TES INDUSTRIAL DEVELOPMENT WILDLIFE AND WILDLIFE HABITAT ASSESSMENT

Prepared for:

Total Energy Services Inc.

Prepared by:

Stantec Consulting Ltd.

1102-18726
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Executive Summary

A wildlife and wildlife habitat assessment was conducted on behalf of Total Energy Services Inc. for the proposed TES Industrial Development. The Subject Property is located west of the Town of Blackfalds, Alberta within the Highway 2 West Area Structure Plan (ASP).

A nocturnal acoustic amphibian survey, breeding bird survey, and wildlife habitat assessment were conducted on the Subject Property to identify actual and potential wildlife habitat use. One amphibian species and 32 bird species were observed. Three of these species are identified as species of management concern, including least flycatcher, sora, and common nighthawk.

Most of the property is in agricultural land use; and this habitat was identified as having Low Suitability for wildlife. Potentially High Suitability habitat was identified in the fen and adjacent forested area in the north portion of the Subject Property. The remaining semi-permanent and permanent wetlands on the property were identified as having Moderate Suitability for wildlife.

Mitigation measures for minimizing the impacts of proposed developments are addressed. These include avoiding disturbance to areas of potentially High Suitability for wildlife and adhering to timing restrictions for breeding birds.

Table of Contents

EXECUTIVE SUMMARY E.1
TABLE OF CONTENTS i
LIST OF TABLES i
LIST OF FIGURES ii

1.0 BACKGROUND 1.1
1.1 SITE DESCRIPTION 1.1

2.0 METHODS 2.1
2.1 DESKTOP REVIEW 2.1
2.2 FIELD ASSESSMENT 2.1
2.2.1 Nocturnal Acoustic Amphibian Surveys 2.1
2.2.2 Breeding Bird Surveys 2.2
2.2.3 Wildlife Habitat Assessment 2.2

3.0 RESULTS 3.1
3.1 DESKTOP REVIEW 3.1
3.2 FIELD ASSESSMENT 3.1
3.2.1 Nocturnal Acoustic Amphibian Surveys 3.1
3.2.2 Breeding Bird Surveys 3.2
3.2.3 Wildlife Habitat Assessment 3.3

4.0 ENVIRONMENTAL OVERVIEW AND POTENTIAL MITIGATIONS 4.1

5.0 CONCLUSION 5.1

6.0 REFERENCES 6.1
6.1 LITERATURE CITED 6.1
6.2 INTERNET SOURCES 6.1

APPENDICES

APPENDIX A SPECIES OF MANAGEMENT CONCERN
APPENDIX B FIGURES

LIST OF TABLES **Page**

Table 1 Wildlife observed during amphibian surveys on the Subject Property 3.2
Table 2 Wildlife observations during the breeding bird survey 3.3
Table 3 Prairie/Parkland sensitive species recommended restricted activity dates and setback distances 4.1

Table of Contents

LIST OF FIGURES **Appended**

Figure 1 Site Location And Boundary
Figure 2 Wildlife Habitat Suitability

1.0 BACKGROUND

Total Energy Services Inc. (TES) is proposing the development of the TES Industrial Development west of the Town of Blackfalds, Alberta, within the Highway 2 West Area Structure Plan (ASP) (Lacombe County 2011).This wildlife assessment was conducted on the proposed site of the TES Industrial Development (the Subject Property) to provide an inventory of existing wildlife use and identify potential wildlife habitat, with a focus on species of management concern.

1.1 SITE DESCRIPTION

The Highway 2 West Area Structure Plan designates the Subject Property and surrounding area for future commercial and light industrial development in the region. The property is currently, and has historically been under cultivation for the production of cereal crops (Stantec 2012) and consists of approximately 160 ha located on the following quartersection (Attachment B, Figure 1):

- SW¼ Sec 28-39-27-W4M

The Subject Property is located within the Central Parkland Natural Subregion, the most extensive subregion of the Parkland Natural Region. Typical landscapes within the subregion include undulating till plains and hummocky uplands. Temperature, precipitation and growing season characteristics within the subregion are intermediate between the dry, warm grasslands to the south and the cooler, moister boreal forests to the west and north.

