

## Detailed Impact Analysis: Badlands Scenic Viewpoint Road

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### SUMMARY

*This form has been modified to present information and analysis for the Detailed Impact Analysis (DIA) for the Badlands Scenic Viewpoint Road (BSVR) in the East Block of Grasslands National Park (GNP). The additional information:*

- *complements or modifies the third party initial detailed impact analysis (initial DIA) completed for this project (February 2016), Specific changes from the initial DIA are indicated as appropriate in the form below.*
- *updates the project description, where more design information is in place, with corresponding updates in effects identification, mitigation, and analysis where required.*
- *updates analysis of effects on species at risk, to provide a Species at Risk Act (SARA) Authorization Decision Tool*
- *Incorporates signing document for the Field Unit Superintendent, indicating a decision with respect to the significance of the adverse environmental effects of the project, as determined by the DIA*

This document, along with related documents and studies noted below, constitutes the report and documentation for the DIA for the Badlands Scenic Viewpoint Road, completed in accordance with *Parks Canada's Directive on Impact Assessment (2015)*.

Project Title & Location: Badlands Scenic Viewpoint Road Construction in the East Block of Grasslands National Park (see Figure 1).

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Proposed Project Dates:

Internal Project File #: SSFU-2015-028-GNP Badlands Scenic Viewpoint Road (Schmidt)

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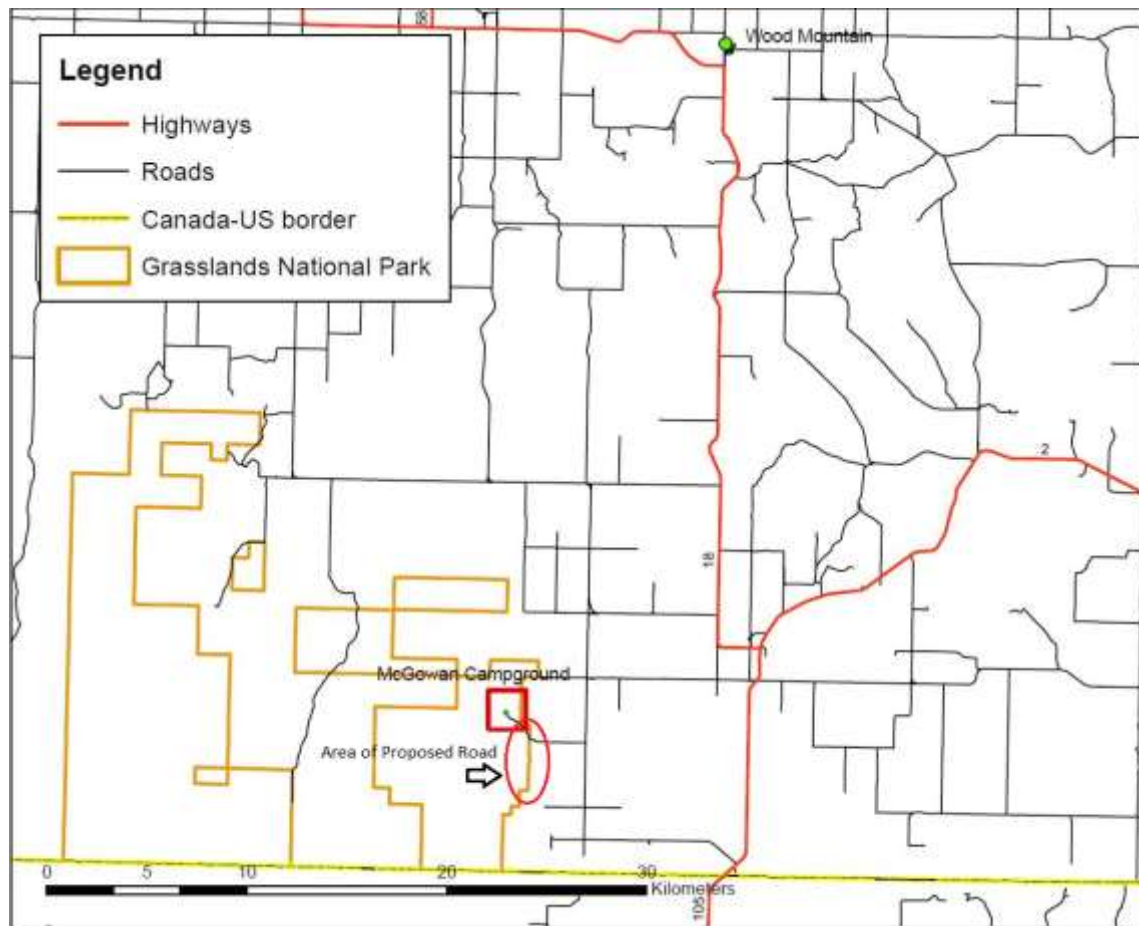


