DILLON CONSULTING

CITY OF WINNIPEG

Pre-Construction Species at Risk Survey Report: Parker Lands

Southwest Rapid Transit Corridor – Stage 2

July 2016 – 16-3611

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1.0 Introduction

On December 18, 2014, Manitoba Conservation and Water Stewardship (now Manitoba Sustainable Development) issued Environment Act Licence (EAL) No. 3121 regarding the construction and operation of the Southwest Rapid Transit Corridor – Stage 2 Project (the 'Project'). Clause 9 of the EAL No. 3121 states that:

"The Licencee shall conduct a pre-construction survey in late spring within the Parker Lands for Species at Risk. A report on the survey shall be submitted to the Director for approval prior to construction, which includes recommendations for conservation of Species at Risk found in this area."

This requirement in the EAL reflects pre-construction mitigation required to avoid or minimize potential adverse effects of the Project on Species at Risk (SAR), as indicated in the Environment Act Proposal (EAP) Environmental Review and Assessment Report (Dillon 2014).

The purpose of this report is to provide the results of pre-construction SAR surveys conducted at the Parker Lands and provide recommendations to minimize or avoid adverse effects of Project construction and operation on SAR potentially occurring within the Parker Lands. A list of SAR that may potentially occur within the Parker Lands is provided in **Table 1-1**.

Table 1-1: SAR Potentially Occurring within the Parker Lands Area

Common Name	Scientific Name	MESEA Status	COSEWIC Status	SARA Status
Amphibians and Reptiles				
Northern Leopard Frog	*Lithobates pipiens*	Not Listed	Special Concern	Special Concern
Arthropods				
Monarch Butterfly	*Danaus plexippus*	Not Listed	Special Concern	Special Concern
Birds				
Chimney Swift	*Chaetura pelagica*	Threatened	Threatened	Threatened
Bank Swallow	*Riparia riparia*	Not Listed	Threatened	Not Listed
Barn Swallow	*Hirundo rustica*	Not Listed	Threatened	Not Listed
Bobolink	*Dolichonyx oryzivorus*	Not Listed	Threatened	Not Listed
Eastern Wood-Pewee	*Contopus virens*	Not Listed	Special Concern	Not Listed
Peregrine Falcon	*Falco peregrinus anatum/tundrius*	Endangered	Special Concern	Special Concern
Short-Eared Owl	*Asio flammeus*	Threatened	Special Concern	Special Concern
Yellow Rail	*Coturnicops noveboracensis*	Not Listed	Special Concern	Special Concern
Mammals				
Little Brown Myotis	*Myotis lucifugus*	Not Listed	Endangered	Endangered
Northern Myotis	*Myotis septentrionalis*	Not Listed	Endangered	Endangered

MESEA = Manitoba's *The Endangered Species and Ecosystems Act*
COSEWIC = Committee on the Status of Endangered Wildlife in Canada
SARA = The federal *Species at Risk Act* (Schedule 1)

2.0 Study Area

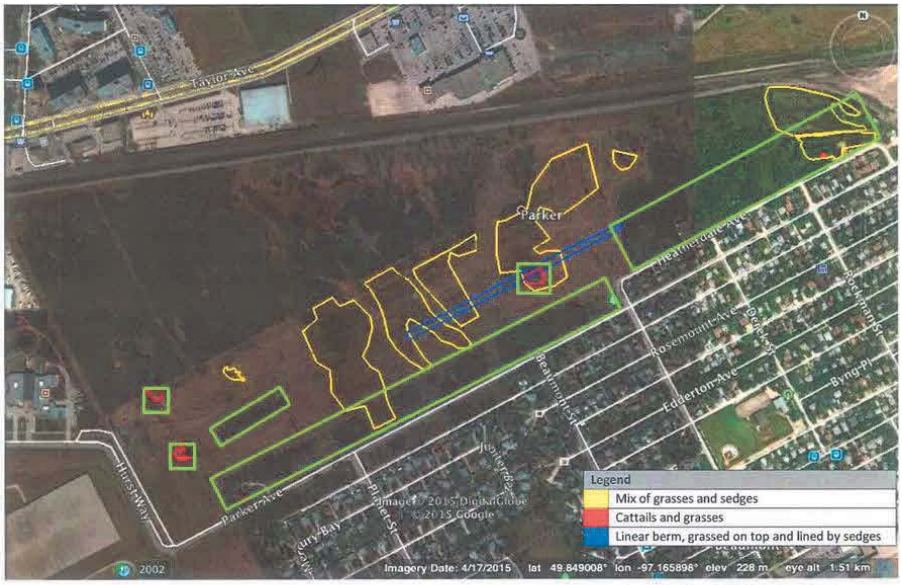
SAR surveys were conducted within an area of land within the City of Winnipeg known as the Parker Lands. These lands are described within the City of Winnipeg Naturalists Services Site Reports #1032 (Parker 1a), #201 (Parker 2) and #550 (Parker 3) and are generally described as contained within the lands north of Parker Avenue and Heatherdale Avenue, south of the CN tracks, and east of Hurst Way and east of an access road north of Hurst Way.

Within the Parker Lands, the scope of this SAR study was focused on:

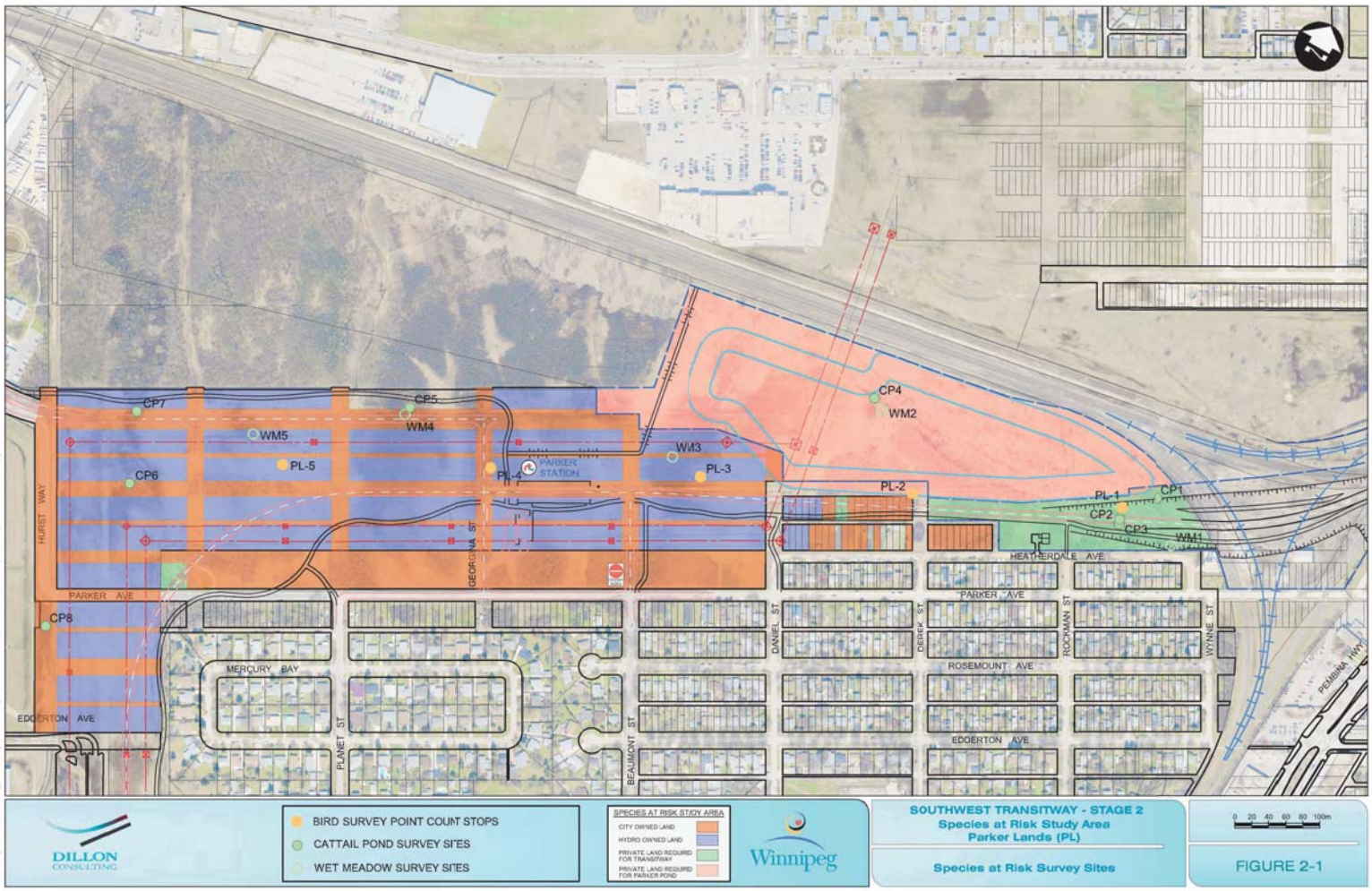
- Those lands that will be physically altered and/or directly affected by Project construction activities and/or Project operation and maintenance (O&M) activities including up to 50 m on either side of those lands that will be physically altered and/or directly affected[1];
- Those lands that are natural vegetation areas (i.e., non-cultivated or mowed) having potential to support life stages of SAR potentially occurring within the lands; and
- Those lands that the City of Winnipeg will have care and control over which are indicated in **Figure 2-1** as 'City owned land', 'Hydro owned land' and 'Private land required for transitway'.

These lands described in the above points define the SAR 'Study Area'. Figure EIA-002 (**Figure 2-2**, below) from the EAP Environmental Review and Assessment Report (Dillon 2014) indicates the naturally vegetated lands where SAR surveys were focused within the SAR Study Area.

Figure 2-2: Figure EIA-002: Naturally Vegetated Wet Areas and Non-Mowed Areas in the Parker Lands



[1] Limited to areas within the boundaries of the Parker Lands that the City will have care and control over and to account for potential disturbance of SAR by Project construction activities.



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SOUTHWEST TRANSITWAY - STAGE 2
Species at Risk Study Area
Parker Lands (PL)

Species at Risk Survey Sites

FIGURE 2-1

C:\projectwise\working directory\active\40gfc\d0364253\Species at Risk Report Map-PL-2-1-FGC.dwg

3.0 Methods

In accordance with the late spring timing of SAR surveys as indicated in Clause 9 of the EAL (**Section 1.0**), the following methods and effort reflect this stipulated timing window*. The methods and timing of SAR surveys are summarized in **Table 3-1**, with additional details provided thereafter.

Table 3-1: Methods, Effort and Timing of SAR surveys in the Study Area

SAR	Methods	Effort	Timing	Protocol References
Northern Leopard Frog	▪ Searches of potentially suitable cattail ponds and wet meadows for egg masses ▪ Search for adult frogs	▪ One-day search for egg masses (and recording any adults that may be present) ▪ Two mornings of search effort for adult frogs during June	▪ June 9, 2016 for egg mass searches ▪ May 30 and June 10, 2016 during SAR breeding bird surveys for adult frog searches	Kendell 2002
Monarch Butterfly	▪ Scouting search for milkweed (critical habitat) focused primarily at field edges and open areas	▪ One-day search effort	▪ June 10, 2016	Oberhauser *et al.* 2009
SAR Birds	▪ Simple point counts along an encounter transect with point count stops in representative habitats and located a minimum of 250 m apart ▪ Five-minute listening period at point counts (unlimited distance) ▪ Recording of bird observations while walking encounter transects between point count stops (unlimited distance) ▪ Surveys conducted between 0.5 hours before sunrise and 4.5 hours after sunrise	▪ Two mornings of surveys	▪ During the peak breeding bird season (surveys conducted May 30 and June 10, 2016)	Ralph *et al.* 1993; Resource Inventory Committee 1999; Manitoba Breeding Bird Atlas 2010
SAR Bats	Maternity roosts (critical habitat) search	▪ One-day search effort	October 22 and 26, 2015	Vonhoff 2003; OMNR 2011
	Acoustic surveys*	▪ Two evening surveys per each of three selected snags / cavity trees (six evening surveys in total assuming at three suitable representative snags / cavity trees)	▪ **To be conducted:** First half of July 2016	Vonhoff 2003; OMNR 2011

*Acoustic surveys for bats at potentially suitable maternity roosts will be conducted during July 2016. A supplemental update to this report submitted to the City of Winnipeg in late July.