Approximately five percent of the Central Parkland Natural Subregion remains in native vegetation, with the remainder having been under intensive cultivation for over a century. Plains rough fescue is the dominant vegetation, with stands of aspen present, but restricted to more moist areas. In the northern and western portions of the subregion, aspen forest is dominant and grasslands are restricted to drier areas. Black Chernozems usually occur under grasslands, and Dark Gray Chernozems and Luvisols usually occur under aspen forests. Common native grasses and forbs in the subregion include plains rough fescue (*Festuca hallii*) blue grama grass (*Bouteloua gracilis*), western porcupine grass (*Stipa curtiseta*), and June grass (*Koeleria macrantha*). Native shrub species common to the subregion include beaked hazelnut (*Corylus cornuta*), bunchberry (*Cornus Canadensis*), and snowberry (*Symphoricapros albus*). Trees most common to the subregion include trembling aspen (*Populus tremuloides*), balsam poplar (*Populus balsamifera*), and white spruce (*Picea galuca*) (Natural Regions Committee 2006).

Wetlands cover approximately ten percent of the subregion and are more common than in the Northern Fescue Natural Subregion due to the somewhat cooler and moister climate (Natural Regions Committee 2006).

2.0 METHODS

2.1 DESKTOP REVIEW

Historical wildlife literature and data were used to review the population status, distribution and habitat associations of species that may occur either seasonally or year-round in the Subject Property. Alberta's Fish and Wildlife Management Information System (FWMIS) database was queried to determine the historical occurrence of wildlife species of management in and around the Subject Property. Information from the Federation of Alberta Naturalists (2007) breeding bird atlas was used to compile a list of potential breeding birds in the Subject Property.

The regional wildlife biologist, Reg Russell was contacted and no specific wildlife concerns for the subject property were identified (personal communication, June 2012).

2.2 FIELD ASSESSMENT

2.2.1 Nocturnal Acoustic Amphibian Surveys

A nocturnal amphibian survey was conducted on 7 June 2012 in the Subject Property during the peak amphibian breeding period (April to June). The survey was designed to provide information on amphibian presence, relative abundance and distribution, as well as species-specific habitat use.

Survey effort targeted potential breeding habitat for amphibians on the property, mainly wetlands as amphibians in Alberta are associated with water during their reproductive cycle. Surveys followed standard amphibian survey techniques from the North American Amphibian Monitoring Program (USGS 2009) and involved a two minute silent period upon arrival at the sample point followed by a five minute listening period. Surveys were conducted after sunset until 0100 during conditions favorable to amphibian activity (no heavy rain, wind or unseasonable temperatures).

Data recorded at each survey point included time, location, standard weather data (temperature, wind, cloud cover, and precipitation), as well as noise, moon visibility and presence of aurora borealis. A simple index to population size was used to record the number of amphibian calls heard and is presented below:

- 0 = no frogs or toads of a given species can be heard calling
- 1 = individual calls, not overlapping
- 2 = calls are overlapping, but individuals are still distinguishable
- 3 = numerous frogs or toads can be heard; chorus is constant and overlapping

2.2.2 Breeding Bird Surveys

A breeding bird survey was conducted on 8 June 2012. This survey is designed to census songbirds, with a focus on species of management concern.

A modified fixed-radius point count sampling procedure, as described in Bibby et al. (1993) was used. Circular census plots were established within a single vegetation type, each 50 m in radius. Birds were identified by sight or sound within this radius. Points were chosen in vegetation types that were at least 150 m in diameter. Survey stations were placed at least 300 m apart to avoid double counting of individuals. Point counts were only conducted during optimal conditions favorable to bird activity and observation (low wind, no precipitation, morning hours).

At each survey point, all birds detected during a five min survey period were documented. For each observation of a bird, the distance, sex (if possible), and behavior were recorded.

2.2.3 Wildlife Habitat Assessment

A field wildlife habitat assessment was conducted on 8 June 2012. This survey is designed to identify potential wildlife habitat suitability for a variety of wildlife species and inventory incidental wildlife observations and sign. A professional biologist surveyed all available wildlife habitat types on the Subject Property and assessed the potential habitat based on a number of criteria, including diversity of tree and shrub cover, structural stage, extent of disturbance, and rarity of the habitat in the immediate region. Each habitat was also assessed for its potential suitability for breeding birds, waterfowl and specific wildlife species of management concern. Incidental wildlife observations and wildlife sign were also recorded.