Figure 1: Map of East Block of Grasslands National Park and region, showing general area of proposed construction

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## Project Description

The design and construction details of the road have been refined and modified from the initial DIA, as indicated below, based on more detailed designs. Please refer to the *Detailed Conceptual Design Report for Badlands Scenic Viewpoint Road* created by McElhanney for detailed plans and drawings. Details in this analysis are based on designs provided on January 6, 2016 and on communications with the project manager.

### 1.1. Project Rationale

The proposed Badlands Scenic Viewpoint Road is an approximately 10.85 km low-profile (no ditches, roadtop flush to ground), asphalt-topped, 3.5 meter-wide single track road to provide visitors a motorized vehicle tour opportunity with access to 6 viewpoints and 1-2 day use areas included in the project design. The project provides opportunities for visitor enjoyment and fostering appreciation for Canada's heritage places, as it provides basic access to key locations in Grasslands National Park. The project meets commitments outlined in GNP's 2010 Park Management Plan (PMP) to improve road access, develop interpretive viewing and day-use areas, and to increase infrastructure to enhance visitor experience in this area of the park (Parks Canada, 2010). Completion of this scenic drive and associated infrastructure will achieve a significant PMP commitments. This area was chosen for development due to:

- Its proximity to the easternmost edge of the park, leaving the interior wilderness of the park undeveloped and concentrating disturbance along the fence line where adjacent non-park lands are mostly cultivated domestic crops,
- The existing ~13 km trail that was historically used for ranch access (the south end of the trail is still actively used by private landowners, visitors, Parks Canada Agency (PCA) staff and researchers), and
- The excellent views and visitor experience opportunities (the proposed viewpoints associated with this project have been historically used as lookouts).

The 2010 Grasslands National Park Management Plan highlights the former McGowan's Ranch Yard the Dawson's viewpoints and The Zahursky Point Trail as focal areas for development (see Figure 2). The management plan links the management approach for this area to Providing the Grasslands Experience, Grasslands Restored – The Prairie Persists and History Abounds key strategies (see section 6.2 of the 2010 Management Plan for complete area management approach). Additional consultation activities guiding the development of this project are included in Appendix B.

Providing a clearly identifiable scenic road in this area, which has been historically used for motor vehicle access and continues to experience unauthorized off-road vehicle use, is also a protection tool for management in the same way as trails are used to define and limit the area of disturbance while offering a guided experience. A well-known quote in the trail community is, "People don't need trails – the land does!" (Attributed to the late Jim Angel.) The park has experienced significant impacts due to off-road activity where vehicles have driven randomly and repeatedly over the landscape. This landscape is particularly susceptible to this type of activity due to its open environment, remoteness and history of vehicle access. This has impacted soil conditions, vegetation and cultural resources. A scenic

roadway allows the park to direct visitors to the scenic highlights and away from the areas of concern and sensitivity.