3.1 Northern Leopard Frogs

Northern Leopard Frogs overwinter in well-oxygenated waterbodies that do not freeze to the bottom (COSEWIC 2009a). Overwintering habitat for this species does not occur within the Study Area. The nearest potentially suitable overwintering habitat in the vicinity of the Study Area occurs at a pond located 170 m to the north-northwest of the Parker Lands area at the Winnipeg Humane Society property on Hurst Way. Northern Leopard Frogs may disburse from overwintering habitat to breed in a variety of permanent and semi-permanent shallow open wet meadows and cattail ponds that range in depth from 2 m to less than 1 m (COSEWIC 2009a). Limited potential breeding habitat for this species occurs in the SAR Study Area (**Section 2.0**, **Figure 2-1**).

Breeding generally occurs during late April and the first three weeks in May in Manitoba (Eddy 1976 in COSEWIC 2009a). Although Northern Leopard Frogs may call at ponds and wet meadows in early spring, the presence of calling frogs at a pond or wet meadow does not necessarily indicate the frogs have bred in the pond or wet meadow. Therefore, confirmation of the use of these habitats by breeding frogs can be confirmed in late spring through observations of egg masses / tadpoles in ponds and wet meadows. During late spring, Northern Leopard Frog egg masses and / or tadpoles are most likely to be present within the deeper cattail ponds located in the Parker Lands area (see **Figure 2-1** in **Section 2.0**). At this time, adults may be near breeding habitat or dispersed to upland moist meadow summer habitat (Kendell 2002). Therefore, survey effort was focused on searching the perimeter of eight cattail ponds and five wet meadows during June in the SAR Study Area for the presence of adult frogs, egg masses attached to aquatic vegetation and tadpoles (**Figure 2-1**). Photos of the cattail ponds and wet meadows that were searched are provided in **Appendix A**. Searches for adult leopard frogs were also conducted along the breeding bird survey transect route (**Section 3.3** below), which followed the proposed Southwest Rapid Transit Corridor, and during searches for milkweed plants (**Section 3.2**).

3.2 Monarch Butterflies

During late spring, adult Monarch butterflies (Monarchs) may be present within the SAR Study Area primarily due to the documented presence of milkweed (Dillon 2014) on which Monarchs lay their eggs (Oberhauser *et al.* 2009). Monarchs reach the northern limit of their breeding range (which includes the City of Winnipeg) in early to mid-June (Oberhauser *et al.* 2009). Therefore, survey effort was focused on searching the SAR Study Area for milkweed plants and inspecting located plants for the presence of Monarch eggs and/or larvae. In the Winnipeg area, searches for milkweed plants, and the potential presence of Monarch use of those plants, is best conducted in June (Oberhauser *et al.* 2009).

In accordance with described scouting techniques for milkweed by Manitoba Agriculture, Food and Rural Development, searches for milkweed focused on field edges and open areas to obtain a general indication of abundance of milkweed within the SAR Study Area. Due to the limited size of the SAR Study Area, a scouting technique on foot, rather than the use of random transects with 1 m^2 plant search quadrats (e.g., Oberhauser et al. 2009), was used to determine the relative abundance of milkweed and potential use of those plants by Monarchs in the SAR Study Area.

3.3 Birds

The possible presence of bird SAR was investigated using simple point counts along an encounter transect during the spring breeding bird season to determine if breeding (i.e., critical) habitat is present in the SAR Study Area (Resource Inventory Committee 1999). Five point count stops were located along the Southwest Rapid Transit Corridor within representative natural areas within the SAR Study Area with the highest habitat suitability for the target bird SAR. Point count stops were located a minimum of 250 m apart, with all birds seen and heard recorded within a five minute time period within an unlimited distance at each stop. Additionally, all birds seen and heard while walking between point count stops were recorded regardless of distance of detected birds from the point count stop or walking transect. The surveys for bird SAR were conducted twice during the peak breeding season window on May 30 and June 10, 2016 to maximize the probability of detecting SAR that may be utilizing the Study Area (Ralph *et. al* 1993). The surveys were conducted between 0.5 hours before sunrise and 4.5 hours after sunrise (Manitoba Breeding Bird Atlas 2010). Photos of the bird survey point count stops are provided in **Appendix B**.

Targeted surveys for the presence of nesting Bank Swallows, Peregrine Falcons, Short-eared Owls, and Yellow Rails were not conducted due to the lack of suitable nesting habitat within the natural vegetation areas of the SAR Study Area. However, those species may stop-over / forage within the SAR Study Area. Although some wet meadow and cattail pond habitat that is not regularly mowed does occur within the Parker Lands area (**Section 2.0**, **Figure 2-1** and **Appendix A**), those natural permanent and ephemeral wet areas (maximum individual area of < 0.5 ha) are not of sufficient size and / or vegetation type to support breeding Yellow Rails (USFWS 2002; COSEWIC 2009; Martin 2011). Although some non-mowed areas of grassland occur in the SAR Study Area (largest patch is approximately 0.39 ha), those areas are not of sufficient size to have a reasonable probability of supporting breeding Short-eared Owls considering the entire extent of grasslands in the Parker Lands area is approximately 22 ha and the minimum known average territory size of Short-eared Owls is approximately 74 ha (Clark 1975 in COSEWIC 2008).

3.4 Bats

The two species of bat SAR (**Table 1-1**) that may potentially occur in the SAR Study Area are non-migratory bat species that over-winter in bat hibernacula, typically limestone caves which are not present in the SAR Study Area (COSEWIC 2013). During summer, females may establish maternity colonies, often in buildings or within snags / cavities of larger diameter trees ≥ 25 cm diameter breast height (dbh) (OMNR 2011; COSEWIC 2013). Foraging primarily occurs over water (especially for the little brown myotis) and along waterways, forest edges, and forest gaps (COSEWIC 2013). Therefore, there is the potential for the presence of foraging bat SAR in the SAR Study Area, and possibly maternal roosts if suitably large snags[2] / cavity trees are present.

