  - SC = State Code
    - Missouri (MO)
  - CC = County Code
    - Buchanan (BC)
    - Carroll (CR)
    - Chariton (CI)
    - St. Charles (SC)
    - , ,
  - XXX = Feature number (001-999)

Or

#### Feature ID protocol for Keystone sites co-located on shared survey corridor:

- FNNCCXXX
  - F = Feature Type ("NAT" for natural feature)
  - o NN = Team Number

- Team 13 Becky Braeutigam and John Alexander (BHE)
- Team 14 Chad Kinney and Samantha Williams (BHE)
- CC = County Code
  - Buchanan (BC)
  - Carroll (CR)
  - Chariton (CI)
- XXX = Feature number (001-999)

#### 2.2 **ON-SITE HABITAT ASSESSMENT**

Potential snake habitat identified during the remote habitat assessment was field-verified in November 2006. During the on-site assessment, each potential habitat feature was visited, evaluated, and categorized as either likely to support protected snake species (i.e., meets habitat requirements), or not likely to support protected snake species (does not meet habitat requirements).

Habitat categorization was primarily based upon these requirements:

- presence of seasonally or temporarily saturated soil
- presence of adjacent non-forested areas such as fields or meadows
- presence and density of potential hibernacula such as crayfish burrows.

As presence of suitable hibernacula appears to be the limiting factor to these snakes' occurrence, categorization of habitat likely to support was highly dependent upon presence of potential hibernacula such as crayfish or small mammal burrows, partially submerged root masses, or other means by which snakes can access subsurface saturated ground. If potential hibernacula were sparse (fewer than one per 10 square meters), or if surface soil was inundated, the area was categorized as not likely to support eastern massasaugas or western fox snakes.

Photographs and GPS points were taken at all sites visited during the field verification, including those categorized as not likely to support eastern massasaugas and western fox snakes (Appendix B). All areas were described on a Site Description Data Sheet (Appendix C). Information recorded on the Site Description Data Sheet included estimated tree canopy closure, density of crayfish burrows, site sketches, and general observations on the area's hydrology and vegetative cover.

#### 3.0 RESULTS

#### 3.1 MAP REVIEW AND REMOTE HABITAT ASSESSMENT

In October and November 2006, 78 areas of potential snake habitat were identified during the map review and remote habitat assessment (Table 1). These included floodplains, farm ponds, forested wetlands, wetlands in or adjacent to agricultural fields, and drainage ditches. A table listing the areas of potentially suitable habitat, identified using Keystone pipeline mileposts, was submitted to ENSR for review, and to coordinate access to private property on the pipeline corridor. Of the 78 sites identified, 13 sites (17%) were located in Buchanan

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County, 15 sites (19%) in Carroll County, 25 sites (32%) in Chariton County, and 25 sites (32%) in St. Charles County.

#### 3.2 ON-SITE HABITAT ASSESSMENT

Between November 6 and 15, 2006, BHE visited and evaluated the 78 sites identified during the remote habitat assessment. Of these sites, 43 (55%) were categorized as *not likely to support* protected snakes, and 29 (37%) were categorized as *likely to support* protected snakes (Table 2). Access was denied to six sites (8%).

Sites categorized as *not likely to support* eastern massasaugas and western fox snakes lacked suitable hibernacula, though some also had other disqualifying characteristics such as inundated surface soil or dense canopy cover. Sites categorized as not likely to support included two sites (NAT13BC001K and NAT13Cl005) that were completely dry, seven sites (NAT13Cl013, NATBH13MOSC011, NATBH13MOSC015 through 017, NATBH13MOSC023, and NATBH13MOSC024) that had been recently tilled, and three sites (NAT13Cl009, NAT13Cl010, and NATBH13MOSC006) that were heavily trampled and muddied by cattle.

Sites categorized as *likely to support* shared characteristics that make them appropriate for eastern massasaugas and western fox snakes: open tree canopy, sparse woody vegetation, presence of crayfish burrows or other suitable hibernacula, and presence of seasonally or temporarily saturated soil. Tree canopy closure at most of these sites was 50% or less, and all 29 sites contained crayfish burrows or other potential hibernacula. Of the 29 sites, most were located in or adjacent to agricultural fields. A brief description and photographs of each site categorized as *likely to support* follow below. A complete collection of site photographs may be found in Appendix B.

#### **NAT13BC003**

This site, located in Buchanan County, was surveyed on November 6<sup>th</sup>, 2006. The site is a wetland in an agricultural field with numerous crayfish burrows and emergent vegetation. Tree canopy closure over the wetland is approximately 2% and the dominant tree species is black willow (*Salix nigra*).



#### NAT13BC004

This site, located in Buchanan County, was surveyed on November 6<sup>th</sup>, 2006. The site is a wetland in a woodlot, surrounded by agricultural field, containing crayfish burrows and emergent vegetation. Tree canopy closure over the wetland is approximately 5% and the dominant tree species are black willow and eastern cottonwood (*Populus deltoides*).



#### NAT13BC005

This site, located in Buchanan County, was surveyed on November 7<sup>th</sup>, 2006. The site is a pond and associated wetland surrounded by pasture. The site contains crayfish burrows and root masses along the pond's banks. Tree canopy closure over the wetland is approximately 10% and the dominant tree species are white oak (*Quercus alba*), bur oak (*Q. macrocarpa*), and American elm (*Ulmus americana*).



#### **NAT13BC006**

This site, located in Buchanan County, was surveyed on November 7<sup>th</sup>, 2006. The site is a wooded ditch surrounded by agricultural field. The site contains crayfish burrows. Tree canopy closure over the ditch is approximately 60% and the dominant tree species are silver maple (*Acer saccharinum*) and sycamore (*Platanus occidentalis*).



#### NAT13BC007

This site, located in Buchanan County, was surveyed on November 7<sup>th</sup>, 2006. The site is a wetland surrounded by agricultural field that is adjacent to a levee. The site contains crayfish burrows and has no tree canopy cover.



#### **NAT13BC008**

This site, located in Buchanan County, was surveyed on November 7<sup>th</sup>, 2006. The site is an emergent/forested wetland surrounded by agricultural field. The site contains crayfish burrows. Tree canopy closure over the wetland is approximately 40% and the dominant tree species are silver maple and slippery elm (*Ulmus rubra*).



#### NAT13BC009

This site, located in Buchanan County, was surveyed on November 7<sup>th</sup>, 2006. The site is an emergent/forested wetland surrounded by agricultural field and pasture. The site contains crayfish burrows and root masses. Tree canopy closure over the wetland is approximately 20% and the dominant tree species are sycamore, American elm, and red oak (*Quercus rubra*).



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#### **NAT14BC010**

This site, located in Buchanan County, was surveyed on November 7<sup>th</sup>, 2006. The site is a wooded wetland surrounded by agricultural field. The site contains crayfish burrows. Tree canopy closure over the wetland is approximately 50% and the dominant tree species is black willow.



#### NAT14BC011

This site, located in Buchanan County, was surveyed on November 7<sup>th</sup>, 2006. The site is a low grassy wetland adjacent to a pond and surrounded by agricultural field. The site contains crayfish burrows. Tree canopy closure over the wetland is approximately 5% and the dominant tree species is black willow.



#### **NAT14BC013**

This site, located in Buchanan County, was surveyed on November 7<sup>th</sup>, 2006. The site is a wetland adjacent to a pond and surrounded by agricultural field. The site contains crayfish burrows. Tree canopy closure over the wetland is approximately 15% and the dominant tree species is black willow.



#### **NAT14CR004**

This site, located in Carroll County, was surveyed on November 8<sup>th</sup>, 2006. The site is a wetland surrounded by agricultural field. The site contains crayfish burrows. Tree canopy closure over the wetland is approximately 4% and the dominant tree species is Osage orange (*Maclura pomifera*).



#### **NAT14CR010**

This site, located in Carroll County, was surveyed on November 8<sup>th</sup>, 2006. The site is a wooded wetland. Crayfish burrows located within the wetland are all found in the eastern end of the site. Tree canopy closure over the wetland is approximately 40% and the dominant tree species are hickory (*Carya cordiformis*), shagbark hickory (*C. ovata*), and boxelder (*Acer negundo*).



#### NAT14CR012

This site, located in Carroll County, was surveyed on November 9<sup>th</sup>, 2006. The site is a wetland in a field surrounded by occasional patches of trees. The site contains crayfish burrows. Tree canopy closure over the wetland is approximately 25% and the dominant tree species are eastern cottonwood and black willow.



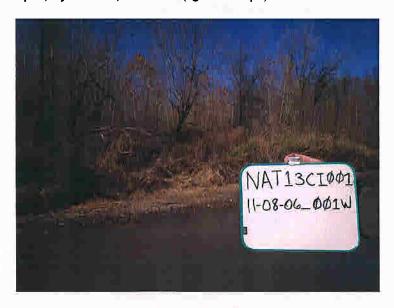
#### NAT14CR015

This site, located in Carroll County, was surveyed on November 9<sup>th</sup>, 2006. The site is a wooded wetland crossed by two seasonal streams (dry at time of survey). The site contains crayfish burrows. Tree canopy closure over the wetland is approximately 50% and the dominant tree species is American elm.



#### NAT13CI001

This site, located in Chariton County, was surveyed on November 8<sup>th</sup>, 2006. The site is an emergent wetland adjacent to a tributary to the Grand River. The site contains crayfish burrows. Tree canopy closure over the wetland is approximately 30% and the dominant tree species are silver maple, sycamore, and oak (*Quercus* sp.).



#### NAT13CI002

This site, located in Chariton County, was surveyed on November 8<sup>th</sup>, 2006. The site is an emergent wetland adjacent to a tributary to the Grand River, abutting a levee. The site contains crayfish burrows, and there is no tree canopy closure over the wetland.



#### NAT13CI003

This site, located in Chariton County, was surveyed on November 8<sup>th</sup>, 2006. The site is a ditch running through an agricultural field. The site contains emergent vegetation, crayfish burrows, and there is no tree canopy closure over the wetland.



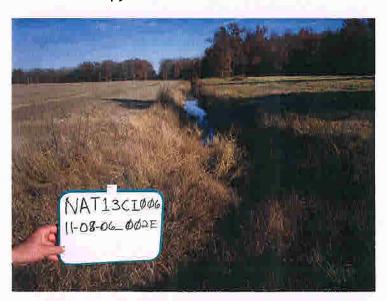
#### NAT13CI004

This site, located in Chariton County, was surveyed on November 8<sup>th</sup>, 2006. The site is a ditch running through an agricultural field. The site contains emergent vegetation, crayfish burrows, and there is no tree canopy closure over the wetland.



#### **NAT13CI006**

This site, located in Chariton County, was surveyed on November 8<sup>th</sup>, 2006. The site is a ditch running through an agricultural field. The site contains emergent vegetation, crayfish burrows, and there is no tree canopy closure over the wetland.



#### NAT13CI007

This site, located in Chariton County, was surveyed on November 8<sup>th</sup>, 2006. The site is an emergent wetland near a tributary to the Grand River, surrounded by woodlot. The site contains crayfish burrows, emergent vegetation, and patches of scrub/shrub. Tree canopy closure over the wetland is approximately 50%, and dominant tree canopy species are American elm, red oak, and slippery elm.



#### NAT13CI008

This site, located in Chariton County, was surveyed on November 9<sup>th</sup>, 2006. The site is a stream and associated wetland in a patchy woodlot, surrounded by pasture. The site contains crayfish burrows and emergent vegetation. Tree canopy closure over the wetland is approximately 30%, and dominant tree canopy species are American elm, red oak, and honey locust (*Gleditsia tricanthos*).



#### NAT13CI014

This site, located in Chariton County, was surveyed on November 9<sup>th</sup>, 2006. The site is a stream and associated forested wetland adjacent to a levee and agricultural field. The site contains crayfish burrows and emergent vegetation. Tree canopy closure over the wetland is approximately 40%, and dominant tree canopy species are American elm, red oak, and silver maple.



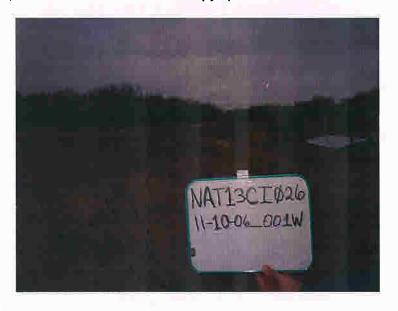
#### NAT13CI016

This site, located in Chariton County, was surveyed on November 9<sup>th</sup>, 2006. The site is a farm pond in a patchy woodlot, surrounded by pasture. The site contains crayfish burrows and emergent vegetation. Tree canopy closure over the wetland is approximately 20%, and dominant tree canopy species are honey locust, red oak, and eastern red cedar (*Juniperus virginiana*).



#### **NAT13CI026**

This site, located in Chariton County, was surveyed on November 10<sup>th</sup>, 2006. The site is a retention pond and associated wetland adjacent to a levee. The site contains abundant crayfish burrows and emergent vegetation. Tree canopy closure over the wetland is approximately 10%, and the dominant tree canopy species is red oak.



#### NATBH13MOSC001

This site, located in St. Charles County, was surveyed on November 13<sup>th</sup>, 2006. The site is a series of man-made ponds and associated forested wetlands. The site contains crayfish burrows and emergent vegetation. Tree canopy closure over the wetland is approximately 40%, and dominant tree canopy species are red oak, slippery elm, and silver maple.



#### NATBH13MOSC005

This site, located in St. Charles County, was surveyed on November 13<sup>th</sup>, 2006. The site is a man-made pond and associated emergent wetland, bordered by forest and agricultural field. The site contains crayfish burrows and emergent vegetation. Tree canopy closure over the wetland is approximately 40%, and dominant tree canopy species are bur oak, red oak, and silver maple.



#### NATBH13MOSC008

This site, located in St. Charles County, was surveyed on November 13<sup>th</sup>, 2006. The site is an emergent wetland surrounded by agricultural field. The site contains crayfish burrows and emergent vegetation. Tree canopy closure over the wetland is approximately 10%, and the dominant tree canopy species is honey locust.



#### NATBH13MOSC012

This site, located in St. Charles County, was surveyed on November 14<sup>th</sup>, 2006. The site is a ditch running through an agricultural field. The site contains crayfish burrows, and there is no tree canopy closure over the wetland.



#### NATBH13MOSC025

This site, located in St. Charles County, was surveyed on November 15<sup>th</sup>, 2006. The site is an emergent wetland near the confluence of the Mississippi and Missouri rivers, and adjacent to a levee. The site contains abundant crayfish burrows and emergent vegetation. There is no tree canopy closure over the wetland.



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**TABLES** 

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Table 1. Mileposts and ID numbers for sites on the Keystone pipeline in Missouri designated for on-site habitat evaluation.

County	West Milepost*	East Milepost*	Feature ID
Buchanan	748.50	748.70	NAT13BC001K
Buchanan	749.60	749.80	NAT13BC002K
Buchanan	752.20	752.50	NAT13BC003
Buchanan	752.50	752.70	NAT13BC004
Buchanan	756.70	756.80	NAT13BC005
Buchanan	761.30		NAT13BC006
Buchanan	762.90	763.00	NAT13BC007
Buchanan	763.00	763.10	NAT13BC008
Buchanan	763.40		NAT13BC009
Buchanan	764.90	765.00	NAT14BC010
Buchanan	765.40	765.50	NAT14BC011
Buchanan	765.80	765.90	NAT14BC012
Buchanan	766.30		NAT14BC013
Carroll	815.20	815.30	NAT14CR001
Carroll	815.60	815.70	NAT14CR002
Carroll	819.10	819.30	NAT14CR003
Carroll	819.40	819.50	NAT14CR004
Carroll	820.20		NAT14CR005
Carroll	820.40	820.50	NAT14CR006
Carroll	822.90	823.00	NAT14CR007
Carroll	823.10	823.20	NAT14CR008
Carroll	829.10	829.20	NAT14CR009
Carroll	829.80	830.00	NAT14CR010
Carroll	833.00	833.10	NAT14CR011
Carroll	834.30	834.40	NAT14CR012
Carroll	834.70	834.80	NAT14CR013
Carroll	837.50	837.60	NAT14CR014
Carroll	840.30	840.40	NAT14CR015
Chariton	841.00	841.10	NAT13CI001
Chariton	841.10	841.20	NAT13CI002
Chariton	841.50	841.60	NAT13CI003
Chariton	841.50	841.60	NAT13CI004
Chariton	841.70	842.40	NAT13CI005
Chariton	842.40	842.80	NAT13Cl006
Chariton	842.90		NAT13CI007
Chariton	846.90	847.00	NAT13CI008
Chariton	849.40	849.50	NAT13CI009
Chariton	850.50	850.60	NAT13CI010
Chariton	853.30	853.40	NAT13CI011

County	West Milepost*	East Milepost*	Feature ID
Chariton	854.20	854.30	NAT13CI012
Chariton	857.20	857.30	NAT13Cl013
Chariton	857.50	857.60	NAT13CI014
Chariton	857.90		NAT13CI015
Chariton	858.40		NAT13CI016
Chariton	859.90	860.00	NAT13CI017
Chariton	860.80	861.00	NAT13CI018
Chariton	861.40	<del></del>	NAT13CI019
Chariton	861.70		NAT13CI020
Chariton	862.40	862.60	NAT13CI021
Chariton	862.70	862.90	NAT13CI022
Chariton	863.00	863.10	NAT13CI023
Chariton	871.10	871.20	NAT13Cl025
Chariton	871.80	871.90	NAT13Cl026
St. Charles	985.30	986.00	NATBH13MOSC001
St. Charles	986.90	987.40	NATBH13MOSC002
St. Charles	988.10	983.00	NATBH13MOSC003
St. Charles	988.30	988.70	NATBH13MOSC004
St. Charles	989.00	989.30	NATBH13MOSC005
St. Charles	989.40	989.50	NATBH13MOSC006
St. Charles	989.60		NATBH13MOSC007
St. Charles	989.70		NATBH13MOSC008
St. Charles	991.50	991.70	NATBH13MOSC009
St. Charles	995.70	995.80	NATBH13MOSC010
St. Charles	1002.30	1002.60	NATBH13MOSC011
St. Charles	1003.30	1003.40	NATBH13MOSC012
St. Charles	1003.90	1004.00	NATBH13MOSC013
St. Charles	1004.40	1004.50	NATBH13MOSC014
St. Charles	1006.40	1006.50	NATBH13MOSC015
St. Charles	1008.80		NATBH13MOSC016
St. Charles	1013.50	1013.70	NATBH13MOSC017
St. Charles	1015.00	1015.10	NATBH13MOSC018
St. Charles	1015.20		NATBH13MOSC019
St. Charles	1015.70	1015.80	NATBH13MOSC020
St. Charles	1016.00		NATBH13MOSC021
St. Charles	1016.70		NATBH13MOSC022
St. Charles	1018.00		NATBH13MOSC023
St. Charles	1018.30	1018.40	NATBH13MOSC024
St. Charles	1020.90	1021.10	NATBH13MOSC025

<sup>\*</sup>Only a single milepost is provided for sites crossed by less than 100 meters of the pipeline corridor.