Habitats were ranked as having overall Nil, Low, Moderate or High Suitability for wildlife species based on the data collected.

3.0 RESULTS

3.1 DESKTOP REVIEW

A search of the FWMIS database was conducted within 5 km of the Subject Property (Government of Alberta 2012a). Two species of management concern are recorded in this database: Canadian toad (*Anaxyrus hemiophrys*) and purple martin (*Progne subis*). Canadian toad is listed provincially as *May Be at Risk* and federally as *Not at Risk*. Purple martin is listed provincially as *Sensitive* and has not been assessed federally.

Wildlife species of management concern that have ranges overlapping the Subject Property are listed in Attachment A.

3.2 FIELD ASSESSMENT

3.2.1 Nocturnal Acoustic Amphibian Surveys

Six nocturnal amphibian surveys were conducted in the Subject Property adjacent to all identified wetlands. Only one species of amphibians was detected, boreal chorus frog (*Pseudacris maculata*). Boreal chorus frog was detected at all survey locations.

All wildlife observed during this survey, including incidental observations, are listed in Table 1. Only two species of management concern were observed, sora and common nighthawk. The common nighthawk (*Chordeiles minor*) is listed as *Sensitive* in Alberta and is listed as *Threatened* federally by COSEWIC. This species is also listed as *Threatened* under Schedule 1 of the federal Species at Risk Act (SARA). Sora (*Porzana corlina*) is listed as *Sensitive* in Alberta, and is not listed federally.

Table 1
Wildlife observed during amphibian surveys on the Subject Property

Common Name	Scientific Name
Boreal chorus frog	*Pseudacris maculata*
Sora	*Porzana corlina*
Red-winged blackbird	*Agelaius phoeniceus*
Yellow-headed blackbird	*Xanthocephalus xanthocephalus*
Le Conte's sparrow	*Ammodramus leconteii*
Black-billed magpie	*Pica hudsonia*
Canada goose	*Branta canadensis*
Mallard	*Anas platyrhynchos*
Red-tailed hawk	*Buteo jamaicensis*
Song sparrow	*Melospiza melodia*
American robin	*Turdus americanus*
Wilson's snipe	*Gallinago delicata*
Common nighthawk	*Chordeiles minor*
Deer sp.	*Odocoileus spp.*

3.2.2 Breeding Bird Surveys

Seven point counts were conducted in the Subject Property. Five of the locations were within or adjacent to wetlands, where most of the wildlife habitat is concentrated. Two points were conducted in the crop field.

A total of 102 individuals were observed of 28 species (Table 2). The most common species observed were red-winged blackbird and mallard. Only two species observed are listed provincially or federally as a species of concern. Both least flycatcher (*Empidonax minimus*) and sora are provincially listed as *Sensitive* and neither is listed federally.

Table 2
Wildlife observations during the breeding bird survey

Common Name	Scientific Name	Total Observations
Red-winged blackbird	*Agelaius phoeniceus*	17
Mallard	*Anas platyrhynchos*	15
Clay-colored sparrow	*Spizella pallida*	6
Le Conte's sparrow	*Ammodramus leconteii*	6
Sora	*Porzana corlina*	6
Black-billed magpie	*Pica hudsonia*	5
Canada goose	*Branta canadensis*	5
Yellow-headed blackbird	*Xanthocephalus xanthocephalus*	5
Blue-winged teal	*Anas discors*	4
European starling	*Sturnus vulgaris*	3
House wren	*Troglodytes aedon*	3
Least flycatcher	*Empidonax minimus*	3
Song sparrow	*Melospiza melodia*	3
Yellow warbler	*Dendroica petechia*	3
American robin	*Turdus americanus*	2
Brown-headed cowbird	*Molothrus ater*	2
Redhead	*Aythya americana*	2
Tree swallow	*Tachycineta bicolor*	2
Alder flycatcher	*Empidonax alnorum*	1
American coot	*Fulica americana*	1
American crow	*Corvus brachyrhynchos*	1
Black-capped chickadee	*Poecile atricapilla*	1
Cedar waxwing	*Bombycilla cedrorum*	1
Killdeer	*Charadrius vociferus*	1
Lincoln's sparrow	*Melospiza lincolnii*	1
Northern shoveler	*Anas clypeata*	1
Nelson’s sharp-tailed sparrow	*Ammodramus nelsoni*	1
White-breasted nuthatch	*Sitta carolinensis*	1

3.2.3 Wildlife Habitat Assessment

Most of the Subject Property is in agricultural land use, which typically provides minimal wildlife habitat. Native vegetation exists on the Subject Property in and around the identified wetlands (Stantec 2012); including temporary, seasonal, semi-permanent and permanent ponds, as well as a fen.