[2] Snag(s) defined: "Standing dead trees with accessible hollows".

Considering there is no evidence that bat foraging habitat is limited in Manitoba, including Winnipeg, bat surveys in the SAR Study Area focused on the potential presence of suitable large snags / cavity trees that may be used as bat maternity roosts, i.e., critical habitat for bat SAR. Searches for suitable snags / cavity trees were conducted on October 22 and 26 in the SAR Study Area in 2015 after leaves were off the trees and before snowfall to provide for maximum potential tree roost visibility and dry ground conditions for ease of walking. Five snags / cavity trees potentially suitable for bat roosting were located within the SAR Study Area (**Section 4.3**). Therefore, acoustic surveys will be conducted in early to mid-July 2016 at representative snags / cavity trees to determine if bat SAR are utilizing the potentially suitable snag / tree cavities. By July, young bats will be making foraging flights from the maternal roost which will maximize the probability of determining if potential tree roosts are being used by bat SAR (Vonhoff 2003). Acoustic surveys will be conducted for 1.5 hours (half hour before sunset to one hour after sunset) during each survey at a minimum of three snags / tree cavities that will be selected based on maximum bat-use suitability. Should bats not be detected at any of the selected survey snags / tree cavities, those snags / tree cavities will be surveyed again a minimum of seven days after the first survey was conducted. Surveys will be conducted during evenings anticipated to be ideal for bat foraging activity (i.e., temperature at sunset above 10°C and no precipitation; Vonhoff 2003). Bat calls will be recorded using an IPad equipped with an Ecometer Touch application and ultrasonic omni-directional module/microphone (**Figure 3-1**). The results of the July 2016 bat acoustic surveys will be provided to the City of Winnipeg as a supplemental report in late July 2016.

Figure 3-1: Bat call detection equipment

4.0 Results

4.1 Amphibian Species at Risk

No adult Northern Leopard Frogs or their egg masses were observed during the surveys of cattail ponds and wet meadows in June in the SAR Study Area. Tadpoles were observed in a grassy shallow (< 10 cm deep) standing water area under the Manitoba Hydro transmission line right-of-way (Photo #12 in **Appendix A**) located approximately 60 m northeast of wet meadow 'WM3' as indicated in **Figure 2-1**. These tadpoles were too young to be positively identified, but were likely not Northern Leopard Frog tadpoles due to the habitat characteristics not being typical for Northern Leopard Frog breeding ponds which are typically permanent ponds 1.5 – 2 m deep (COSEWIC 2009a). The shallow area of standing water was typical breeding habitat for other non-SAR frog species such as Boreal Chorus Frogs (e.g., Lees *et. al.* 2008) which were heard calling during all survey visits to the SAR Study Area.

4.2 Bird Species at Risk

No SAR birds were heard or observed during point count surveys in the SAR Study Area with the exception of two Chimney Swifts that were calling and flying above point count stop PL-1 at the east end of the SAR Study Area (**Figure 4-1**) during the second survey visit on June 10, 2016.

4.3 Bat Species at Risk

A total of five potential bat roost tree cavities / snags that may potentially be used by SAR bats were found within the SAR Study Area during October 2015 (**Figure 4-1**). Photos of the potential bat roost tree cavities / snags are provided in **Appendix C**. As indicated in **Section 3.4** acoustic surveys for bat calls will be conducted at three of the five potential bat roost trees during the first half of July 2016 when young bats are expected to be making foraging flights from the maternal roost. The results of the bat acoustic surveys will be provided in a supplemental report to the City of Winnipeg in late July 2016.

4.4 Other Species at Risk

The SAR Study Area does not provide suitable habitat for SAR plants as listed by Manitoba's *The Endangered Species and Ecosystems Act, the* Committee on the Status of Endangered Wildlife in Canada or Schedule 1 of the federal *Species at Risk Act*, and no SAR plants were observed during bird surveys and surveys of wet meadows and cattail ponds throughout the SAR Study Area. However, Showy Milkweed plants were encountered at seven locations within the SAR Study Area (**Figure 4-1**) and are critical breeding habitat for the Monarch butterfly which is a 'Special Concern' SAR (see **Table 1-1**). When the first area of milkweed plants was encountered during breeding bird point count surveys on June 10, 2016 at the far west end of the SAR study area, the biologist then searched suitable open areas of the SAR Study Area in a zig-zag search pattern to determine the locations of other milkweed plants. Where these plants were encountered, individual milkweed plants were growing in close proximity to other milkweed plants (typically <30 cm apart) in 'patches', with the largest patch being approximately 10 m x 10 m in area. Milkweed plants were visually examined in-situ for the potential presence of

Monarch eggs and / or larvae; however, no eggs or larvae were found and no adult Monarchs were observed during bird surveys, wet meadow and cattail pond surveys or while searching for milkweed plants. Photos of the Showy Milkweed plant locations are provided in **Appendix D**.


MW6
MW5
MW4
MW3
MW2
MW1
MW7
TREE 1
TREE 2
TREE 3
TREE 4
TREE 5
PL-1
PARKER STATION
HURST WAY
GEORGINA ST
PARKER AVE
HEATHERDALE AVE
DANIEL ST
DEREK ST
ROCKMAN ST
WYNNE ST
ROSEMOUNT AVE
EDDERTON AVE
MERCURY BAY
PLANET ST
BEAUMONT ST
PEMBINA HWY
MILKWEED OBSERVATION SITES
POTENTIAL BAT ROOST TREE
SNAGS/CAVITIES
CHIMNEY SWIFT OBSERVATION
SPECIES AT RISK STUDY AREA
DILLON CONSULTING
Winnipeg
SOUTHWEST TRANSITWAY - STAGE 2
Species at Risk Study Area
Parker Lands (PL)
Species at Risk Related Observations
0 20 40 60 80 100m
FIGURE 4-1
C:\projectwise\working directory\active\40gfc\d0364253\Species at Risk Report Map-PL-4-1-FGC.dwg