Table 2. Categorization and description of sites visited during on-site habitat evaluation within the construction corridor of the Keystone pipeline in Missouri.

County	Feature ID	Survey Date	Categorization	Description
Buchanan	NAT13BC001K	6 Nov 06	Not likely to support	Wooded area, no wetland present, no crayfish burrows
Buchanan	NAT13BC002K			Access denied
Buchanan	NAT13BC003	90 voN 9	Likely to support	Wetland in agricultural field
Buchanan	NAT13BC004	6 Nov 06	Likely to support	Wetland in woodlot surrounded by agricultural field
Buchanan	NAT13BC005	7 Nov 06	Likely to support	Pond/wetland in wooded area surrounded by pasture
Buchanan	NAT13BC006	7 Nov 06	Likely to support	Wetland/ditch in agricultural field
Buchanan	NAT13BC007	7 Nov 06	Likely to support	Wetland in agricultural field
Buchanan	NAT13BC008	7 Nov 06	Likely to support	Emergent wetland
Buchanan	NAT13BC009	7 Nov 06	Likely to support	Emergent wetland
Buchanan	NAT14BC010	7 Nov 06	Likely to support	Wooded wetland in agricultural field
Buchanan	NAT14BC011	7 Nov 06	Likely to support	Low grassy area near pond
Buchanan	NAT14BC012	7 Nov 06	Not likely to support	Grassy retention area, no crayfish burrows
Buchanan	NAT14BC013	7 Nov 06	Likely to support	Wetland bordering pond surrounded by agricultural field
Carroll	NAT14CR001	8 Nov 06	Not likely to support	Wetland in pasture, no crayfish burrows
Carroll	NAT14CR002	8 Nov 06	Not likely to support	Wetland in agricultural field, no crayfish burrows
Carroll	NAT14CR003	8 Nov 06	Not likely to support	Wetland in agricultural field, no crayfish burrows
Carroll	NAT14CR004	8 Nov 06	Likely to support	Wetland in agricultural field
Carroll	NAT14CR005	8 Nov 06	Not likely to support	Wetland in agricultural field, only one crayfish burrow observed
Carroll	NAT14CR006	8 Nov 06	Not likely to support	Wetland in agricultural field, no crayfish burrows, inundated soil
Carroll	NAT14CR007	8 Nov 06	Not likely to support	Pond overflow ditch, no crayfish burrows
Carroll	NAT14CR008	8 Nov 06	Not likely to support	Pond overflow ditch, no crayfish burrows
Carroll	NAT14CR009	8 Nov 06	Not likely to support	Wooded edge of pond no crayfish burrows, dense canopy cover
Carroll	NAT14CR010	8 Nov 06	Likely to support	Patchy wooded wetland
Carroll	NAT14CR011	90 voN 6	Not likely to support	Wetland in agricultural field next to road, no crayfish burrows
Carroll	NAT14CR012	90 von 6	Likely to support	Wetland in field surrounded by trees
Carroll	NAT14CR013	90 voN 6	Not likely to support	Wetland in field, no crayfish burrows
Carroll	NAT14CR014	90 von 6	Not likely to support	Wetland in agricultural field adjacent to streambed, no crayfish burrows
Carroll	NAT14CR015	90 voN 6	Likely to support	Patchy wooded wetland
Chariton	NAT13CI001	8 Nov 06	Likely to support	Emergent wetland adjacent to tributary to Grand River

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Description	Emergent wetland adjacent to tributary to Grand River	Wetland/ditch in agricultural field	Wetland/ditch in agricultural field	t Wooded area, no wetland, no crayfish burrows	Wetland/ditch in agricultural field	Emergent/scrub-shrub wetland	Wetland in patchy woodlot surrounded by pasture	t Farm pond in pasture, no crayfish burrows, muddied by cattle	t Farm pond in pasture, no crayfish burrows, muddied by cattle	t Emergent wetland in agricultural field, no crayfish burrows	t Emergent wetland/ditch in agricultural field, no crayfish burrows	t Low area in agricultural field, no crayfish burrows, actively farmed	Emergent wetland surrounding stream		Farm pond in woodlot	t Farm pond in pasture, no crayfish burrows	Access denied	Access denied	Access denied	t Wetland in woodlot surrounded by agricultural field, no crayfish burrows	t Woodlot in agricultural field, no crayfish burrows	t Drainage ditch, no crayfish burrows	t Wooded ditch, no crayfish burrows, dense canopy cover	Emergent wetland at retention pond	Man-made wetland in patchy forest	Access denied	Access denied	t Man-made ponds in agricultural field, no crayfish burrows	Emergent wetland near agricultural field	t Ditch in agricultural field, no crayfish burrows, muddied by cattle	t Emergent wetland in agricultural field, no crayfish burrows	Wetland in agricultural field	t Pond in agricultural field, no crayfish burrows
Categorization	Likely to support	Likely to support	Likely to support	Not likely to support	Likely to support	Likely to support	Likely to support	Not likely to support	Not likely to support	Not likely to support	Not likely to support	Not likely to support	Likely to support	Not likely to support	Likely to support	Not likely to support				Not likely to support	Not likely to support	Not likely to support	Not likely to support	Likely to support	Likely to support			Not likely to support	Likely to support	Not likely to support	Not likely to support	Likely to support	Not likely to support
Survey Date	8 Nov 06	8 Nov 06	8 Nov 06	8 Nov 06	8 Nov 06	8 Nov 06	90 voN 6	90 voN 6	90 voN 6	90 voN 6	90 voN 6	90 voN 6	9 Nov 06	9 Nov 06	90 voN 6	9 Nov 06				10 Nov 06	10 Nov 06	10 Nov 06	10 Nov 06	10 Nov 06	13 Nov 06			13 Nov 06	13 Nov 06	13 Nov 06	13 Nov 06	13 Nov 06	14 Nov 06
Feature ID	NAT13C1002	NAT13C1003	NAT13CI004	NAT13C1005	NAT13C1006	NAT13C1007	NAT13C1008	NAT13C1009	NAT13CI010	NAT13CI011	NAT13CI012	NAT13CI013	NAT13CI014	NAT13CI015	NAT13CI016	NAT13CI017	NAT13CI018	NAT13CI019	NAT13CI020	NAT13CI021	NAT13CI022	NAT13CI023	NAT13CI025	NAT13CI026	NATBH13MOSC001	NATBH13MOSC002	NATBH13MOSC003	NATBH13MOSC004	NATBH13MOSC005	NATBH13MOSC006	NATBH13MOSC007	NATBH13MOSC008	NATBH13MOSC009
County	Chariton	Chariton	Chariton	Chariton	Chariton	Chariton	Chariton	Chariton	Chariton	Chariton	Chariton	Chariton	Chariton	Chariton	Chariton	Chariton	Chariton	Chariton	Chariton	Chariton	Chariton	Chariton	Chariton	Chariton	St. Charles	St. Charles	St. Charles	St. Charles	St. Charles	St. Charles	St. Charles	St. Charles	St. Charles

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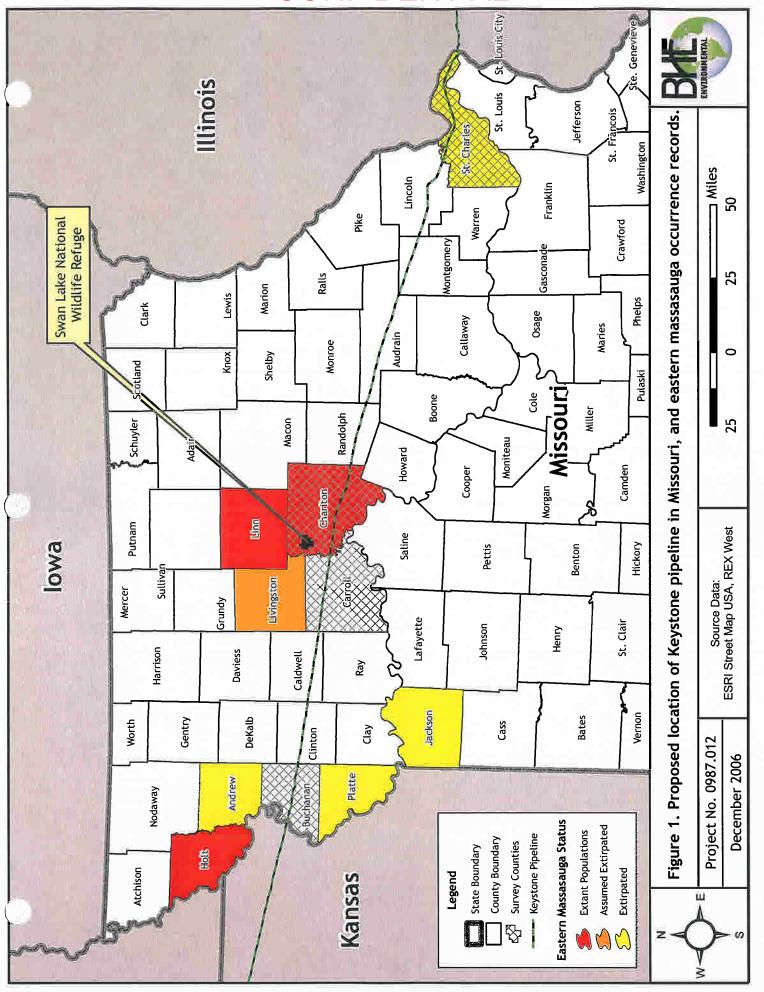
BHE Environmental, Inc. PN: 0987.012-001

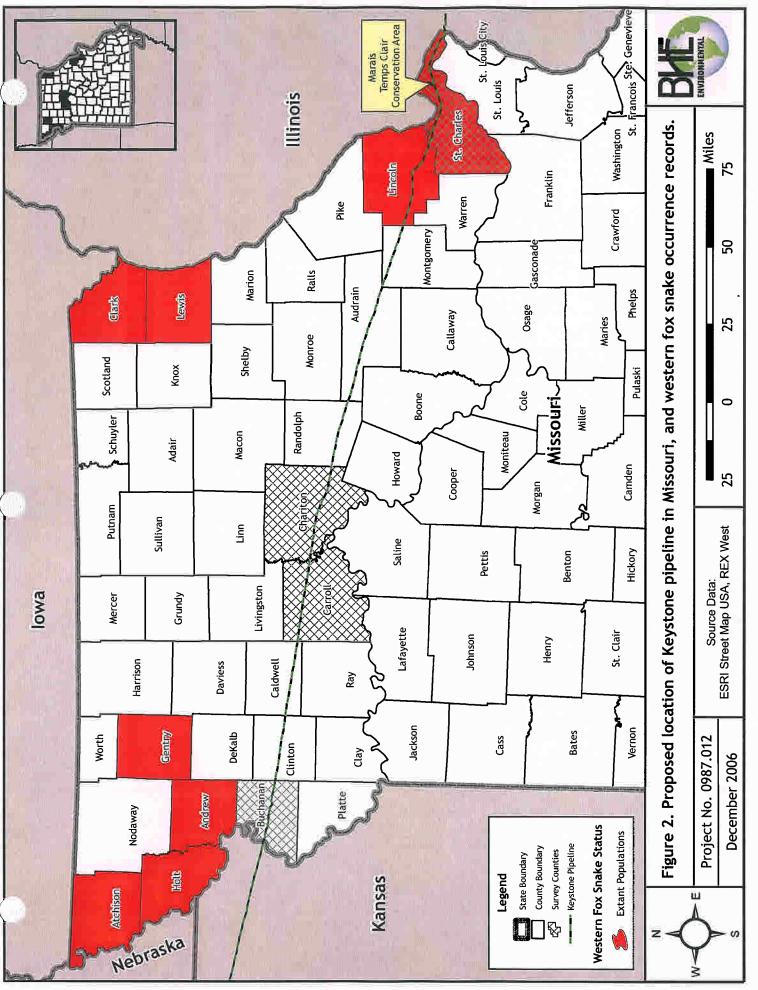
County	Feature ID	Survey Date	Categorization	Description
St. Charles	NATBH13MOSC010	14 Nov 06	Not likely to support	Emergent vegetation along creek, no crayfish burrows, polluted
St. Charles	NATBH13MOSC011	14 Nov 06	Not likely to support	Wetland in corn field, no crayfish burrows, actively farmed
St. Charles	NATBH13MOSC012	14 Nov 06	Likely to support	Wetland/ditch in agricultural field
St. Charles	NATBH13MOSC013	14 Nov 06	Not likely to support	Wetland in agricultural field, no crayfish burrows
C+ Charles	NATBH13MOCCO14	14 Nov 06	Not likely to grapert	Wetland surrounded by agricultural field, no crayfish burrows, dense
ומונבי	HAIDICOMOZIOLA	00 001 +1	INDE LINERY TO SUPPOIL	canopy cover
St. Charles	NATBH13MOSC015	14 Nov 06	Not likely to support	Freshly tilled agricultural field, no crayfish burrows
St. Charles	NATBH13MOSC016	14 Nov 06	Not likely to support	Freshly tilled agricultural field, no crayfish burrows
St. Charles	NATBH13MOSC017	14 Nov 06	Not likely to support	Ditch through freshly tilled agricultural field, no crayfish burrows
St. Charles	NATBH13MOSC018	15 Nov 06	Not likely to support	Emergent scrub-shrub wetland, no crayfish burrows
St. Charles	NATBH13MOSC019	15 Nov 06	Not likely to support	Emergent scrub-shrub wetland, no crayfish burrows
St. Charles	NATBH13MOSC020	15 Nov 06	Not likely to support	Wetland surrounded by field, no crayfish burrows
St. Charles	NATBH13MOSC021	15 Nov 06	Not likely to support	Wetland surrounded by field, no crayfish burrows
St. Charles	NATBH13MOSC022	15 Nov 06	Not likely to support	Wetland in agricultural field, no crayfish burrows, inundated soil
St. Charles	NATBH13MOSC023	15 Nov 06	Not likely to support	Freshly tilled agricultural field, no crayfish burrows
St. Charles	NATBH13MOSC024	15 Nov 06	Not likely to support	Freshly tilled agricultural field, no crayfish burrows
St. Charles	NATBH13MOSC025	15 Nov 06	Likely to support	Wetland near confluence of Missouri and Mississippi rivers

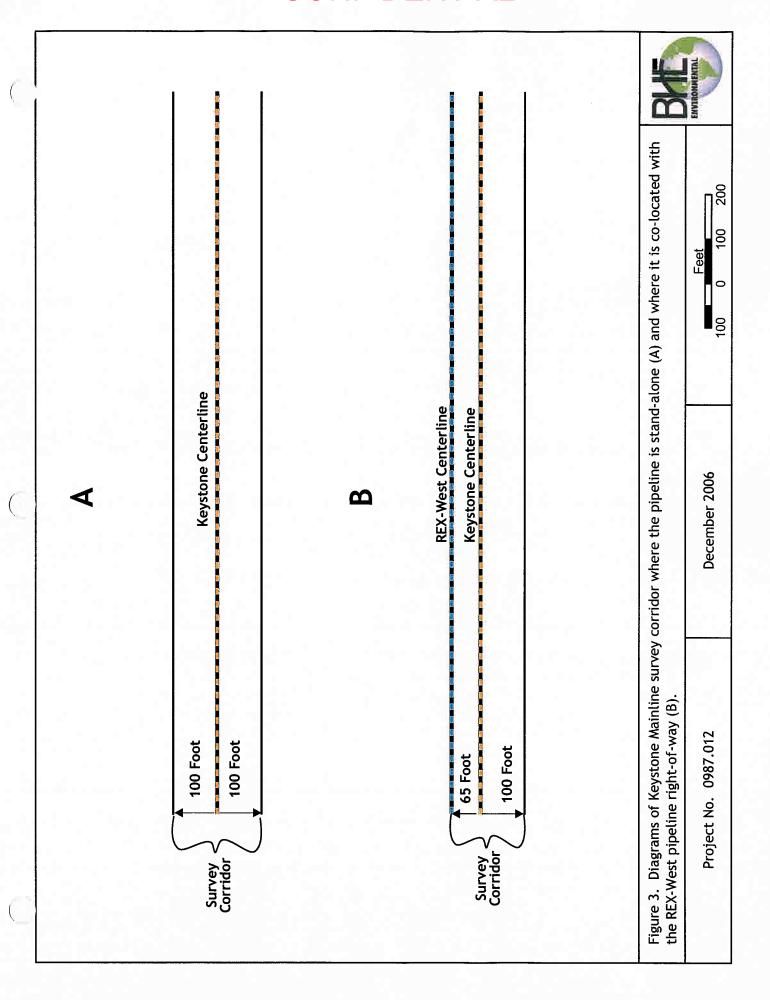
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**FIGURES** 

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**APPENDICES** 

BHE Environmental, Inc. PN: 0987.012-001

Appendix A. MDC Concurrence with Study Plan

BHE Environmental, Inc. PN: 0987.012-001

Re BHE-ENSR snake study plan

From: Jeff Briggler [Jeff.Briggler@mdc.mo.gov]

Sent: Friday, October 20, 2006 5:56 PM To: Melanie Gregory; Doyle Brown Subject: Re: BHE-ENSR snake study plan

Melanie.