Based on the wildlife habitat assessment and wildlife use identified from the amphibian and breeding bird surveys above all habitats were mapped and ranked for relative wildlife suitability (Attachment B, Figure 2). Areas of High wildlife suitability were confined to the Class VII Fen and surrounding native vegetation on the north boundary of the Subject Property. The diversity of wildlife observed here as well as the presence of wildlife trails, indicating wildlife use of the area, contributed to this ranking. The fen extends far beyond the Subject Property and may connect to native vegetation around Lacombe Lake, providing a wildlife movement corridor through the region. Additionally, the fen and surrounding forest may provide habitat for tree-nesting raptors, amphibians, and shorebirds. The high density of shrub understory also provides potential forage for ungulates, including moose and deer; as well as nesting habitat for a variety of breeding birds.

While the suitability of the fen habitat may be somewhat reduced due to the extensive agricultural land uses surrounding it, its value to wildlife is retained due to its size and connectivity to other habitats in the region.

Other permanent and semi-permanent ponds on the Subject Property were rated as having Moderate Suitability for wildlife as these native habitats support a variety of wildlife, including amphibians, songbirds and waterbirds. The suitability of these habitats is somewhat reduced due to the presence of extensive agricultural land use surrounding these wetlands, effectively isolating these areas from adjacent habitats.

Agricultural land uses on the property are rated as having Low Suitability for wildlife. These habitats provide little nesting cover for breeding birds, or forage for other wildlife. Wildlife diversity tends to be low and frequent disturbance (tilling, mowing, etc.) typically limits wildlife use of these areas.

4.0 ENVIRONMENTAL OVERVIEW AND POTENTIAL MITIGATIONS

Site disturbance has the potential to disrupt existing wildlife habitat on the Subject Property and adjacent habitats. The following mitigation measures are recommended to reduce impacts to wildlife on the Subject Property:

- Avoid of disturbance to high and moderate suitability habitat, wherever possible
- Maintain connectivity of fen to the north of the Subject Property
- Conduct clearing and ground disturbance activities outside of the breeding bird season to avoid disturbance to migratory bird nests (March 15th to August 31st) (Environment Canada 2012)
- Incorporate recommended setback distances for selected wildlife species or features that may occur in the region (Table 3)

Table 3
Prairie/Parkland sensitive species recommended restricted activity dates and setback distances[1]

Species	Location	Time of Year	Level of Disturbance		
			High	Moderate	Low
Northern Leopard Frog	Breeding ponds	Year round	100 m	100 m	100 m
Bull Snake, Western Hognose Snake, Prairie Rattlesnake	Hibernacula	Year around	200 m	200 m	500 m
	Rookery	March 15th - October 31st	200 m	200 m	200 m
		November 1st - March 14th	50 m	50 m	200 m
Sharp-tailed Grouse	Leks	March 15th – June 15th	500 m	500 m	500 m
		June 16th – March 14th	100 m	100 m	500 m
Peregrine Falcon, Bald Eagle, Golden Eagle, Prairie Falcon, Ferruginous Hawk	Nesting sites	March 15th – July 15th	1000 m	1000 m	1000 m
		July 16th – March 14th	50 m	100 m	1000 m
Burrowing Owl	Nesting sites	April 1st – August 15th	200 m	500 m	500 m
		August 16th –October 15th	200 m	200 m	500 m
		October 16th – March 31st	50 m	100 m	500 m
Colonial Nesting Birds: American White Pelican, Great Blue Heron*	Nesting sites	April 1st – August 31st	1000 m	1000 m	1000 m
		September 1st – March 31st	100 m	100 m	1000 m