5.0 Conclusion

The only SAR confirmed to be present in the Parker Lands SAR Study Area during SAR surveys conducted in May and June, 2016 was the Chimney Swift. In urban environments, Chimney Swifts prefer to use anthropomorphic structures such as brick chimneys where the ambient environment is relatively stable for nesting and roosting (COSEWIC 2007; Stewart and Stewart 2010). The natural nesting habitat for Chimney Swifts has become increasingly rare and includes trunks of large hollow trees and occasionally on cave walls or in rocky crevices (COSEWIC 2007). Although some larger tree snags / cavities occur within the SAR Study Area (**Section 4.3**), none are large enough to accommodate nesting Chimney Swifts which prefer larger hollow openings of approximately 36 cm x 36 cm (14 inches x 14 inches)[3]. Chimney Swifts are aerial foragers, often concentrating near water where insects are abundant (COSEWIC 2007). Considering that insect-producing ponds and wet meadows occur within the SAR Study Area (**Figure 2-1; Appendix A**), it is likely that the two Chimney Swifts observed during SAR bird survey were foraging for insects above the SAR Study Area and were likely nesting in a nearby older urban neighbourhood such as Cresentwood which provides suitable chimneys for nesting.

The City of Winnipeg's development of the Parker Retention Pond is anticipated to include the incorporation of natural vegetation and shoreline features that could also provide habitat for the existing vegetation and wildlife in the SAR Study Area that require these seasonally wet conditions. Therefore, the development of the Parker Retention Pond would provide compensation for the Project effects on the cattail ponds and wet meadows in the SAR Study Area and provide potential amphibian and other wildlife habitat (Dillon 2014).

Monarch butterflies have the potential to reproduce within the SAR study area due to the presence of critical breeding habitat (i.e., milkweed) found within the SAR Study area (**Figure 2-1**; **Section 4.4**; **Appendix D**). Although no adult Monarchs were observed during SAR surveys and no eggs or larvae were observed on the milkweed plants found, there is still the potential for Monarchs to occur and breed within the SAR Study Area. The lack of evidence of Monarch presence in the SAR Study Area is not unexpected due to the decline of this species by 90% in the past 20 years[4].

Due to the presence of suitable potential tree snags / cavities that may be used as maternal roosts for bat SAR within the SAR Study Area (**Section 4.3**; **Appendix C**), acoustic surveys to be conducted at potential roost tree snags / cavities in July should indicate if active bat SAR critical breeding habitat occurs within the SAR Study area.

[3] Personal communication with Christian Artuso, Manitoba Program Manager for Bird Studies Canada. June 13, 2016.
[4] CTV News article: How Canadians can help save the monarch butterfly. June 15, 2016. http://www.ctvnews.ca/sci-tech/how-canadians-can-help-save-the-monarch-butterfly-1.2946532

6.0 Recommendations

Although no SAR were observed during surveys within the SAR Study Area in May and June 2016, there is the potential for some limited reduction of Chimney Swift foraging habitat (insect-producing ponds and wet meadows) to accommodate Project construction. Loss of milkweed plants, potentially providing breeding habitat for Monarch butterflies, is also expected to occur as a result of Project construction. Although the potential presence of bat SAR using suitable tree snags / cavities as maternity roosts will be investigated in July, project construction activities will require the removal of some potential bat roost tree snags / cavities and removal of some suitable bat foraging habitat (i.e., insect-producing ponds and wet meadows). As indicated in **Section 5.0**, the City of Winnipeg's development of the planned Parker Retention Pond is anticipated to compensate for Project effects on cattail ponds and wet meadows in the SAR Study Area and provide potential habitat for amphibian and other wildlife (Dillon 2014). Additionally, the incorporation of milkweed into the natural revegetation activities associated with planned Parker Retention Pond is anticipated to partly or fully compensate for the loss of milkweed plants associated with the construction of the Project. To avoid potential Project effects on SAR potentially occurring and / or breeding within the Parker Lands SAR Study Area, the following mitigation measures, in addition to requirements stated in the Environment Act Licence #3121, are recommended for the successful Project construction company to implement:

- Clearing / disturbance of vegetated areas including wet meadows and cattail ponds should occur during late fall or winter, outside the breeding season for SAR.
  - If July bat acoustic surveys show that bats are using the potential bat roost trees, then clearing activities should not occur within the SAR Study Area **until October 1**, after bats have migrated.
  - If July bat acoustic surveys show no evidence of bats using the potential bat roost trees, then clearing activities can begin starting **September 1** after birds have fledged their young and have begun migration[5].
- Milkweed species native to Manitoba such as the Showy Milkweed found in the SAR Study Area should be planted (relocated and/or replaced) in other suitable areas as part of the Project landscaping plans.
  - A minimum of approximately 0.007 hectares[6] of milkweed plants interspersed with other native prairie plants should be included in Project landscaping plans

[5] This September 1 timing for the start of clearing activities is intended to protect migratory bird species which are protected under the *Migratory Birds Convention Act*. This timing is in accordance with the expected end of the general bird nesting season for the Environment and Climate Change 'B4' bird nesting zone which includes the City of Winnipeg.

[6] This 0.007 hectare area is a conservative estimate of the vegetated area disturbed during Project construction that contains milkweed plants (maximum size of milkweed plant patches / areas observed was approximately 10 m^2; number of areas of milkweed plants observed were seven areas).

- Should Northern Leopard Frogs be found during Project development activities, they should be relocated to suitable aquatic habitat (e.g., released adjacent to the Red River).
- If bat acoustic surveys (to be conducted by Dillon in July 2016) indicate that bat SAR are using tree snags / cavities within the SAR Study Area, the tree snags / cavity roosting habitat that will be removed (during late fall or winter) to accommodate Project construction should be compensated by providing artificial bat SAR maternity roost structures in other suitable areas such as in the vicinity of the planned Parker Retention Pond.

The establishment of planted milkweed should be monitored during the first growing season. If growth of milkweed in the compensation area is not successful, Manitoba Sustainable Development should be consulted to determine alterative milkweed compensation strategies.