The plan looks good to me. This is definitely a great first step in determining what habitat actually occurs along the pipeline path. This assessment will be important in determine future monitoring efforts.

Sincerely,

Jeff Briggler Herpetologist

The habitat assessment for determine potential monitoring efforts.

>>> Doyle Brown 10/18/06 4:32 PM >>> Melanie,

We did receive the plans, I will let Jeff look them over and provide you with any comments.

Doyle

Doyle F. Brown Policy Coordinator Missouri Department of Conservation P.O. Box 180 2901 West Truman Blvd. Jefferson City, MO 65109 (573) 522-4115 Ext 3355 Doyle.brown@mdc.mo.gov

>>> "Melanie Gregory" <mgregory@bheenvironmental.com> 10/18/06 1:27 PM >>>

Mr. Brown, Just want to check in and make sure you received the study plans I sent via e-mail and fax on Monday. ENSR hopes to initiate and complete the habitat assessment within the next few weeks, and we look forward to receiving your comments and/or concurrence as soon as Thanks very much for your assistance.

Sincerely,

BHE Environmental, Inc. Melanie L. Gregory Biologist 11733 Chesterdale Road Cincinnati, OH 45246 Office: 513.326.1500 Direct: 513.326.1168 Mobile: 513.348.7833 Fax: 513.326.1178

mgregory@bheenvironmental.comwww.bheenvironmental.com

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Re BHE-ENSR snake study plan
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without copying or forwarding it, and notify the sender of the error by replying via
email or by calling BHE Environmental, Inc. at 888.326.1500, so that our address
record can be corrected.

Appendix B. Site Photographs and GPS Data

Photographs and GPS data are included in an attached CD-ROM



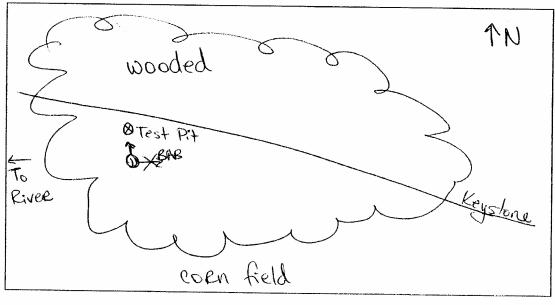
Appendix C. Field Data Sheets

BHE Environmental, Inc. PN: 0987.012-001

# 11733 Chesterdale R Cincinnati, Ohio 45246 513.326.1500 / Fax 513.326.1550

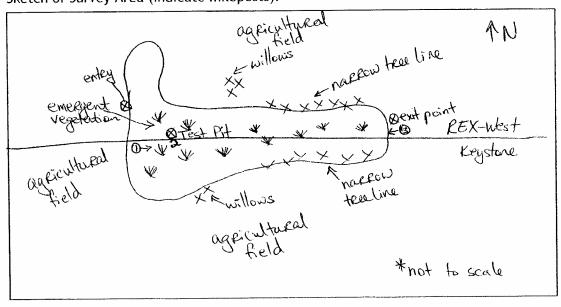
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Keystone Pipeline Project Site Description Data Sheet  NAT13 BC QQ1K MP: 748.5 - 748.7  Chad Kinney, Samantha Williams  Surveyor(s): Becky Braeutigam, John Alexander Date of Survey: 11-6-06
Location of Survey (Lat/Lon or UTM): $N4401167.9$ BAB $E845805.750$
State: Missouri or Illinois County: Buchanan
General description of site:  wooded akea, we fland no longer present  Photo Number(s): 001N
Is standing water present? Y (N) Ground appears to be saturated: frequently temporarily/seasonally rarely
Was a test pit dug? (Y)/ N If yes, depth to saturated soil (cm): n/a at 12 in depth
Estimated distance to nearest permanent body of water (m): 20  Type of water body: lake/pond stream river Hissouri fiver
Are crayfish burrows present? Y $/N$ If yes, estimated density $(\#/m^2)$ : $N/Q$
Describe other potential hibernacula present: <u>Na</u>
Are there trees in the area? (Y)/ N If yes, estimated percent canopy closure: 50 % Dominant species (3): Populus delloides
Circle one: Area is likely to support or not likely to support protected snake species Explain: NO CROYFISH burROWS, wetland no longer present
Sketch of Survey Area (indicate mileposts):
1N



	Lerre/Wetland ID: <u>NAT13B(</u> Chad kinney, sama rveyor(s): Becky Braeutigam	ntha William John Alexa	MP: <u>540.71-1</u> As endec Date of	Survey: //-6		)
Lo	cation of Survey (Lat/Lon or UTM)	): N 43999	184.047	E 851794.	185	
St	ate: Missouri or Illinois	County	: Buchana	<u> </u>		
Ci	rcle one: Feature occurs on	REX-West	Keystone	Both (20-loca	ated)	
Ge	eneral description of site: wetland in agricultural fie	Id	Pho <u>0</u> 0	oto Number(s): <u>0</u> 02 Test P.H., 003	01E, 3W	
	standing water present? Y /(N) cound appears to be saturated:	frequently	demporarily/		rarely	
W	as a test pit dug? (Ŷ)/N	If yes, de	epth to saturated	d soil (cm): <u>Na</u>		h
	timated distance to nearest perma ppe of water body: lake/po		ater (m): <u> </u>	river		
Αı	re crayfish burrows present? 🕥/ N	If yes,	estimated densi	ty (#/m²):	<del>-</del>	
De	escribe other potential hibernacula	present: <u>\\</u>	Ř			
Ai Di	re there trees in the area? $(Y)$ / Normant species (3): $Sa(X)$	If yes, estimat	ed percent cano	py closure: 2	%	
Α	rcle one: rea is <u>tikely to support or</u> explain: crayfish burrows	not likely to		orotected snake sp	pecies	

Sketch of Survey Area (indicate mileposts):



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Site Description Data Sheet  REX or KEY)  Site Description Data Sheet  MP: 540.97 - 541.07  REX or KEY)
Chad Kinney, Samantha Williams: Surveyor(s): Recky Braentyam, John Alexander Date of Survey: 11-6-00
Location of Survey (Lat/Lon or UTM): N 4399985. 226 E852098.389
State: Missouri or Illinois County: Ruchanan
Circle one: Feature occurs on REX-West Keystone Both (20-located)
General description of site:  Wetland in woodlot succounded by agricultural  Photo Number(s): 001 E  002 Test Pit, 003W
Is standing water present? Y (N) Ground appears to be saturated: frequently (temporarily/seasonally) rarely
Was a test pit dug? (Y)/ N If yes, depth to saturated soil (cm): ha at 12 in dep
Estimated distance to nearest permanent body of water (m): $N Q$ Type of water body: lake/pond stream river
Are crayfish burrows present? $(Y)$ N If yes, estimated density $(\#/m^2)$ : $0$
Describe other potential hibernacula present: $NQ$
Are there trees in the area? (Y)/ N If yes, estimated percent canopy closure: 5 % Dominant species (3): Salix rigra, Populus deltaides
Circle one:  Area is  Explain:  CRayfish hurrows, open Canopy
Sketch of Survey Area (indicate mileposts):

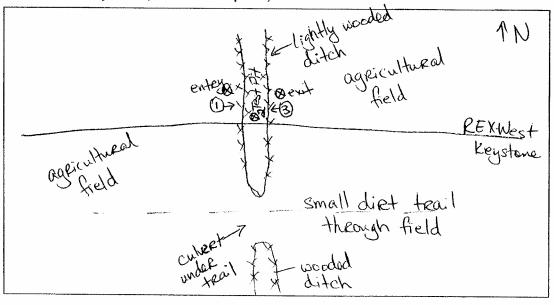
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Site Description Data Sheet  NAT 13 ARC 0 05 MP: 545.17-545.27 (REX or KEY)
Surveyor(s): Becky Beaeutigam, John Alexander Date of Survey: 11-7-06
Location of Survey (Lat/Lon of UTM): N 4399357-150 E 858700-505
State: Missouri or Illinois County: Buchanan
Circle one: Feature occurs on REX-West Keystone Both (co-located)
General description of site:  Wetland pond in wooded alea succounded  by particle Is standing water present? V/N  Ground appears to be saturated:  General description of site:  Photo Number(s): 001W  002 E  type of the control of site:  The provided alea succounded to the control of site:  The provided alea succounde
Was a test pit dug? Y $/$ N If yes, depth to saturated soil (cm): $n/a$
Estimated distance to nearest permanent body of water (m): 1  Type of water body:lake/pond stream river
Are crayfish burrows present? $(Y)/N$ If yes, estimated density $(\#/m^2)$ :
Describe other potential hibernacula present: <u>Loot makes along bank</u>
Are there trees in the area? Y/N If yes, estimated percent canopy closure: 10 % Dominant species (3): Quercus alla, Quercus macrocarpa, Umus americana
Creatis likely to support or not likely to support protected snake species Explain:  Crayfish burrows, open canopy
Sketch of Survey Area (indicate mileposts):
Pasture trad  Patchy trad  Patc

Transalong burn Pasture Wooded area

Location of	Survey (Lat/Lon or UT			Survey: 11-7-06 E86555-573
	ssouri or Illinois		: Buchana	b
Circle one:	Feature occurs on	REX-West	Keystone	Both (co-located)
General desc wetlane	cription of site: Alditch in agricultu	real field	Pho	oto Number(s): <u>001W</u>
Is standing w Ground appe	vater present? Y (N) ears to be saturated:	frequently	temporarily/	seasonally rarely
Was a test p	it dug? 🏽 N	If yes, de	epth to saturated	d soil (cm): 11
Estimated di Type of wate	istance to nearest perm er body: lake/¡	•	ater (m): 100	river
Are crayfish	burrows present? (Y)	N If yes,	estimated densit	zy (#/m²):
		101	a	
Describe oth	er potential hibernacul	a present: VII		
Are there tre	ner potential hibernacul ees in the area? (Y) N ecies (3): <u>Acer sa</u>	lf ves. estimate	ed nercent canor	oy closure: <u>(00</u> %



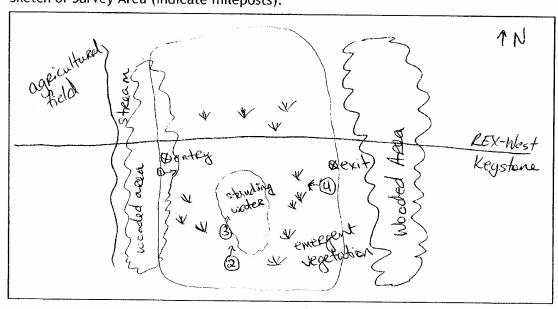
Site Description Data Sheet  REX or KEY)
Surveyor(s): Becky Braentigam, John Alexander Date of Survey: 11-7-06
Location of Survey (Lat/Lon or (UTM)) N4397363.292 E 868073.415
State: Missouri or Illinois County: Buchanan
Circle one: Feature occurs on REX-West Keystone Both (co-located)
General description of site:  we tland within agricultural field  Photo Number(s): 001 E  002 crayfish burrow  003 W
Is standing water present? Y (N) Ground appears to be saturated: frequently temporarily/seasonally rarely
Was a test pit dug? Y (N) If yes, depth to saturated soil (cm): N a
Estimated distance to nearest permanent body of water (m): 50  Type of water body: lake/pond stream river
Are crayfish burrows present? $(Y)$ N If yes, estimated density $(\#/m^2)$ : $(\#/m^2)$ :
Describe other potential hibernacula present: $\sqrt{\lambda}$
Are there trees in the area? Y / N If yes, estimated percent canopy closure:
Circle one: Area is Explain:  Or not likely to support protected snake species
crayfish burrows, no canopy cover
Sketch of Survey Area (indicate mileposts):
agricultural see a
emogo @ et 2 REX-West  Dr 60 Keystone
to the state of th

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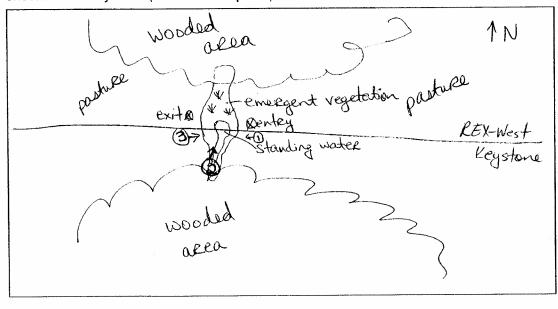
Site Description Data Sheet  WEXNER MP: SUI. 47-541. 57 (REX) or KEY)				
Surveyor(s): Becky Braentigam, John Alexander Date of Survey: 11-7-06				
Location of Survey (Lat/Lon or UTM): N 4398322.093 E 868171.668				
State: Missouri or Illinois County: Buchanan				
Circle one: Feature occurs on REX-West Keystone Both (co-located)				
General description of site:  emergent forested wetland with agricultural  fields to east and west  Photo Number(s): OOI E,  OO2N,003N,004W				
Is standing water present? ( N) Ground appears to be saturated: <u>frequently</u> temporarily/seasonally rarely				
Was a test pit dug? Y /(N) If yes, depth to saturated soil (cm):				
Estimated distance to nearest permanent body of water (m): 20  Type of water body: lake/pond stream river				
Are crayfish burrows present? $(Y)$ N If yes, estimated density $(\#/m^2)$ : 0.5				
Describe other potential hibernacula present: $\sqrt{\alpha}$				
Are there trees in the area? (V) N If yes, estimated percent canopy closure: 40 % Dominant species (3): Acer sacchaeinum, Ulmus Rubra				
Circle one:  Area is  Explain:  Area of the support or not likely to support protected snake species				
crayfish burrows, moist soil				

Sketch of Survey Area (indicate mileposts):



Site Description Data Sheet  NAT 13 BCDD9 MP: SS1.87-SS1.97 (REX or KEY)
Surveyor(s): Becky Braentigam, John Alexander Date of Survey: 11-7-06
Location of Survey (Lat/Lon or UTM): N 4398290.103 E 868803.470
State: Missouri or Illinois County: Buchanan
Circle one: Feature occurs on REX-West Keystone Both (co-located)
General description of site: Photo Number(s): OO\ W
A. A. I. A. A
emergent/forested wetland with agricultural fields 0000,003E
Is standing water present? (1) / N
Ground appears to be saturated: frequently temporarily/seasonally rarely
Was a test pit dug? Y (N) If yes, depth to saturated soil (cm): MQ
Estimated distance to nearest permanent body of water (m): 800
Type of water body: lake/pond stream river
Type of water body. taker pond Stream
Are crayfish burrows present? $\bigcirc$ / N If yes, estimated density (#/m²): $\bigcirc$ . 3
Describe other potential hibernacula present: Some Roof masses
Are there trees in the area? (V)/ N If yes, estimated percent canopy closure: 20 % Dominant species (3): Matamus occidentalis, Quercus Eubra, Whis americana
Circle one:  Area is <u>dikely to support</u> or not likely to support protected snake species  Explain:
crayfish buerows, open canopy

Sketch of Survey Area (indicate mileposts):



Site Description Data Sheet  (REX. or KEY)
Surveyor(s): C. Kinney, S. Williams Date of Survey: 7 November 2006
Location of Survey (Lat/Lon or UTM); 39°39 03.524 / 94° 40 23.832
State: Missouri or Illinois County: Buchanan
Circle one: Feature occurs on REX-West Keystone Both (co-located)
General description of site:  WOODLD WETLAND IN agricultive Reld  OR Crayfish Surray  ORS Estoct, 804 E
Is standing water present? Y// N Ground appears to be saturated: frequently temporarily/seasonally rarely
Was a test pit dug? N If yes, depth to saturated soil (cm): 30 cm
Estimated distance to nearest permanent body of water (m): 400  Type of water body: lake/pond stream river
Are crayfish burrows present? $(Y)/N$ If yes, estimated density $(\#/m^2)$ :
Describe other potential hibernacula present: $\frac{1}{2}$
Are there trees in the area? If yes, estimated percent canopy closure: 50 %  Dominant species (3):
Circle one: Area is Explain:  On not likely to support protected snake species
crayfish brows present
Sketch of Survey Area (indicate mileposts):
trees (trees) NA
corn field water a corn field

drystream bed

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Si ede/Wetland ID: <u>/UAT /4B</u>	ite Description [	Data Sheet MP: <u><i>5</i>53. 8</u>	7-553,97 (REX or KEY)
Surveyor(s): C. Knney, S. L	Williams	Date o	of Survey: 7 November 2 a
Location of Survey (Lat/Lon or UT	m) <u>59°38</u>	5 <b>9</b> .880	<u>  94º 39 53.03</u> 3
State: Missouri or Illinois	County	coura	nan
Circle one: Feature occurs on	REX-West	Keystone	Both (co-located)
General description of site: Iowland grass area sure	randing par	nd P	hoto Number(s): 00/5,
Is standing water present (Y) Ground appears to be saturated:	frequently	temporarily	y/seasonally rarely
Was a test pit dug? (Y) N	If yes, d	epth to saturate	ed soil (cm): Water present
Estimated distance to nearest perm Type of water body: lake/		vater (m): <b>5</b> tream	river
Are crayfish burrows present? Y/	N If yes,	estimated dens	sity (#/m²): $\frac{3/m^2}{}$
Describe other potential hibernacu	la present: <u><i>SM</i></u>	na   mam	mal burrows
Are there trees in the area? N Dominant species (3):	If yes, estimat	ted percent can	opy closure:%
Circle one: Area is Explain:	or not likely t	o support	protected snake species
crayfish burraus p	resent		
Sketch of Survey Area (indicate mi	leposts):		
			M
	× +		
thall wass	ž		courry
Dand			Con