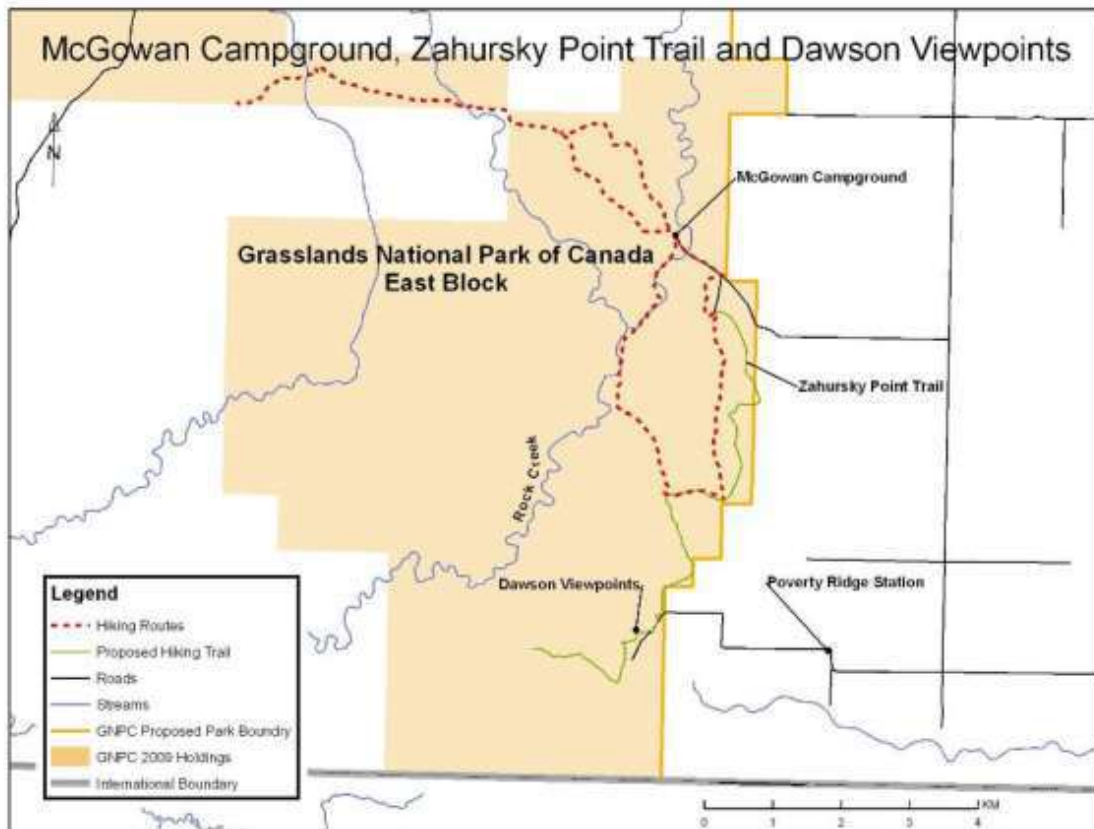


Figure 2: Area Management Approach: McGowan Ranch Yard, Zahursky Point and Dawson Viewpoints (R. Jeffries)

## 1.2. Description of Area

The road is proposed to be built along the eastern-most edge of GNP's East Block boundary, on the uplands plateau between the Killdeer Badlands/Rock Creek river valley to the west and privately-owned cultivated fields to the east. Visitor infrastructure in the East Block is currently limited to the former McGowan Ranch Yard, now the Rock Creek Campground (RCC), which is located just past the northern edge of the proposed project area (see Figure 1, above) as well as a mowed area with a self-contained portable toilet and kiosk at the south entry gate to the park (past Poverty Ridge at park boundary in Figure 1). The vegetation community in the project area is predominantly upland grasslands, characterized by shallow slopes <5%, high elevations >950 m (2800 feet), grasses and/or sedges as the predominant ground cover and shrub cover being low or absent (D.A. Westworth & Associates 1994)(Figure 3). The typical vegetation community is a speargrass-western wheatgrass-blue grama grass complex with some areas of scattered shrubs (predominantly silver sage) and some areas of invasion by exotic grass species (crested wheatgrass, smooth brome and yellow sweet clover). The project also includes two historically cultivated fields (fields visible as "disturbed community" vegetation type in Figure 3 below).