Use of artificial maternity roosts for bat SAR, if required, should be monitored for a period of three years as it may take several years for bats to use artificial structures[7]. Bat biologists such as Dr. Craig Willis (University of Winnipeg) should be consulted on the most appropriate artificial maternity roost structure type and location for use by SAR bats.

[7] The following website provides useful references to studies on bat box design, location and use by bats: http://www.conservationevidence.com/actions/1024#

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Appendix A

Photos of Surveyed Wet Meadows and Cattail Ponds

Appendix A: Photos of Surveyed Wet Meadows and Cattail Ponds

Photo 1: Wet Meadow 1 (20m x 15m), looking SW
GPS Location: Northing 5523721, Easting 632533

Photo 2: Wet Meadow 1 (20m x 15m), looking E
GPS Location: Northing 5523721, Easting 632533

Photo 3: Cattail Pond 1 (5m x 3m), looking SW
GPS Location: Northing 5523762, Easting 632491

Photo 4: Cattail Pond 2 (10m x 40m), looking NW
GPS Location: Northing 5523717, Easting 632462

DILLON CONSULTING		PROJECT NO. 16-3611
	Northern Leopard Frog Survey - Parker Lands - June 9, 2016	PHOTO NO.
June 9, 2016	City of Winnipeg Southwest Transit Phase 2 Species at Risk Surveys	1-4

Photo 5: Large wet area E of Cattail Pond 3, looking W
GPS Location: Northing 5523712, Easting 632464

Photo 6: Cattail Pond 3 (10m x 40m), looking W
GPS Location: Northing 5523712, Easting 632464

Photo 7: Cattail Pond 3 (10m x 40m), looking NW
GPS Location: Northing 5523712, Easting 632464

Photo 8: Wet Meadow 2 (40m x 40m), looking SW
GPS Location: Northing 5523694, Easting 632152

DILLON CONSULTING		PROJECT NO. 16-3611
	Northern Leopard Frog Survey - Parker Lands - June 9, 2016	PHOTO NO.
June 9, 2016	City of Winnipeg Southwest Transit Phase 2 Species at Risk Surveys	5-8

Photo 9: Wet Meadow 2 (40m x 40m), looking SW
GPS Location: Northing 5523694, Easting 632152

Photo 10: Wetl Meadow 2 (40m x 40m), looking SW, representative vegetation in wetland areas
GPS Location: Northing 5523694, Easting 632152

Photo 11: Cattail Pond 4 (20m x 20m), looking W
GPS Location: Northing 5523702, Easting 632138

Photo 12: Young tadpoles (unknown species) in low-lying wet areas along hydro ROW
GPS Location: Northing 5523572, Easting 631986

DILLON CONSULTING		PROJECT NO. 16-3611
	Northern Leopard Frog Survey - Parker Lands - June 9, 2016	PHOTO NO.
June 9, 2016	City of Winnipeg Southwest Transit Phase 2 Species at Risk Surveys	9-12

Photo 13: Wet area along Hydro ROW, looking N
GPS Location: Northing 5523572, Easting 631986

Photo 14: Wet area along Hydro ROW, looking W
GPS Location: Northing 5523572, Easting 631986

Photo 15: Wet Meadow 3 (60m x 20m), looking E
GPS Location: Northing 5523524, Easting 631961

Photo 16: Wet Meadow 3 (60m x 20m), looking W
GPS Location: Northing 5523524, Easting 631961

DILLON CONSULTING		PROJECT NO. 16-3611
	Northern Leopard Frog Survey - Parker Lands - June 9, 2016	PHOTO NO.
June 9, 2016	City of Winnipeg Southwest Transit Phase 2 Species at Risk Surveys	13-16

Photo 17: Wet Meadow 3(60m x 20m), looking E
GPS Location: Northing 5523524, Easting 631961

Photo 18: Wet Meadow 3 (60m x 20m), looking E
GPS Location: Northing 5523524, Easting 631961

Photo 19: Cattail Pond 5 (50m x 50m), looking W
GPS Location: Northing 5523424, Easting 631659

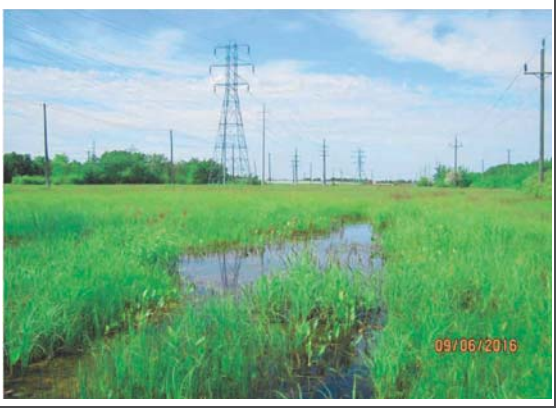

Photo 20: Wet Meadow 4 (150m x 150m), large wet area with grasses, looking W
GPS Location: Northing 5523414, Easting 631658

DILLON CONSULTING		PROJECT NO. 16-3611
	Northern Leopard Frog Survey - Parker Lands - June 9, 2016	PHOTO NO.
June 9, 2016	City of Winnipeg Southwest Transit Phase 2 Species at Risk Surveys	17-20

Photo 21: Wet Meadow 4 (150m x 150m), looking NE
GPS Location: Northing 5523414, Easting 631658

Photo 22: Wet Meadow 5 (40m x 50m), looking NW (fairly dry at this time)
GPS Location: Northing 5523307, Easting 631513

Photo 23: Cattail Pond 6 (20m x 20m), looking SW
GPS Location: Northing 5523184, Easting 631412

Photo 24: Cattail Pond 7 (20m x 30m), looking NW
GPS Location: Northing 5523263, Easting 631378

DILLON CONSULTING		PROJECT NO. 16-3611
	Northern Leopard Frog Survey - Parker Lands - June 9, 2016	PHOTO NO.
June 9, 2016	City of Winnipeg Southwest Transit Phase 2 Species at Risk Surveys	21-24

Photo 25: Cattail Pond 8 (40m x 10m), looking NE
GPS Location: Northing 5522988, Easting 631408