# 11733 Chesterdale R. Cincinnati, Ohio 45246 513,326,1500 / Fax 513,326,1550

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Site Description Data Sheet  NOTE OF KEY)  NOTE OF KEY)
Surveyor(s): C. Kinney, S. Williams Date of Survey: 7 November 2006
Location of Survey (Lat/Lon or UTM): 39° 38 55.125 94° 39 26.008
State: Missouri or Illinois County: Duchanan
Circle one: Feature occurs on REX-West Keystone Both (co-located)
General description of site: NETEMBON area along grass waterway Photo Number(s): DOLE BUY  OOLS
Is standing water present? Y N Ground appears to be saturated: frequently temporarily/seasonally rarely
Was a test pit dug? Y/N If yes, depth to saturated soil (cm): //C
Estimated distance to nearest permanent body of water (m): 300  Type of water body: lake/pond stream river
Are crayfish burrows present? Y N If yes, estimated density (#/m²):
Describe other potential hibernacula present:
Are there trees in the area? Y / N If yes, estimated percent canopy closure:
Circle one: Area is likely to support or not likely to support protected snake species  Explain:  No Cray Rish buraus present
Sketch of Survey Area (indicate mileposts):
counteld counteld
poe water
roans tole line
1 (Notation /

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Bit Site Description Data Sheet  MP: 554, 77 - 554,87 (REX or KEY)
Surveyor(s): C. Kinney, P. Williams Date of Survey: 7 November 200 G
Location of Survey (Lat/Lon or) UTM): 59°38 50, 753 / 94° 38 55, 310
State: Missouri or Illinois County: <u>Suchanan</u>
Circle one: Feature occurs on REX-West Keystone Both (co-located)
General description of site:  Wetland bordering pand Surrounded  by agriculture field  Is standing water present? Y (N)  Photo Number(s): 00/W,  002 lest pt, 003 N  resolutions
Ground appears to be saturated: frequently temporarily/seasonally rarely n/a 12" prt dug, no
Was a test pit dug? (Y)/ N If yes, depth to saturated soil (cm): Water present
Estimated distance to nearest permanent body of water (m):
Are crayfish burrows present? Y N If yes, estimated density (#/m²): 1/1/1/1/1/1/1/1/1/1/1/1/1/1/1/1/1/1/1/
Describe other potential hibernacula present:
Are there trees in the area? Y N . If yes, estimated percent canopy closure:
Circle one: Area is likely to support or not likely to support protected snake species Explain:  Crayfish burrows present, no standing water
open ranopy
Sketch of Survey Area (indicate mileposts):
Pand  Pand  A A A A A A A A A A A A A A A A A A A
N & dry strambed

_	Site Description Data Sheet  Wetland ID: NATI4 CROO ( MP: (W3.67 - (W3.77) (REX or KEY)
NV	Surveyor(s): C. Kinney, S. Williams Date of Survey: 8 November 2006
	Location of Survey (Lat/Lon) or UTM): 39°32 41,421 /93° 44 42,345
	State: Missouri or Illinois County: (according)
	Circle one: Feature occurs on REX-West Keystone Both (co-located)
	General description of site:  Wetland M pasture  Photo Number(s): 0018
	Is standing water present? Y / N Ground appears to be saturated: frequently temporarily/seasonally rarely
	Was a test pit dug? Y / N If yes, depth to saturated soil (cm): //a
	Estimated distance to nearest permanent body of water (m): 40 m  Type of water body: lake pond stream river
	Are crayfish burrows present? Y $(N)$ If yes, estimated density $(\#/m^2)$ : $(\#/m^2)$ :
	Describe other potential hibernacula present:
	Are there trees in the area? (Y) N If yes, estimated percent canopy closure:
	Circle one:  Area is likely to support or not likely to support protected snake species  Explain:
	no crayRish burraus present in the wetland
	Sketch of Survey Area (indicate mileposts):
	NT pond pond
	L ZEV V ZEV
	K fence w/ electrical line

+ +	
+ + +	Site Description Data Sheet  Wetland ID: WAT 14 CR 00 Q MP: 604.07-64,17 (REX or KEY)
· <b>4</b> -	Surveyor(s): C. Kinney, S. Williams Date of Survey: 8 November 2000
+	Location of Survey (Lat/Lon) or UTM): 39032 36.028 / 930 44 16.014
T ≥	State: Missouri or Illinois County: Carroll
, , , , , , , , , , , , , , , , , , ,	Circle one: Feature occurs on REX-West Keystone Both (co-located)
787 10 X81	General description of site:  WET and in agriculture field  Photo Number(s): 001E *
013:010:13:00 / Fax	Is standing water present? Y N Ground appears to be saturated: frequently temporarily/seasonally rarely
70.610	Was a test pit dug? Y /N If yes, depth to saturated soil (cm): //A
0110 43240	Estimated distance to nearest permanent body of water (m): 100 M  Type of water body: lake pond stream river
2	Are crayfish burrows present? (Y/N If yes, estimated density (#/m²): // / / / / / / / / / / / / / / / / /
innati,	Describe other potential hibernacula present:
5	Are there trees in the area? (V) N If yes, estimated percent canopy closure:
/33 Chesterdale r	Circle one: Area is likely to support or not likely to support protected snake species Explain:  No crayfish burrows present in wetland
·	
	Sketch of Survey Area (indicate mileposts):
	MI
	trees  * photo taken white board reads 11-08-010 DOING picture taken facing E
	dry stream picture taken
	pond x

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Site Description Data Chart
Site Description Data Sheet  VERONENTAL MP: (007.77 (REX) or KEY)
Surveyor(s): C. May S. Williams Date of Survey: 8 Wovember 2000
Location of Survey (Lat/Lon or UTM): 39°32 17.686 193°40 15.211
State: Missouri or Illinois County: (arroll
Circle one: Feature occurs on REX-West Keystone Both (co-located)
General description of site:  Wetland in ag. Reld  Photo Number(s): 00/E
Is standing water present? Y (N) Ground appears to be saturated:  frequently temporarily/seasonally rarely
Was a test pit dug? Y (N) If yes, depth to saturated soil (cm):
Estimated distance to nearest permanent body of water (m): 100 m  Type of water body: lake/pond stream river
Are crayfish burrows present? $Y/N$ If yes, estimated density $(\#/m^2)$ : $N/\alpha$
Describe other potential hibernacula present: $\frac{h/a}{}$
Are there trees in the area? (X) N If yes, estimated percent canopy closure:
Circle one: Area is likely to support or not likely to support protected snake species  Explain:
110 crayfish burrows present
Sketch of Survey Area (indicate mileposts):
The state of the s
Rield Of A Rield V

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Site Description Data Sheet  (REX or KEY)
Surveyor(s): C. Kinney S. Williams Date of Survey: November 20
Location of Survey (Lat/Lon or UTM): 39°32 16.672 93°39 58.650
State: Missouri or Illinois County: Carroll
Circle one: Feature occurs on REX-West Keystone Both (co-located)
General description of site;  Wetland in ag. field  Photo Number(s): 00/E  203 Test pit
Is standing water present? Y (N)  Ground appears to be saturated: frequently temporarily/seasonally rarely  [In a dua 30 cm
Was a test pit dug? YN If yes, depth to saturated soil (cm): No water
Estimated distance to nearest permanent body of water (m): 60 M  Type of water body: lake/pond stream river
Are crayfish burrows present? $(Y)N$ If yes, estimated density $(\#/m^2)$ : $3/m^2$
Describe other potential hibernacula present:
Are there trees in the area? Y N If yes, estimated percent canopy closure:
Circle one: Area is likely to support or not likely to support protected snake species  Explain:
crayfish burows present in wetland
Sketch of Survey Area (indicate mileposts):
1 1 1 1 1 1 N N N N N N N N N N N N N N
Soubean Dex A x
Soubean Of x Piles

Surveyor(s): C. Linney S. W.	lians	Date or	f Survey: 8 N	Nember o
Location of Survey (Lat/Lon/or UT	м) <i>39°3</i> 2	10.752	93033	09.94
State: Missouri or Illinois	Count	y: <u>Carro</u>	//	
Circle one: Feature occurs on	REX-West	Keystone	Both (co-le	ocated)
General description of site: WITAND IN AGNICULTURE	Reld	Ph	oto Number(s):_	001W
s standing water present? Y N Ground appears to be saturated:	frequently	(temporarily/	seasonally	rarely
Was a test pit dug? Y	If yes, d	epth to saturated	d soil (cm):/	1/a
Estimated distance to nearest perm Type of water body: lake/p	anent body of woond s	ater (m): <u>/00</u> tream	niver	,
Are crayfish burrows present? Y) 1	√ If yes,	estimated densi	ty (#/m²): <b>※</b> ///	$n^2$
Describe other potential hibernacul	a present:	Ma		
Are there trees in the area?(Y)/N Dominant species (3): MacTuca		ed percent cano	oy closure; <u>So</u> IMBCICA (1	<u>%</u>
~	not likely to	e support p	protected snake	,
ketch of Survey Area (indicate mile	eposts):			
V V	1		7N	
wheat Reld				
		Anz. Dead		
			_	

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Site Description Data Sheet  WHT 14 CROS MP: 608.89-608.97 (REX or KEY)
Surveyor(s). C. Gnney /S. Williams Date of Survey: 8 November
Location of Survey (Lat/Lon or UTM): 35°32 03.516/93°38 56.807
State: Missouri or Illinois County: (arroll
Circle one: Feature occurs on REX-West Keystone Both (co-located)
General description of site:  Wetland in to cested ag. Reld  Photo Number(s): 201E
Is standing water present Y N Ground appears to be saturated:  frequently temporarily/seasonally rarely
Was a test pit dug? Y N If yes, depth to saturated soil (cm): Y / C
Estimated distance to nearest permanent body of water (m): /50 M  Type of water body: lake/pond stream river
Are crayfish burrows present? Y / N If yes, estimated density (#/m²):
Describe other potential hibernacula present:
Are there trees in the area? (Y) N If yes, estimated percent canopy closure:
Circle one: Area is likely to support or not likely to support protected snake species  Explain:  Standing water, and no
crayAsh burrows
Sketch of Survey Area (indicate mileposts):
Reld m
water to the same of the same

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B	Site Description Data Sheet  (REX_or_KEY)
	Surveyor(s): C. Kinney S.W. 1/1ams Date of Survey: 8 Navember 2006
	Location of Survey (Lat/Lon or UTM): 39°31 51,936/93°36 08,023
	State: Missouri or Illinois County: (acro//
,	Circle one: Feature occurs on REX-West Keystone Both (co-located)
,	General description of site:  Fond over flow abong  Is standing water present? Y/N  Photo Number(s): 00/S
•	Ground appears to be saturated: frequently temporarily/seasonally rarely
,	Was a test pit dug? Y (N) If yes, depth to saturated soil (cm): \( \textit{N} \)
-	Estimated distance to nearest permanent body of water (m): 20 M  Type of water body: lake pond stream river
,	Are crayfish burrows present? Y N If yes, estimated density (#/m²):
j	Describe other potential hibernacula present:
	Are there trees in the area? Y (N) If yes, estimated percent canopy closure: 1 / 4 / 8  Dominant species (3):
,	Circle one: Area is likely to support or not likely to support protected snake species  Explain:  Present
9	Sketch of Survey Area (indicate mileposts):
<u></u>	tree line Pond 2 NT
	cleared Row Cleared Row
	tree line
	, -

77 - 77 T 7 M M M M M M M M M M M M M M M M	C.W.//ams Date of Survey: 8 November
Location of Survey (Lat/Lon or U	тм): <u>89°31 50.965/93°35 54.7</u> °
State: Missouri or Illinois	County: (arroll
Circle one: Feature occurs on	REX-West Keystone Both (co-located)
General description of site: Flow in ag.	Reld Photo Number(s): 0015
Is standing water present Y N Ground appears to be saturated:	frequently temporarily/seasonally rarely
Was a test pit dug? Y (N)	If yes, depth to saturated soil (cm):
Estimated distance to nearest per Type of water body: lake	manent body of water (m): 20 M  pond stream river
Are crayfish burrows present? Y	If yes, estimated density (#/m²):
Describe other potential hibernac	ula present:
	7
Are there trees in the area? Y ( Normant species (3):	If yes, estimated percent canopy closure:
Dominant species (3):  Circle one: Area is likely to support	or not likely to support protected snake species  OS PRESENT
Circle one: Area is likely to support Explain:  No Cray Sh bw  Sketch of Survey Area (indicate m	or not likely to support protected snake species  aus present  nileposts):
Dominant species (3): Circle one: Area is likely to support Explain:  No Cray RSh bw	or not likely to support protected snake species  aus present  nileposts):
Circle one: Area is likely to support Explain: No Cray RSh bw  Sketch of Survey Area (indicate m	or not likely to support protected snake species  aus present  nileposts):
Circle one: Area is likely to support Explain:  No Crayfish by  Sketch of Survey Area (indicate m  Tractor Access	or not likely to support protected snake species  aus present  mileposts):

Site Description Data Sheet  ENVIRONMENTAL  Surveyor(s): C. Linney, S.W. Manney  Date of Survey.  Surveyor(s): Date of Survey.
Location of Survey (Lat/Lon of UTM): $\frac{59°51}{03.498}$ /93° $\frac{33}{03}$ /5. $\frac{15.103}{03}$
State: Missouri or Illinois County: Carroll
Circle one: Feature occurs on REX-West Keystone Both (co-located)
General description of site:  Wooded eagl of pand  Photo Number(s): 0015
Is standing water present? Y (N) Ground appears to be saturated: frequently temporarily/seasonally rarely
Was a test pit dug? Y/N If yes, depth to saturated soil (cm)://\alpha
Estimated distance to nearest permanent body of water (m): 5 M  Type of water body: lake pond stream river
Are crayfish burrows present? Y/N If yes, estimated density (#/m²):
Describe other potential hibernacula present:
Are there trees in the area? (A) N If yes, estimated percent canopy closure: (60 % Dominant species (3): Umus americana, Quercus imbricaria
Circle one:  Area is likely to support or not likely to support protected snake species  Explain:
no craytish britains present
heavy caropy coves
Sketch of Survey Area (indicate mileposts):
Srass Reld IN
Corn Reld
tree line
- PMC

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Site Description Data Sheet  NATIY CROID MP: 618,27 - 618,47 (REX) or KEY)
Surveyor(s): C. Linney, S. Williams Date of Survey: 8 November 2000
Location of Survey (Lat/Lon of UTM)x 39° 30 56 977 / 93° 28 24.885
State: Missouri or Illinois County: (ascoll
Circle one: Feature occurs on REX-West Keystone Both (co-located)
General description of site:  Woodld wetland  Photo Number(s): 00/ W  002 fest pit  003 E
Is standing water present? Y / N Ground appears to be saturated: frequently temporarily/seasonally rarely
Was a test pit dug? Y N If yes, depth to saturated soil (cm): 30 cm
Estimated distance to nearest permanent body of water (m): //OM  Type of water body: lake/pond stream river
Are crayfish burrows present? $N$ If yes, estimated density $(\#/m^2)$ : $6/m^2$
Describe other potential hibernacula present:
Are there trees in the area? (V/N) If yes, estimated percent canopy closure:
Circle one:  Area is likely to support or not likely to support protected snake species
Explain: Crayfish burrows present
all burrows were located on the eastern section of wetland
Sketch of Survey Area (indicate mileposts):
Anybed Ax XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

# 11733 Chesterdale R Cincinnati, Ohio 45246 513.326.1500 / Fax 513.326.1550

## CONFIDENTIAL

Site Description Data Sheet  VERONNENTAL  WHEN A CREAT PROPERTY OF THE MEXAGE (REX OF KEY)
Surveyor(s): C-Kinney, S. Williams Date of Survey: 9 Novembes 20
Location of Survey (Lat/Lon) or UTM): \$90 30 29.599   93° 24 57.228
State: Missouri or Illinois County: Carrol/
Circle one: Feature occurs on REX-West Keystone Both (co-located)
General description of site:  Welland in agrheld along road  Photo Number(s): 00   E
Is standing water present? Y N Ground appears to be saturated: frequently temporarily/seasonally rarely
Was a test pit dug? Y N If yes, depth to saturated soil (cm): 1/0
Estimated distance to nearest permanent body of water (m): 100 m  Type of water body: lake/pond stream river
Are crayfish burrows present? Y $\sqrt{N}$ If yes, estimated density $(\#/m^2)$ : $\sqrt{M}$
Describe other potential hibernacula present:
Are there trees in the area (Y) N. If yes, estimated percent canopy closure: // %  Dominant species (3):
Circle one: Area is Explain:  One of the support or not likely to support protected snake species
no craytish burrous present in welland
Sketch of Survey Area (indicate mileposts):
* IN
unused field D
aller trees
Tree's