Species	Location	Time of Year	Level of Disturbance		
			High	Moderate	Low
Long-billed Curlew, Upland Sandpiper, Mountain Plover, Short-eared Owl, Sprague's Pipit	Active nest and surrounding habitat	April 1st - July 15th	100 m	100 m	100 m

[1] Taken from Government of Alberta 2012b

5.0 CONCLUSION

This wildlife and wildlife habitat assessment provides an inventory of wildlife observed and potential wildlife habitat suitability on the Subject Property as assessed on 7 and 8 June, 2012. Three wildlife species of management concern were identified on the Subject Property. Most of the property is under agricultural land use and this habitat type is ranked as having Low Suitability for wildlife. Potentially High Suitability habitat is located in the north of the Subject Property in the identified fen and surrounding native vegetation. Other semi-permanent and permanent wetlands on the property were identified as having Moderate Suitability for wildlife.

6.0 REFERENCES

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Attachment A
Species of Management Concern

Species of management concern with ranges overlapping the Subject Property[1,2].

Common Name	Scientific Name	AESRD Status	COSEWIC Status
AMPHIBIANS			
Northern Leopard Frog	*Rana pipiens*	At Risk	Special Concern
Canadian Toad	*Bufo hemiophrys*	May Be at Risk	Not at Risk
BIRDS			
Trumpeter swan	*Cygnus buccinator*	At Risk	Not at Risk
Ferruginous hawk	*Buteo regalis*	At Risk	Threatened
Short-eared owl	*Asio flammeus*	May Be At Risk	Special Concern
Olive-sided flycatcher	*Contopus cooperi*	May Be At Risk	Threatened
Pied-billed grebe	*Podilymbus podiceps*	Sensitive	-
Horned grebe	*Podiceps auritus*	Sensitive	Special Concern
Western grebe	*Aechmophorus occidentalis*	Sensitive	-
American white pelican	*Pelecanus erythrorhynchos*	Sensitive	Not at Risk
American bittern	*Botaurus lentiginosus*	Sensitive	-
Great blue heron	*Ardea herodias*	Sensitive	-
Black-crowned night-heron	*Nycticorax nycticorax*	Sensitive	-
American green-winged teal	*Anas crecca*	Sensitive	-
Northern pintail	*Anas acuta*	Sensitive	-
Lesser scaup	*Aythya affinis*	Sensitive	-
White-winged scoter	*Melanitta fusca*	Sensitive	-
Osprey	*Pandion haliaetus*	Sensitive	-
Bald eagle	*Haliaeetus leucocephalus*	Sensitive	Not at Risk
Northern harrier	*Circus cyaneus*	Sensitive	Not at Risk
Northern goshawk	*Accipiter gentilis*	Sensitive	Not at Risk
Broad-winged hawk	*Buteo platypterus*	Sensitive	-
Swainson's hawk	*Buteo swainsoni*	Sensitive	-
Golden eagle	*Aquila chrysaetos*	Sensitive	Not at Risk
American kestrel	*Falco sparverius*	Sensitive	-
Prairie falcon	*Falco mexicanus*	Sensitive	Not at Risk
Sharp-tailed grouse	*Tympanuchus phasianellus*	Sensitive	-
Sora	***Porzana carolina***	***Sensitive***	***-***
Black-necked stilt	*Himantopus mexicanus*	Sensitive	-
Upland sandpiper	*Bartramia longicauda*	Sensitive	-
Long-billed curlew	*Numenius americanus*	Sensitive	Special Concern
Forster's tern	*Sterna forsteri*	Sensitive	Data Deficient
Black tern	*Chlidonias niger*	Sensitive	Not at Risk
Great gray owl	*Strix nebulosa*	Sensitive	Not at Risk
Common nighthawk	***Chordeiles minor***	***Sensitive***	***Threatened***
Pileated woodpecker	*Dryocopus pileatus*	Sensitive	-
Western wood-pewee	*Contopus sordidulus*	Sensitive	-
Least flycatcher	***Empidonax minimus***	***Sensitive***	***-***
Eastern phoebe	*Sayornis phoebe*	Sensitive	-
Purple martin	***Progne subis***	***Sensitive***	***-***
Barn swallow	*Hirundo rustica*	Sensitive	Threatened
Brown creeper	*Certhia americana*	Sensitive	-
Sedge wren	*Cistothorus platensis*	Sensitive	Not at Risk
Sprague's pipit	*Anthus spragueii*	Sensitive	Threatened
Loggerhead shrike	*Lanius ludovicianus*	Sensitive	Threatened