DILLON CONSULTING		PROJECT NO. 16-3611
	Northern Leopard Frog Survey - Parker Lands - June 9, 2016	PHOTO NO.
June 9, 2016	City of Winnipeg Southwest Transit Phase 2 Species at Risk Surveys	25

Appendix B

Photos of Bird Survey Point Count Stops

Appendix B: Photos of Bird Survey Point Count Stops

Photo 1: PL-1; looking N at tracks
GPS Location: Northing 5523731, Easting 632458

Photo 2: PL-1; looking S at Cattail Pond 2
GPS Location: Northing 5523731, Easting 632458

Photo 3: PL-1; looking W at wooded area
GPS Location: Northing 5523731, Easting 632458

Photo 4: PL-1; looking E at tower
GPS Location: Northing 5523731, Easting 632458

DILLON CONSULTING		PROJECT NO. 16-3611
	Bird Species at Risk Survey - Parker Lands - Visit #1, May 30, 2016	PHOTO NO.
May 30, 2016	City of Winnipeg Southwest Transit Phase 2 Species at Risk Surveys	1-4

Photo 5: PL-2; looking SW at trail
GPS Location: Northing 5523625, Easting 632232

Photo 6: PL-2; looking NE at trail
GPS Location: Northing 5523625, Easting 632232

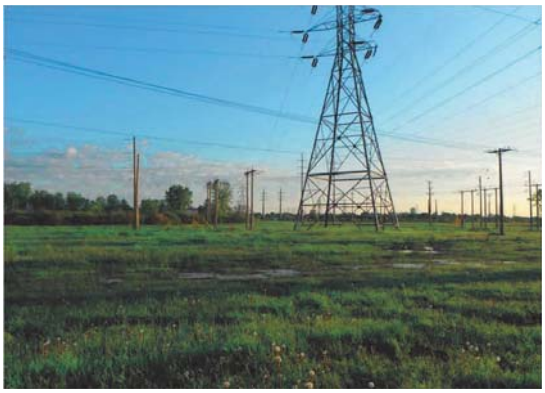

Photo 7: PL-3; looking N at transmission tower
GPS Location: Northing 5523521, Easting 632004

Photo 8: PL-3; Looking W at Hydro ROW
GPS Location: Northing 5523521, Easting 632004

DILLON CONSULTING		PROJECT NO. 16-3611
	Bird Species at Risk Survey - Parker Lands - Visit #1, May 30, 2016	PHOTO NO.
May 30, 2016	City of Winnipeg Southwest Transit Phase 2 Species at Risk Surveys	5-8

Photo 9: PL-3; looking S towards wooded area
GPS Location: Northing 5523521, Easting 632004

Photo 10: PL-4; looking WNW at low wet area, and Cattail Pond 5 and woods in distance
GPS Location: Northing 5523409, Easting 631780

Photo 11: PL-4; looking N at Hydro tower
GPS Location: Northing 5523409, Easting 631780

Photo 12: PL-4; Looking S at Hydro tower
GPS Location: Northing 5523409, Easting 631780

DILLON CONSULTING		PROJECT NO. 16-3611
	Bird Species at Risk Survey - Parker Lands - Visit #1, May 30, 2016	PHOTO NO.
May 30, 2016	City of Winnipeg Southwest Transit Phase 2 Species at Risk Surveys	9-12

Photo 13: PL-4; Representative vegetation in grassy area
GPS Location: Northing 5523409, Easting 631780

Photo 14: PL-5; looking N at Lattice Hydro tower
GPS Location: Northing 5523292, Easting 631561

Photo 15: PL-5; looking W at distribution poles
GPS Location: Northing 5523292, Easting 631561

Photo 16: PL-5; Looking S at young aspen in small wooded area
GPS Location: Northing 5523292, Easting 631561

DILLON CONSULTING		PROJECT NO. 16-3611
	Bird Species at Risk Survey - Parker Lands - Visit #1, May 30, 2016	PHOTO NO.
May 30, 2016	City of Winnipeg Southwest Transit Phase 2 Species at Risk Surveys	13-16

Appendix C

Photos of Potential Bat Roost Tree Snags/Cavities

Appendix C: Potential Bat Roost Tree Snags/Cavities

Photo 1: Tree 1, CBH (circumference at breast height): 95cm; one larger cavity 3.5 m up tree
GPS Location: Northing 5523227, Easting 631481

Photo 2: Tree 1, CBH: 95cm; one larger cavity 3.5 m up tree
GPS Location: Northing 5523227, Easting 631481

Photo 3: Tree 2, CBH: 83cm; cavities in upper part of tree, evidence of wood pecker activity
GPS Location: Northing 5523298, Easting 631793

Photo 4: Tree 2, CBH: 83cm; cavities in upper part of tree, evidence of w
GPS Location: Northing 5523298, Easting 631793

DILLON CONSULTING		PROJECT NO. 16-3611
	Potential Bat Roosting Habitat Survey - Parker Lands - October 22 & 26, 2015	PHOTO NO.
October 22 & 26, 2015	City of Winnipeg Southwest Transit Phase 2 Species at Risk Surveys	1-4

Photo 5: Tree 3, CBH: 85 cm; large cavity at 6 ft.
GPS Location: Northing 5523234, Easting 631670

Photo 6: Tree 3, CBH: 85 cm; large cavity at 6 ft.
GPS Location: Northing 5523234, Easting 631670

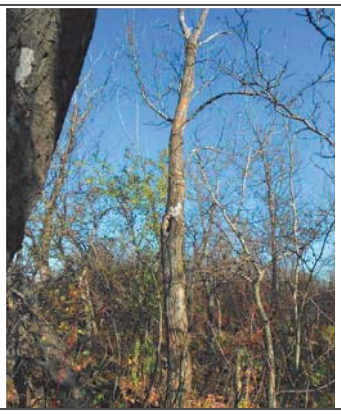

Photo 7: Tree 3, CBH: 85 cm; large cavity at 6 ft.
GPS Location: Northing 5523234, Easting 631670

Photo 8: Tree 3, CBH: 85 cm; large cavity at 6 ft.
GPS Location: Northing 5523234, Easting 631670