CR 174

X

## CONFIDENTIAL

Site Description Data Sheet  NP: 622.77-622.87 (REX or KEY)	- - -
Surveyor(s): C. Kinney, S. Williams Date of Survey: 9 November 200	Xe
Location of Survey (Lat/Lon or UTM): 39°30 20,896   93°23 31,233	
State: Missouri or Illinois County:	
Circle one: Feature occurs on REX-West Keystone Both (co-located)	
General description of site:  Wetland in Rela Swianded  by Nees  Is standing water present? Y (N)  Photo Number(s): 00 E  003 U  O03 U	
Ground appears to be saturated: frequently (temporarily/seasonally) rarely	n
Was a test pit dug? (Y) N If yes, depth to saturated soil (cm): ground very al	n
Estimated distance to nearest permanent body of water (m): 80 m  Type of water body: lake/pond stream river	
Are crayfish burrows present? $N$ N If yes, estimated density $(\#/m^2)$ :	
Describe other potential hibernacula present:	
Are there trees in the area? (Y) N If yes, estimated percent canopy, closure: 25 %  Dominant species (3): 1000 delfolds, Salix Nigra	,
Circle one: Area is Explain:  Area one:  One is tikely to support or not likely to support protected snake species	
crayfish burrows present no standing water	
Sketch of Survey Area (indicate mileposts):	
existing Platte line was the TN	
The pot All A	
DAY ALO	
hold x	
X X	

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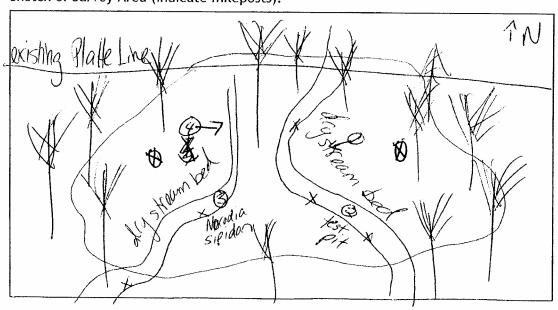
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Single Wetland ID: NATING	te Description [	Data Sheet MP・723 27・	- 623.37 WEV	àr NEV)
NATIONAL SECRETARIAN CONTRACTOR AND ADMINISTRATION OF THE PROPERTY OF THE PROP	1 1 1 1			<u>or</u> ker) <u>mber</u> 2004
Location of Survey (Lat/Lon or UT/		_		
State: Missouri or Illinois	County	r: Carrol		1
Circle one: Feature occurs on	REX-West	Keystone	Both (co-loca	ted)
General description of site: Withand in held	- Anna Anna Anna Anna Anna Anna Anna Ann	Pho	to Number(s):	2/60
Is standing water present? Y N Ground appears to be saturated:	frequently	temporarily/s	seasonally	rarely
Was a test pit dug? Y /N	· If yes, de	epth to saturated	soil (cm): 1/c	2
Estimated distance to nearest permater Type of water body:		ater (m): <u></u> ream	river	
Are crayfish burrows present? Y	If yes,	estimated density	y (#/m²)://a	<u>,</u>
Describe other potential hibernacula	present:	nla		minos.
Are there trees in the area? Y (N)  Dominant species (3):	If yes, estimate	ed percent canop	y closure: <i>O</i>	_% 
Circle one: Area is likely to support on Explain:	not likely to	support pr	otected snake spe	ecies
no waytish burran	US			
Sketch of Survey Area (indicate mile	posts):			
existing Plate Line			1/10	
\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	<b>V</b>			
tall gra	SS D	* * *	1888/	
Perce Prod		M		

Site Description Data Sheet  WHT 14 CR 014 MP: (025.87-625.97 (REX) or KEY)
Surveyor(s): C. Kinney, S. Williams Date of Survey: 9 Navembe
Location of Survey (Lat/Lon or UTM): 39°29 59.300 /93°20 03,75
State: Missouri or Illinois County: Castoll
Circle one: Feature occurs on REX-West Keystone Both (co-located)
General description of site:  William in agrifield along  Photo Number(s): 00/5
Is standing water present? Y / N Ground appears to be saturated: frequently temporarily/seasonally rarely
Was a test pit dug? Y If yes, depth to saturated soil (cm): Y//Q
Estimated distance to nearest permanent body of water (m):  Type of water body:  lake/pond  stream  river
Are crayfish burrows present? Y N If yes, estimated density $(\#/m^2)$ : $//$
Describe other potential hibernacula present: ///@
Are there trees in the area? Y N If yes, estimated percent canopy closure:%  Dominant species (3):
Circle one: Area is likely to support or not likely to support protected snake species Explain:  No craefish burows present in wetland
Sketch of Survey Area (indicate mileposts):
existing Platfe Line
held 1 X
Jall grass
11//'/\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\

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ENV	Surveyor(s): C. Kinney, S. W. Man Data Sheet  Location of Survey (Lat/Lon or UTM) 39 29 34 568 930 16 52 059
	State Missouri or Illinois County: (acrol)
	Circle one: Feature occurs on REX-West Keystone Both (co-located)
	General description of site:  Wooded weltand  Photo Number(s): 201W,  We ket pit, with N. sipiden,
	Is standing water present? Y N Ground appears to be saturated: frequently temporarily/seasonally n/a dug to 30 cm
	Was a test pit dug? (Y) N If yes, depth to saturated soil (cm): no water
	Estimated distance to nearest permanent body of water (m): 200 m  Type of water body: lake/pond stream river
	Are crayfish burrows present? Y) N If yes, estimated density $(\#/m^2)$ : $3/m^2$
	Describe other potential hibernacula present:
	Are there trees in the area? (V) N If yes, estimated percent canopy closure: 50 % Dominant species (3):
	Circle one: Area is likely to support or not likely to support protected snake species  Explain:  Crayfish burrows present no standing
	Sketch of Survey Area (indicate mileposts):



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Site Description Data Sheet  NAT 13 CT QQ1 MP: 629.47-629.57 (REX) or KEY)
Surveyor(s): Becky Braputigam, John Alexander Date of Survey: 11-8-06
Location of Survey (Lat/Lon or UTM): Wa - site could not be accessed by foot
State: Missouri or Illinois County: Chariton
Circle one: Feature occurs on REX-West Keystone Both (co-located)
General description of site:  emergent > scenbished > forested we tland along eiver
Is standing water present? Y /N Ground appears to be saturated: frequently temporarily/seasonally rarely
Was a test pit dug? Y $/(N)$ If yes, depth to saturated soil (cm): $N/a$
Estimated distance to nearest permanent body of water (m): 1  Type of water body: lake/pond stream tiver Grand River
Are crayfish burrows present? (Y) N If yes, estimated density (#/m²): 0.0
Describe other potential hibernacula present: $\sqrt{a}$ Are there trees in the area? $\sqrt{N}$ N   If yes, estimated percent canopy closure: $\sqrt{a}$
Dominant species (3): Acer saccharinum, Platams occidentalis, Queccus sp
Circle one: Area is likely to support or not likely to support protected snake species  Explain:
crayfish burrows were observed from opposite bank,
open canopy
Sketch of Survey Area (indicate mileposts):
vocabal Pri
cleated wastone
The state of the s
*Site could not be accessed due to
wooded accessed due to high water

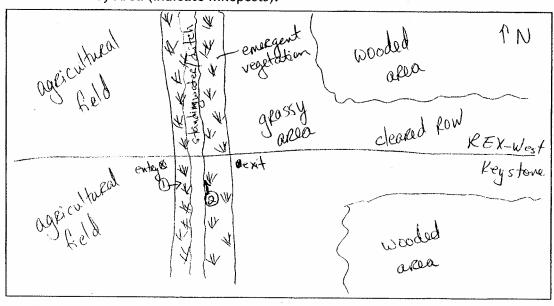
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Site Description Data Sheet  NAT $13CI\phi\phi3$ MP: $630.00$ REX or KEY)
Surveyor(s): Beaky Braentyam, John Alexander Date of Survey: 11-8-06
Location of Survey (Lat/Lon or UTM): N 4386968-301 E 993707-992
State: Missouri or Missouri County: Charitan
Circle one: Feature occurs on REX-West Keystone Both (co-located)
General description of site:  wetland   ditch in agricultural field  Photo Number(s): 001 E, 002 W, 003 N
Is standing water present? \( \bar{\Phi} / N \)  Ground appears to be saturated: \( \frac{\text{frequently}}{\text{temporarily/seasonally}} \)  rarely
Was a test pit dug? Y $/(N)$ If yes, depth to saturated soil (cm): $N/\alpha$
Estimated distance to nearest permanent body of water (m): 1  Type of water body: lake/pond stream river
Are crayfish burrows present? $(Y)$ N If yes, estimated density $(\#/m^2)$ : $0$ .
Describe other potential hibernacula present: $\underline{n}\underline{a}$
Are there trees in the area? Y $/$ N If yes, estimated percent canopy closure: $/$ N Dominant species (3): $/$ A
Circle one:  Area is likely to support or not likely to support protected snake species Explain:  Crayfish buelows planent, no canopy cover
Sketch of Survey Area (indicate mileposts):
agricultural agricultural field
Keustone Keustone
outcolled with appoint appoint appoint appointment

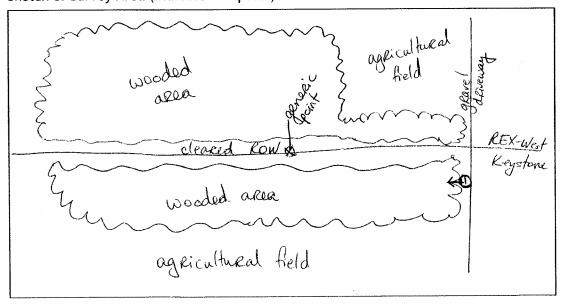
Site Description Data Sheet  Wetland ID: NAT13 CT 004 MP: 630.17-630.27 (REX or KEY)
Surveyor(s): Becky Braentig am, John Alexander Date of Survey: 11-8-06
Location of Survey (Lat/Lon or UTM): N 4386945.317 E 994073.752
State: Missouri or Illinois County: Chariton
Circle one: Feature occurs on REX-West Keystone Both (co-located)
General description of site:  wetland/ditch in agrecultural field  Photo Number(s): 001E,  COON
Is standing water present? N Ground appears to be saturated: temporarily/seasonally rarely
Was a test pit dug? Y/ $(N)$ If yes, depth to saturated soil (cm): $n/\alpha$
Estimated distance to nearest permanent body of water (m): 1  Type of water body: lake/pond stream river
Are crayfish burrows present? $(Y)$ N If yes, estimated density $(\#/m^2)$ :
Describe other potential hibernacula present: $N Q$
Are there trees in the area? Y $N$ If yes, estimated percent canopy closure: $N/2$ % Dominant species (3): $N/2$
Circle one: Area is Explain:  Or not likely to support protected snake species
chayfish burrows, no canopy cover

Sketch of Survey Area (indicate mileposts):

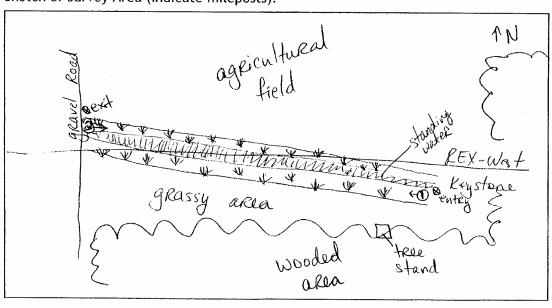


	s): Bloky Beaeutigam of Survey (Lat/Lon ocUTM			
	Missouri or Illinois		: Charite	
Circle one	: Feature occurs on	REX-West	Keystone	Both (co-located)
woodlad age: cult Is standing Ground ap Was a test Estimated Type of wa	escription of site:  It with cleared Row sure  wed fields  g water present? Y (N)  pears to be saturated:  pit dug? (Y) N  distance to nearest permater body: lake/p	frequently  If yes, de	temporarily/ pth to saturated ter (m): 50	soil (cm): Na at 12 in
Describe o	other potential hibernacula	a present: $N_0$		
Are there Dominant	trees in the area? (Y)/ N species (3): Queleus	If yes, estimate Rubra	ed percent cano	py closure: <u>SO</u> %
Circle one Area is Explain:	e: likely to support <u>o</u> no crayfish bur			protected snake species

Sketch of Survey Area (indicate mileposts):



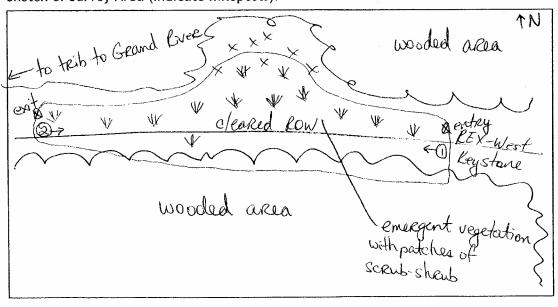
_	Site Description Data Sheet  PAT13 CI ØO WP: 630.97-631.27 (REX) or KEY)					
IV.	Surveyor(s): Becky Bearutigam, John Alexander Date of Survey: 11-8-06					
Location of Survey (Lat/Lon of UTM) N 4386883.760 E995523.190						
	State: Missouri or Illinois County: Chariton					
	Circle one: Feature occurs on REX-West Keystone Both (co-located)					
	General description of site:  wet land latch in agricultural field  Photo Number(s): OOIW.  OORE					
	Is standing water present? Y/N Ground appears to be saturated:  Was a test pit dug?  Y/N  If yes, depth to saturated soil (cm): N/C					
	Estimated distance to nearest permanent body of water (m): 1  Type of water body: lake/pond stream river					
	Are crayfish burrows present? (Y) N If yes, estimated density (#/m²): 0.8					
	Describe other potential hibernacula present: $\underline{W} \underline{a}$					
	Are there trees in the area? Y $/(N)$ If yes, estimated percent canopy closure: $n/a$ % Dominant species (3): $n/a$					
	Circle one: Area is Explain:  Or not likely to support protected snake species  Orange of the bureous, no canopy cover					



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Site Description Data Sheet  NAT 13CI Ø Ø 7 MP: 631-37 (REX or KEY)						
Surveyor(s): Becky Beautigan, John Alexander Date of Survey: 11-8-06						
Location of Survey (Lat/Lon or UTM): N 4386923.685 E 995929.420						
State: Missouri or Illinois County: Charton						
Circle one: Feature occurs on REX-West Keystone Both (co-located)						
General description of site:  emocgent/scenb-sheub/toested wetland  Photo Number(s): 40-BAB  001 W,002 E						
Is standing water present? Y (N)  Ground appears to be saturated: frequently temporarily/seasonally rarely						
Was a test pit dug? Y $\sqrt{N}$ If yes, depth to saturated soil (cm): $\sqrt{N}$						
Estimated distance to nearest permanent body of water (m): 50  Type of water body: lake/pond stream river						
Are crayfish burrows present? $(Y)$ N If yes, estimated density $(\#/m^2)$ : $0$ .						
Describe other potential hibernacula present: \( \hat{\eta} / a \)						
Are there trees in the area (Y)/ N If yes, estimated percent canopy closure: 50 % Dominant species (3): Wmus americana, Quercus Rubra, Wmus enbra						
Circle one: Area is Explain:  Crayfish bureous present  Crayfish bureous present						



·
Site Description Data Sheet NAT 13 CI ゆゆ 8 MP: 635-37-635-47 (REX) or KEY
Surveyor(s): Becky Beaeutigam, John Alexander Date of Survey: 11-9-06
Location of Survey (Lat/Lon or UTM) N 4386304.103 E 1002411.1/2
State: Missouri or Illinois County: Chariton
Circle one: Feature occurs on REX-West Keystone Both (co-located)
General description of site:  Wetland win patchy woodlot succounded by pasture  Is standing water present? (Y) / N  Ground appears to be saturated: trequently temporarily/seasonally rarely
Turcty
Was a test pit dug? Y $/(N)$ If yes, depth to saturated soil (cm): $n/a$
Estimated distance to nearest permanent body of water (m):
Are crayfish burrows present? $(Y)$ N If yes, estimated density $(\#/m^2)$ : $0 \circ 3$
Describe other potential hibernacula present: $N\alpha$
Are there trees in the area? (Y) N If yes, estimated percent canopy closure: 30 % Dominant species (3): Who amakicana, Quercus Rubea, Gleditsia triacanthos
Circle one: Area is likely to support or not likely to support protected snake species Explain:
crayfish burrows present, fairly open canopy
Sketch of Survey Area (indicate mileposts):
grassylemisgen og kind tural 1N  patchy agricultural  REX-West  Reystone  A A Gricultural

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Site Description Data Sheet  Site Description Data Sheet  WAT 13 CI 0 0 9 MP: 637.87-637.97 (REX or KEY)
Surveyor(s): Becky Beaeutigam, John Alexander Date of Survey: 11-9-06
Location of Survey (Lat/Lon or (UTM)) N 4386050-101 E 1006394-513
State: Missouri or Illinois County: Chariton
Circle one: Feature occurs on REX-West Keystone Both (co-located)
General description of site:  Photo Number(s): 0015  facem pend in pasture
Is standing water present? Y / N Ground appears to be saturated: temporarily/seasonally rarely
Was a test pit dug? Y/N If yes, depth to saturated soil (cm): <u>h/a</u>
Estimated distance to nearest permanent body of water (m):
Are crayfish burrows present? Y $\sqrt{N}$ If yes, estimated density $(\#/m^2)$ : $\sqrt{a}$
Describe other potential hibernacula present: $N/\alpha$
Are there trees in the area? (Y)/ N If yes, estimated percent canopy closure: 10 %  Dominant species (3): 6/editsia telacanthos
Circle one: Area is likely to support or not likely to support protected snake species  Explain:
no crayfish burrows, heavily trafficked by cattle
Sketch of Survey Area (indicate mileposts):
parture 1 N  Parture 1 N  Parture 1 N  Parture 1 N
Keystone Keystone
some emergent vegetation