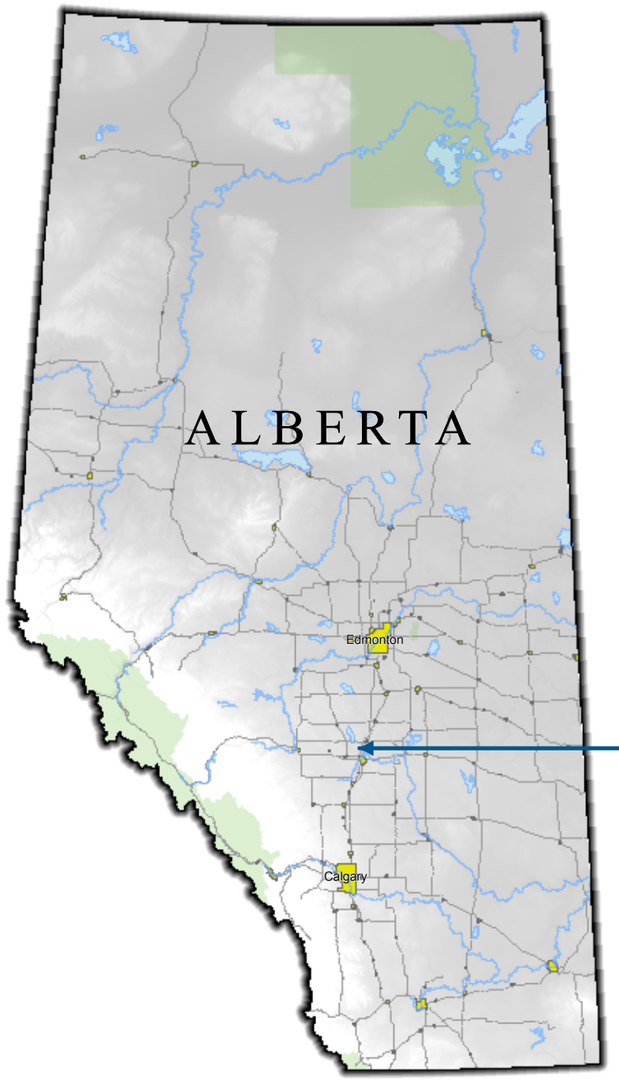
Common Name	Scientific Name	AESRD Status	COSEWIC Status
Common yellowthroat	*Geothlypis trichas*	Sensitive	-
Western tanager	*Piranga ludoviciana*	Sensitive	-
Baird's sparrow	*Ammodramus bairdii*	Sensitive	Special Concern
Bobolink	*Dolichonyx oryzivorus*	Sensitive	Threatened
Baltimore oriole	*Icterus galbula*	Sensitive	-
Yellow rail	*Coturnicops noveboracensis*	Undetermined	Special Concern
MAMMALS			
Long-tailed weasel	*Mustela frenata*	May Be At Risk	Not at Risk
Little brown bat	*Myotis lucifugus*	Secure	Endangered
Silver-haired bat	*Lasionycteris noctivagans*	Sensitive	-
Hoary bat	*Lasiurus cinereus*	Sensitive	-
American badger	*Taxidea taxus*	Sensitive	Not at Risk
Canada lynx	*Lynx canadensis*	Sensitive	Not at Risk
REPTILES			
Bullsnake	*Pituophis catenifer*	Sensitive	Data Deficient
Wandering garter snake	*Thamnophis elegans*	Sensitive	-
Plains garter snake	*Thamnophis radix*	Sensitive	-
Red-sided garter snake	*Thamnophis sirtalis*	Sensitive	-