DILLON CONSULTING		PROJECT NO. 16-3611
	Potential Bat Roosting Habitat Survey - Parker Lands - October 22 & 26, 2015	PHOTO NO.
October 22 & 26, 2015	City of Winnipeg Southwest Transit Phase 2 Species at Risk Surveys	5-8

Photo 9: Tree 5, CBH: 98cm, tree has snags and cavities
GPS Location: Northing 5523143, Easting 631486

Photo 10: Tree 5, CBH: 98cm, tree has snags and cavities
GPS Location: Northing 5523143, Easting 631486

Photo 11: Tree 5, CBH: 98cm, tree has snags and cavities
GPS Location: Northing 5523143, Easting 631486

Photo 12: Tree 5, CBH: 98cm, tree has snags and cavities
GPS Location: Northing 5523143, Easting 631486

DILLON CONSULTING		PROJECT NO. 16-3611
	Potential Bat Roosting Habitat Survey - Parker Lands - October 22 & 26, 2015	PHOTO NO.
October 22 & 26, 2015	City of Winnipeg Southwest Transit Phase 2 Species at Risk Surveys	9-12

Photo 13: Tree 6 , CBH: 250cm, large cavity in trunk at breast height.
GPS Location: Northing 5523571, Easting 632138

Photo 14: Tree 6 , CBH: 250cm, large cavity in trunk at breast height.
GPS Location: Northing 5523571, Easting 632138

Photo 15: Tree 6 , CBH: 250cm, large cavity in trunk at breast height.
GPS Location: Northing 5523571, Easting 632138

DILLON CONSULTING		PROJECT NO. 16-3611
	Potential Bat Roosting Habitat Survey - Parker Lands - October 22 & 26, 2015	PHOTO NO.
October 22 & 26, 2015	City of Winnipeg Southwest Transit Phase 2 Species at Risk Surveys	13-15

Appendix D

Photos of Milkweed Plant Locations Observed within the SAR Study Area

Appendix D: Photos of Milkweed Plant Locations Observed within the SAR Study Area

Photo 1: MW1 (Milkweed Site 1), Showy Milkweed, S of new transmission line towers, 10m x 10m area

GPS Location: Northing 5523452, Easting 631896

Photo 2: MW1, Patch of Showy Milkweed, approximately 15m S of new transmission line towers, looking W; milkweed is in between machinery tracks, 10m x 10m area

GPS Location: Northing 5523452, Easting 631896

Photo 3: MW2, Showy Milkweed, looking S toward southern angle of Transitway Route, 10m x 10m area

GPS Location: Northing 5523193, Easting 631460

Photo 4: MW2, Showy Milkweed, looking S toward southern angle of Transitway Route, 10m x 10m area

GPS Location: Northing 5523193, Easting 631460

DILLON CONSULTING		PROJECT NO. 16-3611
	June 10, 2016	PHOTO NO.
June 10, 2016	City of Winnipeg Southwest Transit Phase 2 Species at Risk Surveys	1-4

Photo 5: MW2, More mature Showy Milkweed plant
GPS Location: Northing 5523193, Easting 631460

Photo 6: MW3, Showy Milkweed with flowers, 2m x 2m area
GPS Location: Northing 5523305, Easting 631553

Photo 7: MW3, Showy Milkweed with flowers, 2m x 2m area
GPS Location: Northing 5523305, Easting 631553

Photo 8: MW3, Showy Milkweed with flowers, 2m x 2m area
GPS Location: Northing 5523305, Easting 631553

DILLON CONSULTING		PROJECT NO. 16-3611
	June 10, 2016	PHOTO NO.
June 10, 2016	City of Winnipeg Southwest Transit Phase 2 Species at Risk Surveys	5-8

Photo 9: MW3, Showy Milkweed, larger area, looking SW
GPS Location: Northing 5523305, Easting 631553

Photo 10: MW4, Showy Milkweed, 2m x 2m area
GPS Location: Northing 5523389, Easting 631600

Photo 11: MW4, Showy Milkweed, 2m x 2m area
GPS Location: Northing 5523389, Easting 631600

Photo 12: MW4, Showy Milkweed looking SSW, 2m x 2m area
GPS Location: Northing 5523389, Easting 631600

DILLON CONSULTING		PROJECT NO. 16-3611
	June 10, 2016	PHOTO NO.
June 10, 2016	City of Winnipeg Southwest Transit Phase 2 Species at Risk Surveys	9-12

Photo 13: MW4, Showy Milkweed looking N at barred trail, 2m x 2m area
GPS Location: Northing 5523389, Easting 631600

Photo 14: MW5, Showy Milkweed, 3m x 1m area
GPS Location: Northing 5523452, Easting 631896

Photo 15: MW5, very sparse Showy Milkweed, occasional plants among Peavine plants, between 2 lines of distribution poles N of new transmission line towers.
GPS Location: Northing 5523571, Easting 631915

Photo 16: MW5, looking W, very sparse Showy Milkweed, occasional plants among Peavine plants, between 2 lines of distribution poles N of new transmission line towers.
GPS Location: Northing 5523571, Easting 631915

DILLON CONSULTING		PROJECT NO. 16-3611
	June 10, 2016	PHOTO NO.
June 10, 2016	City of Winnipeg Southwest Transit Phase 2 Species at Risk Surveys	13-16

Photo 17: MW6, Showy Milkweed, 1m x 2m area

GPS Location: Northing 5523652, Easting 631964

Photo 18: MW6, looking NW, wet area where Showy Milkweed plants were found, approximately 20 plants in 1m x 2m area
GPS Location: Northing 5523652, Easting 631964

Photo 19: MW7, 2 Showy Milkweed plants found in opening of woodlot

GPS Location: Northing 5523641, Easting 632254

Photo 20: MW7, looking S, 2 Showy Milkweed plants found in opening of woodlot

GPS Location: Northing 5523641, Easting 632254

DILLON CONSULTING		PROJECT NO. 16-3611
	June 10, 2016	PHOTO NO.
June 10, 2016	City of Winnipeg Southwest Transit Phase 2 Species at Risk Surveys	17-20