Site Description Data Sheet  WEXAMENTALE WETLAND ID: NAT 13 CI 10 10 MP: 138-97-639-07 (REX) OF 1	KEY
Surveyor(s): Becky Banewtigam, John Alexandie Date of Survey: 11-9-0	
Location of Survey (Lat/Lon or UTM): N 4385984-068 61008267-480	2
State: Missouri or Illinois County: Charton	
Circle one: Feature occurs on REX-West Keystone Both (co-located)	)
General description of site:  Photo Number(s): 0015  factor particle	\$
Is standing water present? Y N Ground appears to be saturated: frequently temporarily/seasonally rare	ly
Was a test pit dug? Y $/$ N If yes, depth to saturated soil (cm): $n/\alpha$	_
Estimated distance to nearest permanent body of water (m): 1  Type of water body: take/pond stream river	
Are crayfish burrows present? Y (N) If yes, estimated density (#/m²):n\bar{k}	
Describe other potential hibernacula present:	
Are there trees in the area? Y $/$ N If yes, estimated percent canopy closure: $N/\alpha$ % Dominant species (3): $N/\alpha$	
Circle one:  Area is likely to support or not likely to support protected snake species Explain:	;
no cauxfish bullows, heavily teafficked by cattle	
Sketch of Survey Area (indicate mileposts):	
parture Properties GPS point	
Do Bran	
REX-West Keystone	
pasture	

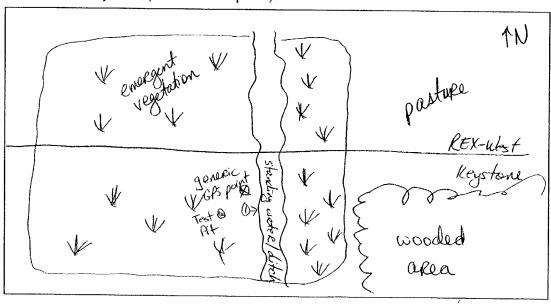
Site Description Data Sheet  WAT 13 CI Ø 11 MP: 641.77-641.87 (REX or KEY)
Surveyor(s): Becky Beacutican, John Alexander Date of Survey: 11-9-06
Location of Survey (Lat/Lon or OTM): N4385605-052 E/0/2692-963
State: Missouri or Illinois County: Chaeton
Circle one: Feature occurs on REX-West Keystone Both (co-located)
General description of site:  emergent/focestal wetland in agricultural field  Photo Number(s): 001 E,  002 test pit
Is standing water present? Y (N) Ground appears to be saturated: frequently temporarily/seasonally rarely not saturated at
Was a test pit dug? (Y)/ N  If yes, depth to saturated soil (cm): NA 12 in depth
Estimated distance to nearest permanent body of water (m): 700  Type of water body: take/pond stream river
Are crayfish burrows present? Y $/$ N If yes, estimated density $(\#/m^2)$ : $/$ N
Describe other potential hibernacula present: NQ
Are there trees in the area? (Y) N If yes, estimated percent canopy closure: 40 %  Dominant species (3): Queecus Rubra, WMUS americana
Circle one: Area is likely to support or not likely to support protected snake species  Explain:
no crayfish burrows present
Sketch of Survey Area (indicate mileposts):
Shall some enaction of potential parent of posture pos

Hickory Crack

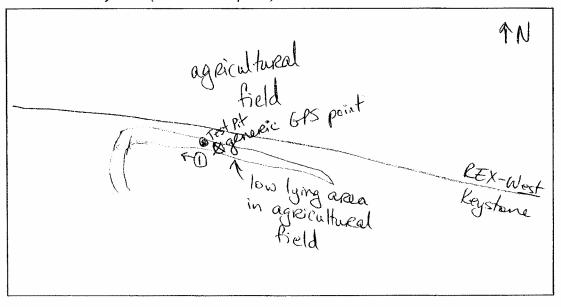
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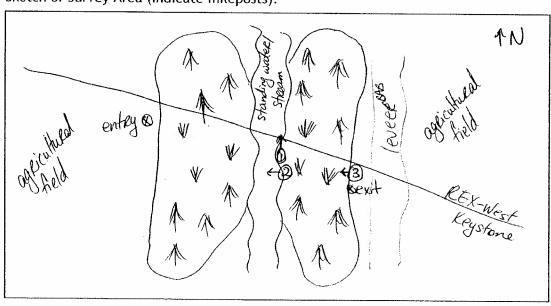
Site Description Data Sheet  VIRONMENTAL  WHENTAL  WEY  WEY  REX  OF KEY)
Surveyor(s): Bedley Beach gam, John Alexander Date of Survey: 11-9-06
Location of Survey (Lat/Lon or UTM): N4385414.836 E1014223.517
State: Missouri or Illinois County: Chariton
Circle one: Feature occurs on REX-West Keystone Both (co-located)
General description of site:  ewargent wetland along ditch in agricultural  ODD Test Pit  ODD Test Pit
Is standing water present? Y/N Ground appears to be saturated: frequently temporarily/seasonally rarely
Was a test pit dug? (Y) N If yes, depth to saturated soil (cm): not saturated when the saturated soil (cm): not saturated
Estimated distance to nearest permanent body of water (m): 1  Type of water body: lake/pond stream river
Are crayfish burrows present? Y $(N)$ If yes, estimated density $(\#/m^2)$ : $N/Q$
Describe other potential hibernacula present: $\sqrt{\alpha}$
Are there trees in the area? Y $/$ N If yes, estimated percent canopy closure: $/$ $/$ $/$ N Dominant species (3): $/$ $/$ $/$ $/$ $/$ $/$ $/$ $/$ $/$ $/$
Circle one: Area is likely to support or not likely to support protected snake species  Explain:
no crayfish burkows



Site Description Data Sheet VIRONMENTAL  Surveyor(s): Bloky Braudigam, John Alexander Date of Survey: 11-9-06
Location of Survey (Lat/Lon or UTM): N 43 84436.053 E 1019 017.182
State: Missouri or Illinois County: Chariton
Circle one: Feature occurs on REX-West Keystone Both (co-located)
General description of site:  Now area in agricultural field  Photo Number(s): OO11N  002 Test P:t
Ground appears to be saturated: frequently temporarily/seasonally rarely not saturated.
Was a test pit dug? (Y) N If yes, depth to saturated soil (cm): n/a at 12 in depth
Estimated distance to nearest permanent body of water (m): $300$ Type of water body: lake/pond stream river
Are crayfish burrows present? Y $(N)$ If yes, estimated density $(\#/m^2)$ : $(\#/m^2)$ :
Describe other potential hibernacula present: $N \alpha$
Are there trees in the area? Y $/$ N If yes, estimated percent canopy closure: $N/a$ %  Dominant species (3): $N$
Circle one: Area is likely to support or not likely to support protected snake species Explain:  No CRayfish burkows, actively farmed



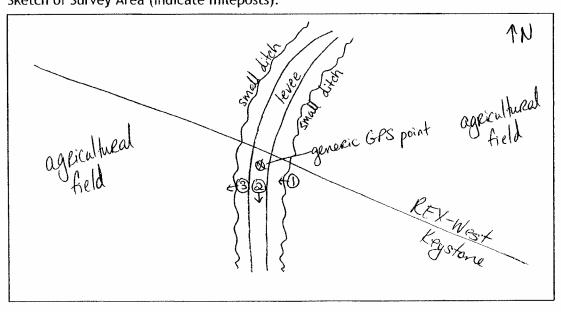
Site Description Data Sheet  WEX. 97-646.07 (REX.) or KEY)						
Surveyor(s): Becky Bearufigam, John Alexander Date of Survey: 11-9-06						
Location of Survey (Lat/Lon of UTM)? N4384371.989 E1019378.77						
State: Missouri or Illinois County: Charitan						
Circle one: Feature occurs on REX-West Keystone Both (co-located)						
General description of site:  Emergent/forested wetland surrounding stream  Photo Number(s): 001N,  002W,003W						
Is standing water present? Y N Ground appears to be saturated: frequently temporarily/seasonally rarely						
Was a test pit dug? Y $(N)$ If yes, depth to saturated soil (cm): $n/a$						
Estimated distance to nearest permanent body of water (m): 1  Type of water body: lake/pond stream river						
Are crayfish burrows present? $(Y)$ N If yes, estimated density $(\#/m^2)$ : 0.7						
Describe other potential hibernacula present: $h/A$						
Are there trees in the area? (V)/ N If yes, estimated percent canopy closure: 40 % Dominant species (3): Ulmus americana, Quercus Rubra, Acer Saccharanum						
Circle one: Area is Explain:  or not likely to support protected snake species						
clayfish bulkows, open canopy						



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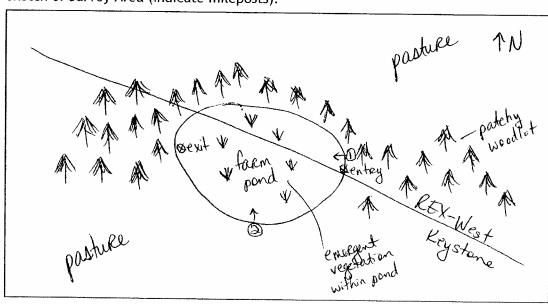
Site Description Data Sheet  Site Description Data Sheet  (REX) or KEY)				
Surveyor(s): Becky Beaeuhyam, John Alexander Date of Survey: 11-9-06				
Location of Survey (Lat/Lon of UTM): N4384173.679 E1019897.317				
State: Missouri or Illinois County: Chariton				
Circle one: Feature occurs on REX-West Keystone Both (co-located)				
General description of site:  ditches along lever in agricultural field  Photo Number(s): 00/W, 00.25,003W				
Is standing water present? Y (N) Ground appears to be saturated: frequently temporarily/seasonally rarely				
Was a test pit dug? Y $/(N)$ If yes, depth to saturated soil (cm): $N/a$				
Estimated distance to nearest permanent body of water (m): 700  Type of water body: lake/pond stream river				
Are crayfish burrows present? Y $(N)$ If yes, estimated density $(\#/m^2)$ : $N/a$				
Describe other potential hibernacula present: $n/a$				
Are there trees in the area? Y / $\sqrt{N}$ If yes, estimated percent canopy closure: $\frac{h/a}{a}$ % Dominant species (3): $\frac{n}{a}$				
Circle one: Area is likely to support or not likely to support protected snake species  Explain:				
no crayfish burrows, just field drainage ditches				



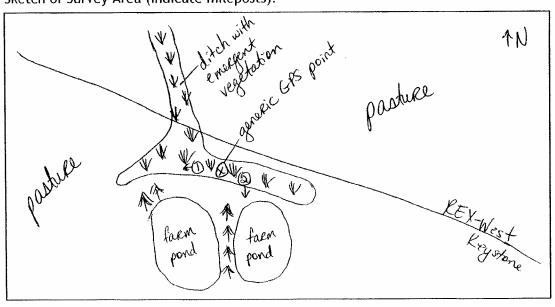
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Site of the State	e Description D	rata Sheet MP: <u>646,87</u> -	646-97	(REX or KEY)
Surveyor(s): Becky Braentigam,	John Alexan	dee_ Date of	Survey:/	1-9-06
Location of Survey (Lat/Lon or UTM	D:N438397	12.403 E	1020705	.996
State: Missouri or Illinois	County	: Chariton	_	
Circle one: Feature occurs on	REX-West	Keystone	Both (co	o-located)
General description of site: Faem pend in woodlot sueround	ded	Pho 	oto Number(s oこん	): 001W,
by pasture Is standing water present?(Y) N Ground appears to be saturated:	frequently	temporarily/	seasonally	rarely
Was a test pit dug? Y /(N)	If yes, de	pth to saturated	soil (cm):	n/a_
Estimated distance to nearest perma Type of water body:   lake/po	nent body of wa	nter (m): 1	river	
Are crayfish burrows present? $(Y)$ N	If yes, e	estimated densit	y (#/m²):	0.4
Describe other potential hibernacula	present: <u>n/a</u>			
Are there trees in the area? (V) N Dominant species (3): <u>Gleditsia</u>	If yes, estimate eiacanthos , Q	d percent canop uercus eukra,	y closure: Juniperus	20_% vilginiana
Circle one: Area is Explain:  Of an Ash I	not likely to	<b>support</b> pi	rotected snal	ke species
chayfish burkows				



Site Description Data Sheet  NAT13 C F Ø 17 MP: 648.37 - 648.47 REX or KEY)				
Surveyor(s): Becky Braentigam, John Alexander Date of Survey: 11-9-06				
Location of Survey (Lat/Lon of UTM): N4383129.477 E1022976.519				
State: Missouri or Illinois County: Chaerton				
Circle one: Feature occurs on REX-West Keystone Both (co-located)				
General description of site:  emergent vegetation along edge of farm ponds  in pasture  Photo Number(s): 001W,  002S				
Is standing water present? Y (N) Ground appears to be saturated: frequently temporarily/seasonally rarely				
Was a test pit dug? Y $/(N)$ If yes, depth to saturated soil (cm): $n/a$				
Estimated distance to nearest permanent body of water (m): 5  Type of water body: 1ake/pond stream river				
Are crayfish burrows present? Y $(N)$ If yes, estimated density $(\#/m^2)$ : $N/\alpha$				
Describe other potential hibernacula present: $n/a$				
Are there trees in the area? Y $/$ N If yes, estimated percent canopy closure: $n/a$ % Dominant species (3): $\sqrt{a}$				
Circle one:  Area is likely to support or not likely to support protected snake species Explain:				
no crayfish burrows				



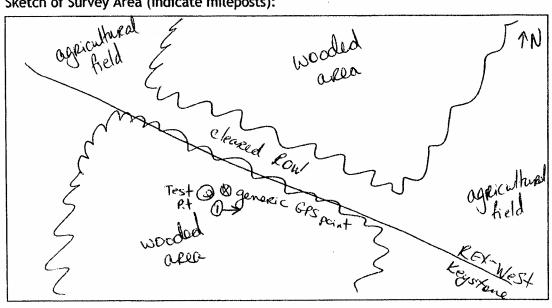
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Site Description Data Sheet  WAT 13 CI Ø21 MP: 650.97-651.	07 <b>(DEV</b> ) - <b>VEV</b>
Surever (s): Becky Beaeutigam, John Alexander Date of Sur	- 4 A
Location of Survey (Lat/Lon of UTM): N 4381663.534 E	1026912.646
State: Missouri or Illinois County: Chaciton	
Circle one: Feature occurs on REX-West Keystone	Both (co-located)
by agricultural fields  Is standing water present? Y/N	Number(s): 001s, Test Pit
	not saturated to (cm): Na at 12 in depth
Estimated distance to pearest permanent body of water (m): 200	iver Chariton River
Are crayfish burrows present? Y N If yes, estimated density (#	/m²): <i>N</i>
Describe other potential hibernacula present: <u>M/a</u>	
Are there trees in the area? (Y) N If yes, estimated percent canopy clopominant species (3): Acee sacchaenum	osure: <u>40</u> %
Circle one: Area is likely to support or not likely to support protection:	cted snake species
no chayfish bureows present	
Sketch of Survey Area (indicate mileposts):	
control of emergent to the marginal of emergent to the marginal of the margina	nir Ral

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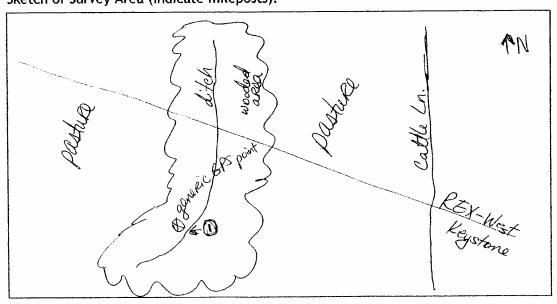
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Site vetland ID: NAT 13 CI	Pescription D グ <u>ネス</u>	Pata Sheet MP: <u>651.17-</u>	651-37 (REX or KEY)
Street (s): Becky Blaentigam			
Location of Survey (Lat/Lon or UTM)	D N4381	496.429	E1027351.885
State: Missouri or Illinois	County	: Chariton	
Circle one: Feature occurs on	REX-West	Keystone	Both (co-located)
General description of site: woodlot in agricultural field			oto Number(s): OOLE, DOOL test pt
Is standing water present? Y (G) Ground appears to be saturated:	frequently	***************************************	/seasonally rarely not saturated
Was a test pit dug? 🕥 N	If yes, de	epth to saturate	d soil (cm): Na at 12 in depth
Estimated distance to nearest permanance Type of water body: lake/po	nent body of wond st	ater (m): <u> </u>	OD Chapiton River
Are crayfish burrows present? Y /N	) If yes,	estimated densi	ity (#/m²): <u>N(a</u>
Describe other potential hibernacula	present: <u></u> <u></u>	a	Annual Control of the
Are there trees in the area? (Y)/ N Dominant species (3): Acec sauche	If yes, estimat weinum, Uli	ed percent cand иил Ецька	ppy closure: <u>50</u> %
Circle one: Area is likely to support or Explain:  No crayfish bucco		o support	protected snake species



Site Description Data Sheet
sur ever(s): Becky Braentigam, John Alexander Date of Survey: 11-10-06
Location of Survey (Lat/Lon or UTM): N 4381320-864 E 1027754.576
State: Missouri or Illinois County: Charitan
Circle one: Feature occurs on REX-West Keystone Both (co-located)
General description of site:  Ditch with tree line to west & agricultural field to east  Photo Number(s): 100 i N
Is standing water present? Y /N  Ground appears to be saturated: frequently temporarily/seasonally rarely
Was a test pit dug? Y/N If yes, depth to saturated soil (cm): Was
Estimated distance to nearest permanent body of water (m): 1,100  Type of water body: lake/pond stream river chaefon River
Are crayfish burrows present? Y $/(N)$ If yes, estimated density $(\#/m^2)$ : $n/q$
Describe other potential hibernacula present: $N \alpha$
Are there trees in the area? (Y) N If yes, estimated percent canopy closure: 40 % Dominant species (3): Acer Sacchaeinum, Quercus cubes
Circle one:  Area is likely to support or not likely to support protected snake species Explain:
no crayfish burrows present
Sketch of Survey Area (indicate mileposts):
agricultural agricultural agricultural agricultural significant field significant fi