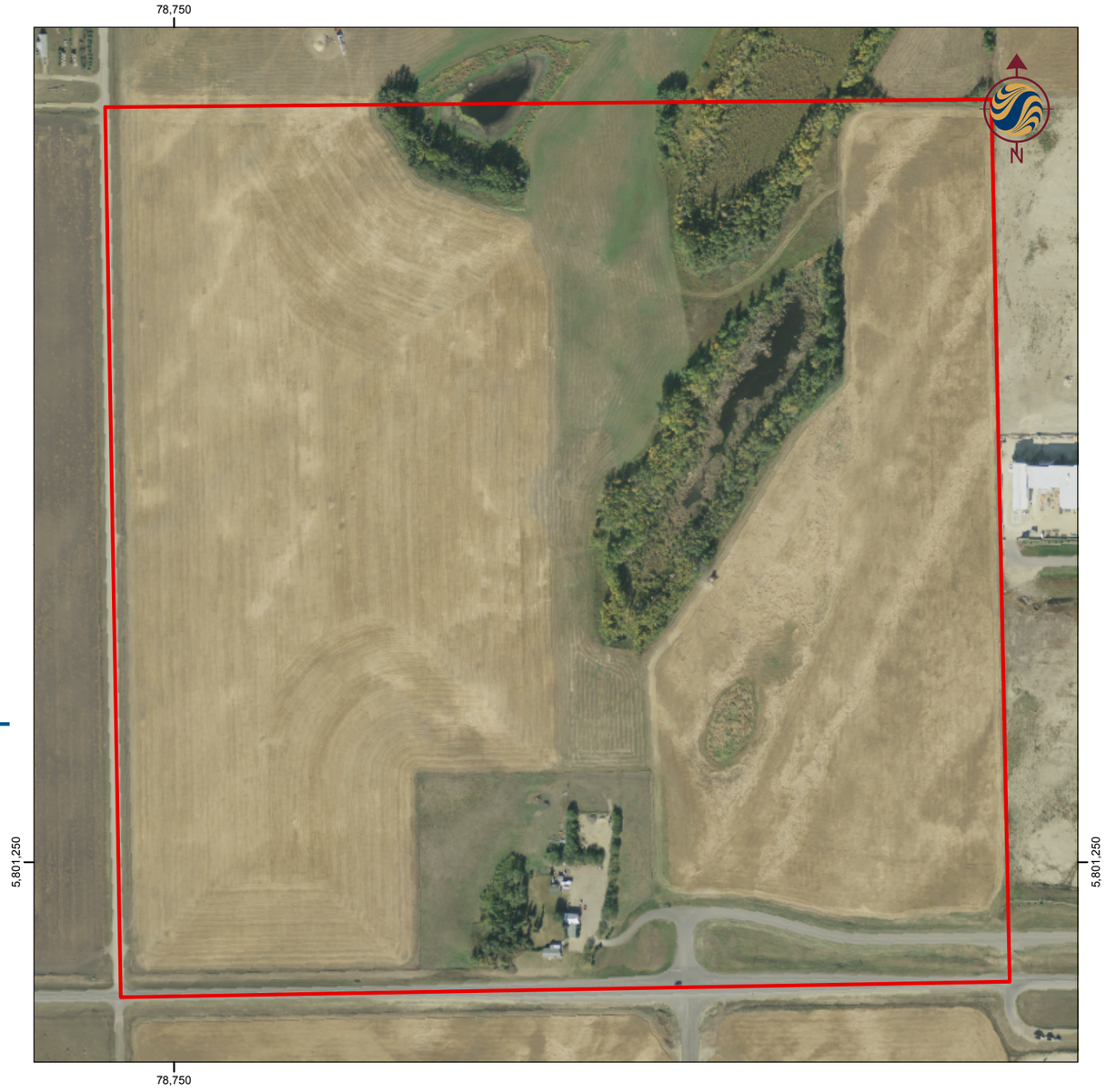
[1] Species in **bold** and *italics* were observed on the Subject Property or within 5 km.

[2] Federation of Alberta Naturalists 2007

Attachment B
Figures

LOCATION PLAN
SCALE 1:7,000,000





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2012-06-22 sgrossman

June 2012
1102-18726

Stantec

Projection: 10TM Resource Datum: NAD83
Imagery obtained from Alberta Sustainable Resource Development, 2008.