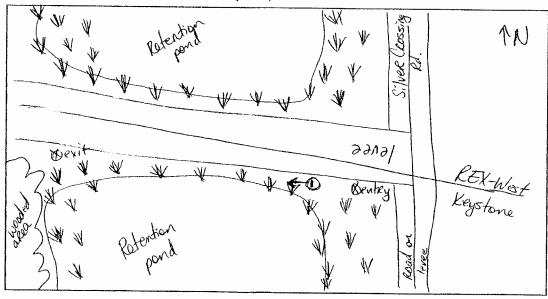
Site Description Data Sheet  vetland ID: NAT13 CT Q25 MP: 659.47-659.57 (REX)or KEY)
Somewor (s): Becky Braenhyam, John Alexander Date of Survey: 11-10-06
Location of Survey (Lat/Lon or UTM): N 4379223-479 E1040249-465
State: Missouri or Illinois County: Chariton
Circle one: Feature occurs on REX-West Keystone Both (co-located)
General description of site:  wooded ditch with pasture sucrounding  Photo Number(s): 004W
Is standing water present? Y (N) Ground appears to be saturated: frequently temporarily/seasonally rarely
Was a test pit dug? Y $/(N)$ If yes, depth to saturated soil (cm): $N/a$
Estimated distance to nearest permanent body of water (m): 500  Type of water body: dake/pond stream river
Are crayfish burrows present? Y /N If yes, estimated density (#/m²):
Describe other potential hibernacula present: $N \alpha$
Are there trees in the area? (Y) N If yes, estimated percent canopy closure: 60 %  Dominant species (3): Acer sacchae inum, Queceus eubea
Circle one: Area is likely to support or not likely to support protected snake species  Explain:  no crayfish burrows, relatively closed canopy



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Site Description Data Sheet  WIRDHNIATTAL VETTON OF THE PROPERTY OF THE STREET OF THE
Sure (s): Becky Beaeutigam, John Alexander Date of Survey: 11-10-04
Location of Survey (Lat/Lon or OTM): N4379150.873 E 1041453.834
State: Missouri or Illinois County: Charitan
Circle one: Feature occurs on REX-West Keystone Both (co-located)
General description of site:  we thank (emergent) along setention fond  Photo Number(s): OPIW
Is standing water present? Y N Ground appears to be saturated: frequently temporarily/seasonally rarely
Was a test pit dug? Y/N If yes, depth to saturated soil (cm): Na
Estimated distance to nearest permanent body of water (m): 1  Type of water body: lake/pond stream river
Are crayfish burrows present? $(Y)$ N If yes, estimated density $(\#/m^2)$ :
Describe other potential hibernacula present: $N/\alpha$
Are there trees in the area? Y N If yes, estimated percent canopy closure:
Circle one:  Area is  Explain:  Area of the lates are a support or not likely to support protected snake species
abundant crayfish burrows
Chatch of Common Anna Calling to the



Keystone Pipeline Project Site Description Data Sheet  NATBH13M0SC $\phi\phi$ 1 MP: 985.30 -986.00
Surveyor(s): Becky Braentigan, John Alexander Date of Survey: 11-13-06
Location of Survey (Lat/Lon or UTM)? N 4337 975. 346 E 1218263-244
State: Missouri or Illinois County: St. Charles
General description of site:  Forested wetland wan-made wetland ponds  Photo Number(s): OOIW,  002N,003E
Is standing water present? Y / N Ground appears to be saturated: frequently temporarily/seasonally rarely
Was a test pit dug? Y / $(N)$ If yes, depth to saturated soil (cm): $n/\alpha$
Estimated distance to nearest permanent body of water (m):  Type of water body:take/pond/ stream river
Are crayfish burrows present? $(Y)'$ N If yes, estimated density $(\#/m^2)$ : $(\#/m^2)$ :
Describe other potential hibernacula present: $N/\alpha$
Are there trees in the area? (V)/ N If yes, estimated percent canopy closure: 40 % Dominant species (3): Queecus Eubra, W mus eubra, Acer Sacchaeinum
Circle one: Area is Explain:  Clayfish bullows, Open Canopy along pond divisions
Sketch of Survey Area (indicate mileposts):
Wooded area [ ] [ ] AN}
To Agricultural cleared ROW Agricultural Keystone
wooded wooded system of standing water ponds  Plesumably for hunting ducks
, g

### Cincinnati. Ohio 45246 513.326.1500 / Fax 513.326.1550 +++ ++++++ 11733 Chesterdale R.

Keystone Pipeline Project Site Description Data Sheet Wetland ID: <u>NATBH13 MOSC Ø Ø 4</u> MP: <u>988.30-988.70</u>
Surveyor(s): Becky Bragutigam, John Alexander Date of Survey: 11-13-06
Location of Survey (Lat/Lon or UTM): N 43373595.253 E1222868.32
State: Missouri or Illinois County: St Chaeles
General description of site:  wan-made pond system in agrecultural field  Photo Number(s): 00/W  ——————————————————————————————————
Is standing water present? $(Y)/N$ Ground appears to be saturated: frequently temporarily/seasonally rarely
Was a test pit dug? Y/N If yes, depth to saturated soil (cm): n/a
Estimated distance to nearest permanent body of water (m):
Are crayfish burrows present? Y $(N)$ If yes, estimated density $(\#/m^2)$ : $N$
Describe other potential hibernacula present: $n/\alpha$
Are there trees in the area? Y $\sqrt{N}$ If yes, estimated percent canopy closure: $\sqrt{A}$ % Dominant species (3): $\sqrt{A}$
Circle one:  Area is likely to support or not likely to support protected snake species  Explain:  No crayfish burkows present
Sketch of Survey Area (indicate mileposts):
Railroad  H Railroad  H Race Vine N  A  A  A  A  A  A  A  A  A  A  A  A  A
1 tever (ine 1) Al print 1 lever (ine 1) Al pr
XXX standing water  XXX standing water  Auck ("duck pond")  Club House  Club House

Keystone Pipeline Project Site Description Data Sheet Wetland ID: <u>NATBは13 Moscのゆら</u> MP: <u>989.00 - 989.30</u>
Surveyor(s): Bocky Braentigon, John Alexander Date of Survey: 11-13-06
Location of Survey (Lat/Lon or UTM): N 4337040-535 E 1223736-23:
State: Missouri or Illinois County: St. Charles
General description of site:  PEH acound duck pond teansitioning into PFO  Photo Number(s): 001W  ODDE
Is standing-water present? (Y) / N Ground appears to be saturated: frequently temporarily/seasonally rarely
Was a test pit dug? Y (N) If yes, depth to saturated soil (cm): N (a
Estimated distance to nearest permanent body of water (m):
Are crayfish burrows present? $(Y)$ N If yes, estimated density $(\#/m^2)$ : 0.3
Describe other potential hibernacula present: $M\alpha$
Are there trees in the area? Y/N If yes, estimated percent canopy closure:%  Dominant species (3): Queecus macrocarpa, Queecus rubea, Acer saccharnum
Circle one: Area is Explain:  One is likely to support protected snake species
crayfish burrows present, open canopy
Sketch of Survey Area (indicate mileposts):
wooded area AN
cleared ROW
wooded area
duck pand    Leystone
agriculturat field

+ + +

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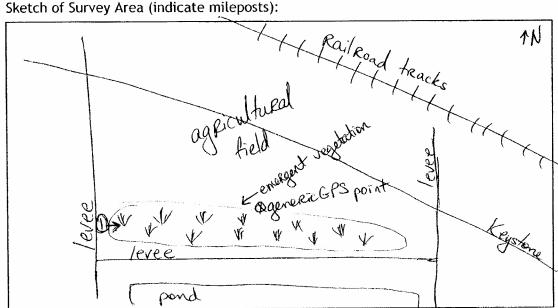
Keystone Pipeline Project Site Description Data Sheet  WELLIAM BH13 HD5 C Ø Ø 6 MP: 986.40 - 989.50
Surveyor(s): Becky Braentigam John Alexander Date of Survey: 11-13-06
Location of Survey (Lat/Lon or UTM): N 4336883.307 F/2242/3.405
State: Missouri er Illinois County: St. Chaeles
General description of site:  Aitch & open water along either side of levee  Photo Number(s): OO/E
Is standing water present? (Y) N Ground appears to be saturated: frequently temporarily/seasonally rarely
Was a test pit dug? Y $/$ N If yes, depth to saturated soil (cm): $\frac{n}{a}$
Estimated distance to nearest permanent body of water (m):
Are crayfish burrows present? Y $\sqrt{N}$ If yes, estimated density $(\#/m^2)$ : $\sqrt{M/A}$
Describe other potential hibernacula present: $\eta/\alpha$
Are there trees in the area? Y $/N$ If yes, estimated percent canopy closure $N/A$ % Dominant species (3): $N/A$
Circle one: Area is Explain:  NO CRayfish burrows present, heavily trafficked by deer
Sketch of Survey Area (indicate mileposts):
Railkoad kacks  Railkoad kacks  Racks  Point agricultural  A field

Keystone

levee.

emergent egotation

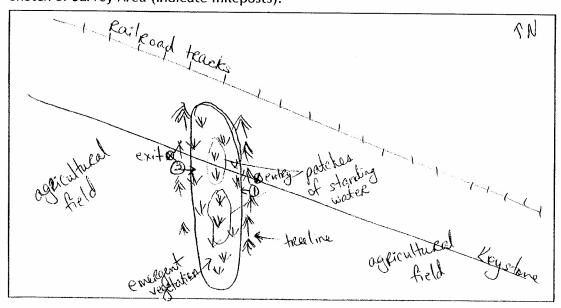
Surveyo	r(s): Beck	y Braewigam	John Ale	xandee	_ Date of Survey:\	-13-06
Location	of Survey	(Lat/Lon <u>or</u>	ITM): N4	<u>336765</u>	021 E1224	475.50
State:	Missouri	<u>or</u> Illinois	C	County: <u>S</u>	t. Charles	
	description				Photo Number(	s):_ <i>001E</i> _
emerg	jent vege	tation withi	n corn fie	11		
Ground a	appears to	•	freque		mporarily/seasonally o saturated soil (cm):_	<u>rarely</u>
Estimate		to nearest pe		y of water (r		
Are cray	fish burrov	vs present? Y	/(N)	If yes, estima	ated density (#/m²):	n/a_
Describe	other pot	ential hiberna	cula present:	Ma		
Are ther Dominar	e trees in nt species (	the area? Y / $(3)$ : $\sqrt[a]{A}$	N If yes, e	stimated per	cent canopy closure:	<u>v/a</u> %
Circle or Area is Explain:	likel	y to support	or not li	kely to supp	protected sn	ake species
	NO CR	eayfish bue	erows pro	esent		
		rea (indicate r	milanosts):			

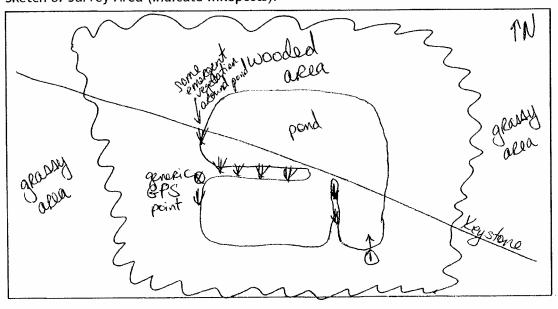


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Keystone Pipeline Project Site Description Data Sheet  Wetland ID: ΝΑΤ ΒΑΙ3μος φφη ΜΡ: _ 989.70
Surveyor(s): Bracky Braentigam, John Alexander Date of Survey: 11-13-06
Location of Survey (Lat/Lon or UTM): N4336728.339 E 1224577.655
State: Missouri or Illinois County: St. Charles
General description of site:  we Hand surrounded by agricultural fields  Photo Number(s): DOIW,  002E
Is standing water present? Y / N Ground appears to be saturated: frequently temporarily/seasonally rarely
Was a test pit dug? $\hat{Y}$ $\hat{N}$ If yes, depth to saturated soil (cm): $\hat{N}$
Estimated distance to nearest permanent body of water (m): 25  Type of water body: take/pond stream river
Are crayfish burrows present? $\bigcirc$ / N If yes, estimated density (#/m²): $\bigcirc$ . $\bigcirc$
Describe other potential hibernacula present: Na
Are there trees in the area? (V)/ N If yes, estimated percent canopy closure: 10 %  Dominant species (3): Gledisia teiacanthes
Circle one: Area is Explain:  Crayfish burerous present, open canopy

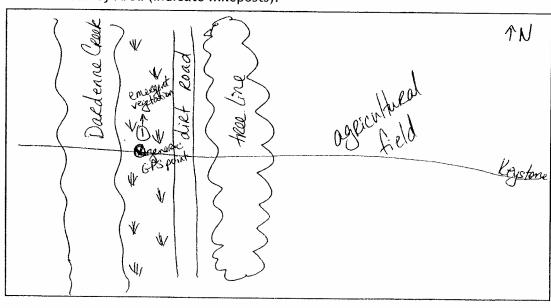




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Keystone Pipeline Project Site	Description Data Sheet  MP: <u>995.70-995.80</u>
Surveyor (s): Becky Bearupyam, John Alexano	<u>lee</u> Date of Survey: 11-14-06
Location of Survey (Lat/Lon or UTM): 143343	50.183 E1233832.579
State: Missouri or Illinois County	St. Charles
General description of site:	Photo Number(s): 001N photo i
emergent vegetation along creek	incorrectly labela on white board as on
Is standing water present?  \( \bar{V} \) N Ground appears to be saturated:  \( \bar{trequently} \)	temporarily/seasonally rarely
Was a test pit dug? Y / N If yes, de	oth to saturated soil (cm):
Estimated distance to nearest permanent body of wa Type of water body: lake/pond str	ter (m): 1 ream river
Are crayfish burrows present? Y / N If yes, e	estimated density (#/m <sup>2</sup> ): $\frac{\hbar/a}{}$
Describe other potential hibernacula present: $n/\alpha$	
Are there trees in the area? (Y) N If yes, estimate Dominant species (3): Queecus Kubea Ulmus	d percent canopy closure: <u>10</u> %
Circle one: Area is likely to support or not likely to Explain:	
no crayfish burrows, lots	of trash \$ debris

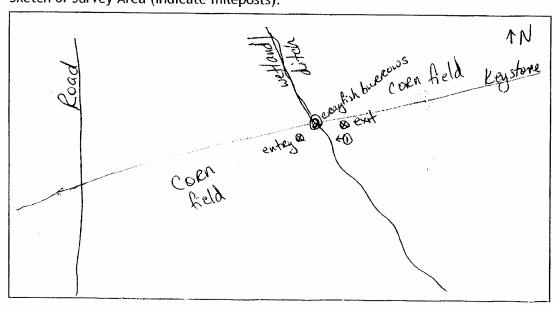


Keystone Pipeline Project Site Description Data Sheet  NATBH13 MOSCØ11 MP: 1002.3-1002.6	
Surveyor(s): Becky Beacutigam, John Alexander Date of Survey: 1-14-06	_
Location of Survey (Lat/Lon or UTM): <u>M 4338384.706</u> E 1243849.91	6
State: MissourD or Illinois County: St Chaelus	
General description of site:  Wetland also of cornfield  Photo Number(s): 001W	
Is standing water present? (V)/ N Ground appears to be saturated: frequently temporarily/seasonally rarely	y
Was a test pit dug? Y $\sqrt{\hat{N}}$ If yes, depth to saturated soil (cm): $\sqrt{\alpha}$	
Estimated distance to nearest permanent body of water (m):  Type of water body: lake/pond stream river	
Are crayfish burrows present? Y $/(N)$ If yes, estimated density $(\#/m^2)$ : $/(M)$	
Describe other potential hibernacula present: $Na$	
Are there trees in the area? Y $N$ If yes, estimated percent canopy closure: $Na$ $Na$ $Na$ $Na$ $Na$ $Na$ $Na$ $Na$	
Circle one: Area is likely to support or not likely to support protected snake species Explain:  NO Clayofsh bulknows present, we Hand appears to be actively farmed for corn	
Sketch of Survey Area (indicate mileposts):	
area of consists of standing water in coen field	

# 11733 Chesterdale R Cincinnati, Ohio 45246 513.326.1500 / Fax 513.326.1550

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Keystone Pipeline Project Site Description Data Sheet  NYLEDMENTAL WELLAND ID: NATBH 13 MOSC Ø19 MP: 1003.30 - 1003.40	
Surveyor(s): Backy Braentigam, John Alexander Date of Survey: 11-14-06	
Location of Survey (Lat/Lon or UTM) N 4338929.732 E1245192.982	
State: Missouri or Illinois County: St. Charles	
General description of site:  Wetland/ditch in agricultural field  Photo Number(s): 001W, 002 creays sh buerous	
Is standing water present? Y / N Ground appears to be saturated: frequently temporarily/seasonally rarely	
Was a test pit dug? Y (N) If yes, depth to saturated soil (cm):	
Estimated distance to nearest permanent body of water (m): $n/\alpha$ Type of water body: lake/pond stream river	
Are crayfish burrows present? $(Y)$ N If yes, estimated density $(\#/m^2)$ : $(\#/m^2)$	
Describe other potential hibernacula present: $\Lambda$	
Are there trees in the area? Y (N) If yes, estimated percent canopy closure: <u>\(\lambda\)</u> \(\lambda\) Dominant species (3): \(\lambda\)	
Circle one: Area is Explain:  Or not likely to support protected snake species	
crayfish burrows present	
Sketch of Survey Area (indicate mileposts):	



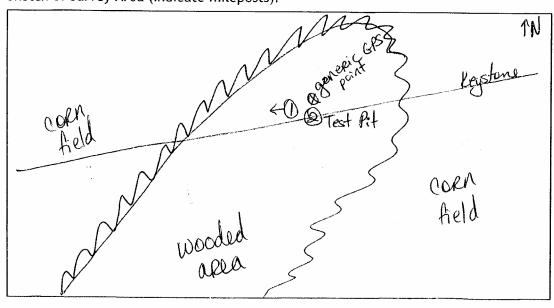
11733 Chesterdale R

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pasture

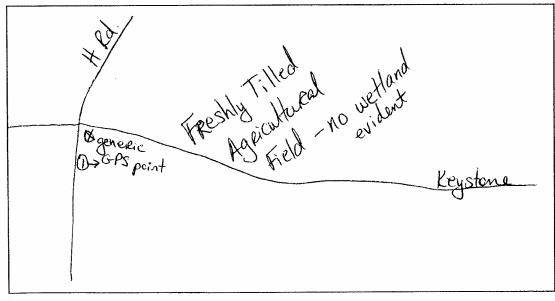
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Keystone Pipeline Project Site Description Data Sheet WETEN WETEN MP: 1004.40-1004.50	
Surveyor(s): Becky Braentigan, John Alexander Date of Survey: 11-14-06	
Location of Survey (Lat/Lon or UTM) N 4335980.614 E 1246967.547	
State: Missouri or Illinois County: St Charles	
General description of site: Forested wetland surrounded  Photo Number(s): 001 W  OOS Test Pit	
by agricultural field	
Is standing water present? Y (N)  Ground appears to be saturated: frequently temporarily/seasonally rarely	
Was a test pit dug? (Y) N If yes, depth to saturated soil (cm): not saturated with at 12 in depth	
Estimated distance to nearest permanent body of water (m): \( \mathbb{N} \) \( \alpha \)  Type of water body: lake/pond stream river	
Are crayfish burrows present? Y $(N)$ If yes, estimated density $(\#/m^2)$ : $N$	
Describe other potential hibernacula present: $N\alpha$	
Are there trees in the area? (Y)/ N If yes, estimated percent canopy closure: 75 %  Dominant species (3): Acec sacchaenum, Sahx nigea, Quercus Rubea	
Circle one: Area is likely to support or not likely to support protected snake species  Explain:	
no clayfish buelows present, dense canopy cover	
Sketch of Survey Area (indicate mileposts):	



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HE.	Keystone Pipeline Project Site Description Data Sheet  Wetland ID: NATBH13 MOSCH15 MP: 1006.40 -1006.50
Survey	yor(s): Becky Braentgam, John Alexander Date of Survey: 11-14-06
Locati	ion of Survey (Lat/Lon <u>or(UTM);) N 43040592.826                                   </u>
State:	: Missouri or Illinois County: St. Charles
Genera fleas	ral description of site:  Ahly filled agricultural field  Photo Number(s): 00/E
	nding water present? Y /N nd appears to be saturated: frequently temporarily/seasonally rare
Was a	a test pit dug? Y /N If yes, depth to saturated soil (cm): <u>N/a</u>
	nated distance to nearest permanent body of water (m): $250$ of water body: $\frac{120}{120}$ of water body:
Are cra	rayfish burrows present? Y $/(N)$ If yes, estimated density $(\#/m^2)$ : $//(A)$
Descri	ibe other potential hibernacula present: $N/\alpha$
Are the	here trees in the area? Y $/$ If yes, estimated percent canopy closure: $N/a$ % nant species (3): $N/a$
Circle Area is Explai	e one: is likely to support or not likely to support protected snake species
Sketch	ch of Survey Area (indicate mileposts):
	\./



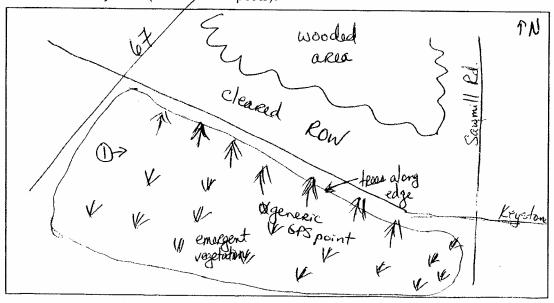
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Keystone Pipeline Project Site Description Data Sheet  NATSH13H0SCØ16 MP: 1006.80	
Surveyor(s): Becky Braentyam, John Alexander Date of Survey: 11-14-06	<u> </u>
Location of Survey (Lat/Lon or UTM) N 4340726.533 E 1250274-37	<u> </u>
State: Missouri or Illinois County: St. Chaeles	
General description of site:  freehly tilled agricultured field  Photo Number(s): 00/E	
Is standing water present? Y (N)  Ground appears to be saturated: frequently temporarily/seasonally rarely	
Was a test pit dug? Y (N)  If yes, depth to saturated soil (cm): N/a	_
Estimated distance to nearest permanent body of water (m): 300 m  Type of water body: take/pond stream river	
Are crayfish burrows present? Y $/(N)$ If yes, estimated density $(\#/m^2)$ : $n/\alpha$	
Describe other potential hibernacula present: $N a$	
Are there trees in the area? Y $\sqrt{N}$ If yes, estimated percent canopy closure: $N a$ % Dominant species (3): $N a$	
Circle one: Area is Explain:  On the first support or for the support	
site is freshly tilled agricultural field with no wetland evident, no crayfish burrows present	
no wetland evident, no crayfish burrows present	
Sketch of Survey Area (indicate mileposts):	
\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	
Freshly Tilled Field	
-no wetland	
- no we make GPS paint	
Hectz Rd	

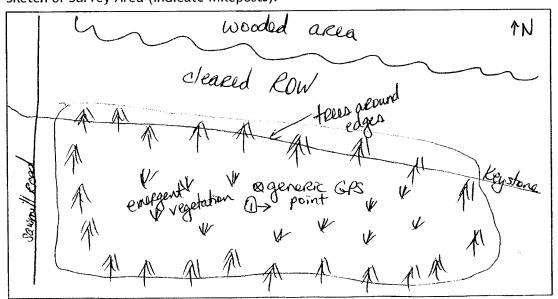
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Keystone Pipeline Project Site Description Data Sheet Wetland ID: <u>NATBH13 HOSC Q17</u> MP: <u>1013.50 -1013.70</u>
Surveyor(s): Becky Braeutigam, John Alexander Date of Survey: 11-14-06
Location of Survey (Lat/Lon or UTM): N 4339987-738 E 1260817-237
State: Missouri or Illinois County: St. Chaeles
General description of site:  d:tch through tilled agricultural field  Photo Number(s): 001 N, 0025
Is standing water present? Y / (N) Ground appears to be saturated: frequently temporarily/seasonally rarely
Was a test pit dug? Y / N If yes, depth to saturated soil (cm): //a
Estimated distance to nearest permanent body of water (m): N/A  Type of water body: lake/pond stream river
Are crayfish burrows present? Y $(N)$ If yes, estimated density $(\#/m^2)$ : $N/a$
Describe other potential hibernacula present: $\frac{\hbar}{a}$
Are there trees in the area? Y / $N$ If yes, estimated percent canopy closure: $N/a$ % Dominant species (3): $N/a$
Circle one: Area is likely to support or not likely to support protected snake species Explain:  No crayfish burrows present, site is a Small ditch in a freshly filled agricultural field
Sketch of Survey Area (indicate mileposts):
Freezhly Tilled Field Agricultural Field
Culverted under Road
Freshly Tilled Agricultural Field

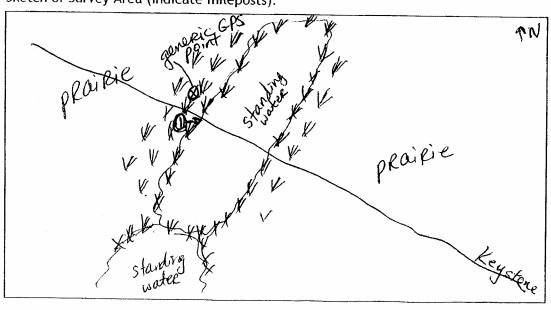
Keystone Pipeline Project Site Description Data Sheet  NATBH13H0SC Ø 18 MP: 10 S.00 -10 S.10
Surveyor(s): Becky Braenfigam, John Alexander Date of Survey: 11-15-06
Location of Survey (Lat/Lon or UTM): N 4339002-206 E1263010.423
State: Missouri or Illinois County: St Charles
General description of site:  Photo Number(s): DOTE - incremently labeled on white board as COTW
Is standing water present? Y / (N)  Ground appears to be saturated: frequently <u>temporarily/seasonally</u> rarely
Was a test pit dug? Y $/(N)$ If yes, depth to saturated soil (cm): $n/a$
Estimated distance to nearest permanent body of water (m): 1,600  Type of water body: lake/pond stream river
Are crayfish burrows present? Y $(N)$ If yes, estimated density $(\#/m^2)$ : $N$
Describe other potential hibernacula present: $h/a$
Are there trees in the area? (1) N If yes, estimated percent canopy closure: 45 %  Dominant species (3): Salix Nigra
Circle one: Area is likely to support or not likely to support protected snake species Explain:  No Clayfish burrows



ocation of Survey (Lat/Lon or OTM): N438920.61	11 1 10/22/11 490
tate: Missour or Illinois County: St	Charles
eneral description of site:	Photo Number(s): OOI E
emergent/scrub-shrub wetland	
s standing water present? Y (N)	. The state of the
round appears to be saturated: frequently temp	porarily/seasonally rarely
Vas a test pit dug? Y /(N) If yes, depth to s	saturated soil (cm):n/a
stimated distance to nearest permanent body of water (m) Type of water body: lake/pond stream	: <u> , 1,000</u>
are crayfish burrows present? Y $(N)$ If yes, estimate	ed density (#/m²)://a
Pescribe other potential hibernacula present:	
nre there trees in the area? (Y) N If yes, estimated perce Cominant species (3): <u>Salix rigea</u>	ent canopy closure: <u>15</u> %
circle one: Area is likely to support or not likely to support Explain:  no chayfish buelows present	protected snake species



Keystone Pipeline Project Site Description Data Sheet Wetland ID: <u>NATBH13MOSCの2の</u> MP: <u>1015・70 -/015</u> 、80	
Surveyor(s): Becky Bearutigam, John Alexander Date of Survey: 11-15-06	
Location of Survey (Lat/Lon or UTM): N 433 8084:675 E1264084.061	
State: Missouri or Illinois County: St. Charles	
General description of site:  We Hand suppounded by prairie  Photo Number(s): DOIE	
Is standing water present? () / N Ground appears to be saturated: frequently temporarily/seasonally rarely  Was a test pit dug? Y N  If yes, depth to saturated soil (cm): Y R	
Estimated distance to nearest permanent body of water (m): 1200  Type of water body: lake/pond stream river	
Are crayfish burrows present? Y / (N) If yes, estimated density (#/m²): / (R)	
Describe other potential hibernacula present: $N$	
Are there trees in the area? Y / N If yes, estimated percent canopy closure: Ma % Dominant species (3): _NA	
Circle one: Area is likely to support or not likely to support protected snake species  Explain:  NO CRAYFISH BURROWS PRESENT	
O	



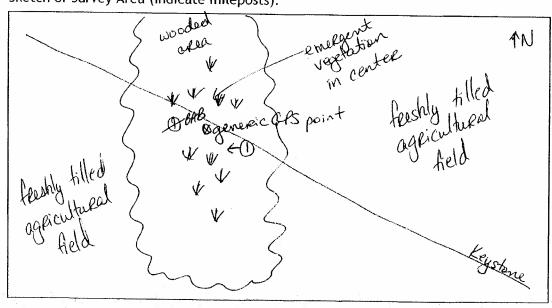
•	513.326.1500 / Fax 513.326.1550
	Cincinnati, Ohio 45246
(	11733 Chesterdale R

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Keystone Pipeline Project Site Description Data Sheet  NURSCOLUMN MP: 1016-00
Surveyor(s): Booky Beautigam, John Alexander Date of Survey: 11-15-06
Location of Survey (Lat/Lon or UTM): N 4338450.150 E1264525.41
State: Missouri or Illinois County: St. Charles
General description of site:  emergent wetland in prairie  Photo Number(s): OOIE
Is standing water present? Y $/$ N Ground appears to be saturated: frequently temporarily/seasonally rarely
Was a test pit dug? Y /(N) If yes, depth to saturated soil (cm)://a
Estimated distance to nearest permanent body of water (m): 1,000  Type of water body: lake/pond stream
Are crayfish burrows present? Y $\sqrt{N}$ If yes, estimated density $(\#/m^2)$ : $\sqrt{A}$
Describe other potential hibernacula present: $N/\alpha$
Are there trees in the area? Y / N If yes, estimated percent canopy closure: $\frac{n/a}{a}$ % Dominant species (3): $\frac{n/a}{a}$
Circle one: Area is likely to support or not likely to support protected snake species  Explain:
no clayfish bullows present
Sketch of Survey Area (indicate mileposts):
1N
rie of agreeic GPS point  Proilie
proieire pro-
Il temergent toys

Keystone Pipeline Project Site Description Data Sheet  VERONMENTAL Wetland ID: NATBH13 MOSC # 22 MP: 1016-70  Superver(s): Rody, Resolution The Manual Company To 11 15 04
Surveyor(s): Bedry Braentigam, John Alexander Date of Survey: 11-15-06  Location of Survey (Lat/Lon or UTM)? N 4338094.018 F 1265558.152
State: Missouri or Illinois County: St. Chaeles
General description of site:  Photo Number(s): 001W  PFO surrounded by agricultural field
Is standing water present? (v)/ N Ground appears to be saturated: frequently temporarily/seasonally rarely
Was a test pit dug? Y/N If yes, depth to saturated soil (cm): Max a
Estimated distance to nearest permanent body of water (m): 900  Type of water body: lake/pond stream river
Are crayfish burrows present? Y (N) If yes, estimated density (#/m²): <u>N/a</u>
Describe other potential hibernacula present: NO
Are there trees in the area? (Y) N If yes, estimated percent canopy closure: 65 % Dominant species (3): Platanus occidentalis
Circle one:  Area is likely to support or not likely to support protected snake species  Explain:
no chayfish burrows present, inundated soil
Sketch of Survey Area (indicate milenosts):



	ntere Vetland ID: NATBILLS NOSCOSS MP: 1018.00  Inveyor(s): Bedry Beautigam, John Alexander Date of Survey: 11-15-06  Decation of Survey (Lat/Lon or OTM): N4337300.611 E1267482.375
	ocation of Survey (Lat/Lon or OTM): N4337300.6/1
	ate: Missouri or Illinois County: St. Charles
	eneral description of site:  Feasily tilled agricultural field  Photo Number(s): 0015
	standing water present? Y /N round appears to be saturated: frequently temporarily/seasonally rarely
- Wa	as a test pit dug? Y (N) If yes, depth to saturated soil (cm): <u>n/a</u>
Es Ty	rimated distance to nearest permanent body of water (m): 800 rpe of water body: lake/pond stream river
Ar	Te crayfish burrows present? Y $(N)$ If yes, estimated density $(\#/m^2)$ : $N/\alpha$
De	escribe other potential hibernacula present: <u>n/a</u>
	re there trees in the area? Y / N If yes, estimated percent canopy closure: <u>h</u> a _ % ominant species (3):
Ar	rea is likely to support or not likely to support protected snake species splain:  no chayfish burlows present, site is a freshly tilled agricultural field
Sł	-A-b of Currey Area (indicate milenests):
	reachly filled fred small diet each My field s
	agricultural field

Keystone Pipeline Project Site Description Data Sheet  NOTE: NATERIAL SERVICE DESCRIPTION DATA SHEET  NOTE: 1018-40  NOTE: 1018-40
Surveyor(s): Bedry Braentigam, John Alexander Date of Survey: 11-15-06
Location of Survey (Lat/Lon or UTM) N 4337/66.861 E 1267848.278
State: Missouri or Illinois County: St. Charles
General description of site:  Feashly tilled agricultural field  Photo Number(s): 0015W  ———————————————————————————————————
Is standing water present? Y (N) Ground appears to be saturated: frequently temporarily/seasonally rarely
Was a test pit dug? Y (N) If yes, depth to saturated soil (cm):
Estimated distance to nearest permanent body of water (m): 800  Type of water body: lake/pond stream river
Are crayfish burrows present? Y $/(N)$ If yes, estimated density $(\#/m^2)$ : $/(N)$
Describe other potential hibernacula present: $\eta \alpha$
Are there trees in the area? Y $/N$ If yes, estimated percent canopy closure: $Na$ % Dominant species (3): $Na$
Circle one:  Area is likely to support or not likely to support protected snake species  Explain:
no crayfish burrows present, site is a freshly tilled agricultural field
Sketch of Survey Area (indicate mileposts):
Fearly tilled agricultural agricultural
Regeneric GPS point  GRavel Road
Frenchly tilled a speculation of the stance

Keystone Pipeline Project Site Description Data Sheet
Keystone Pipeline Project Site Description Data Sheet  NATRH13 MOSC 少気 MP: 10 26, 90-10 21-10
Surveyor(s): Bedry Braentgam, John Alexander Date of Survey: 11-15-06
Location of Survey (Lat/Lon or UTM): N 4334939-989 E 127/556. 082
State: Missouri or Illinois County: St Chaeles
General description of site:  PEM wetland rear liver confluence  Photo Number(s): 001W,  002E-incorrectly labeled on  white beard as 001E
Is standing water present? Y (N)  Ground appears to be saturated: frequently temporarily/seasonally rarely
Was a test pit dug? Y $\sqrt{N}$ If yes, depth to saturated soil (cm): $\frac{n}{a}$
Estimated distance to nearest permanent body of water (m): 100  Type of water body: lake/pond stream river
Are crayfish burrows present? $(N)$ N If yes, estimated density $(\#/m^2)$ :
Describe other potential hibernacula present: Small mammal huceows (field mouse)
Are there trees in the area? Y $N$ If yes, estimated percent canopy closure: $N = N$ Dominant species (3): $N = N$
Circle one:  Area is likely to support or not likely to support protected snake species  Explain:
crayfish burrows abundant