LEGEND:

Site Boundary

Site Description
Within:
SW 1/4 28-39-27 W4M
Alberta

1:5,000

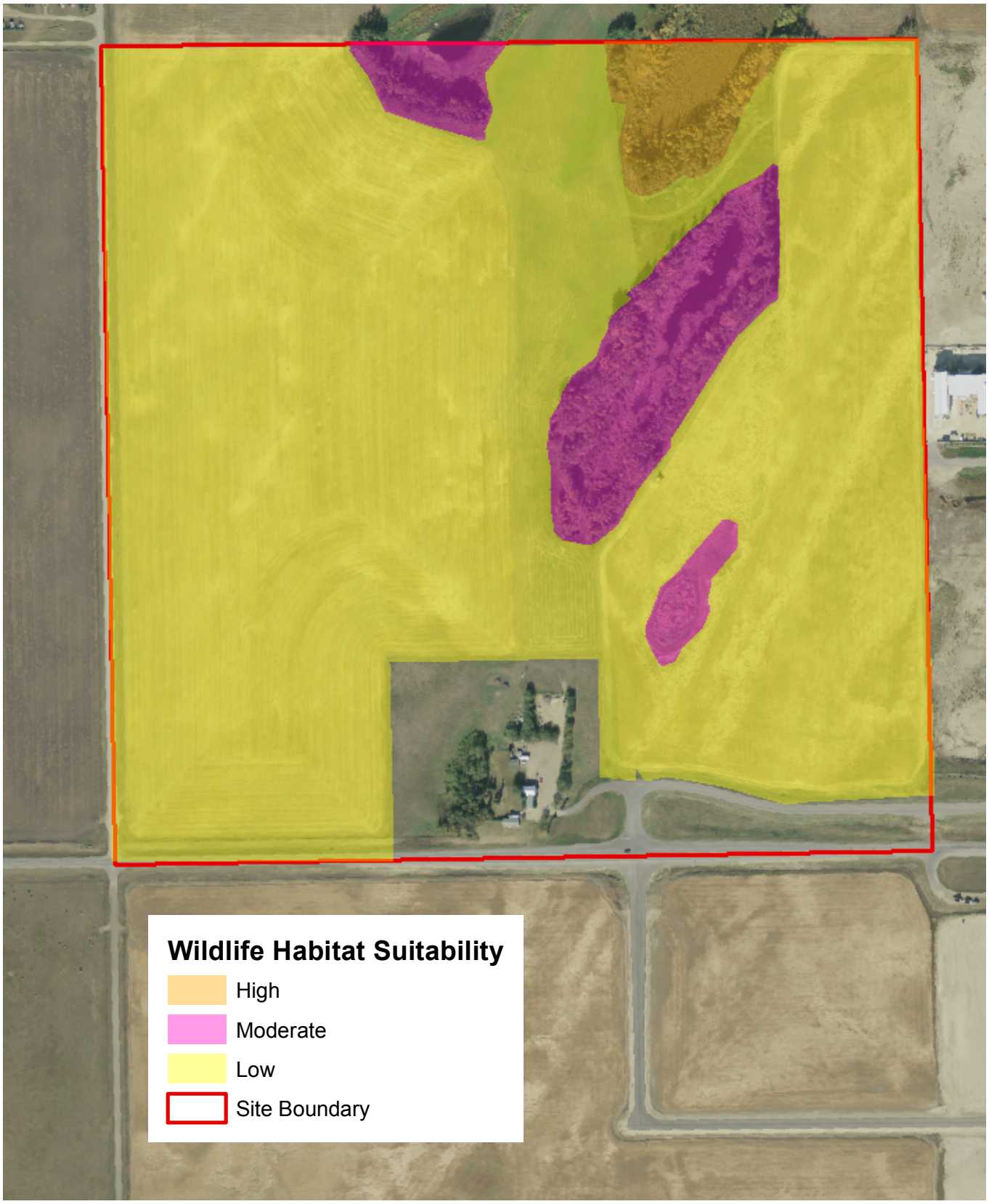
0 100 200 300 Metres

This map is for reference purposes only

Client/Project
TOTAL ENERGY SERVICES INC.
TES INDUSTRIAL DEVELOPMENT
WILDLIFE HABITAT ASSESSMENT

Figure No.
1

Title
SITE LOCATION AND BOUNDARY



TES Industrial Development

Wildlife Habitat Assessment

N

0 100 200

Meters

Acknowledgements:
Original Drawing by Stantec

Stantec

June 22, 2012					1:5,500
REVISION DATE				PROJECT 110218726	FIGURE NO. 2
DRAWN SG	CHECKED	APPROVED SG	VOL		