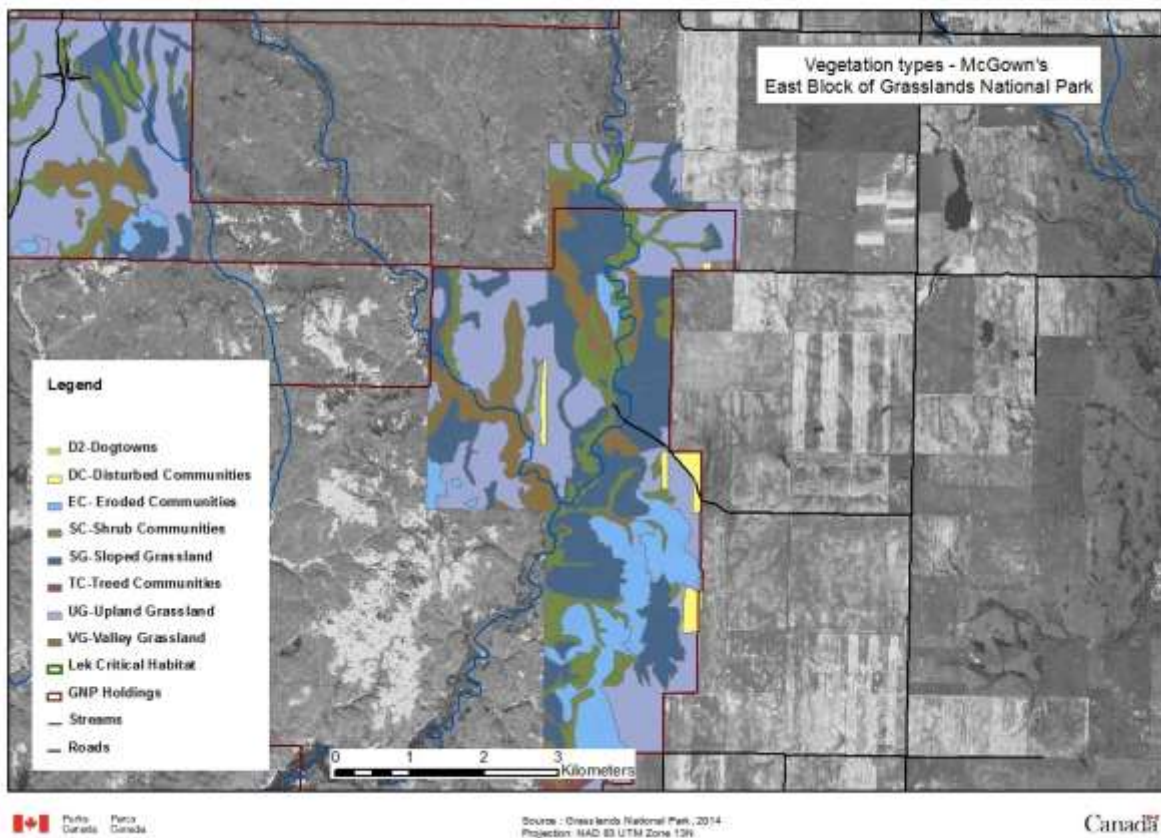


Figure 3: Map of vegetation types in the East Block of Grasslands National Park as described in a study by D.A. Westworth & Associates Ltd funded by Grasslands National Park in 1994.

The proposed 10.85 km road follows the general alignment of an existing 13 km vehicle trail, though the proposed alignment deviates from the existing trail in several places, as shown in Appendix A. The southern portion of the existing trail (the 5 kms between the south park access past Poverty Ridge and the gate to private lands west of the park) is a soil-top trail currently used for motorized vehicle access by private landowners, visitors, PCA staff and researchers and has been bladed by a grader. The 8 km northern portion of trail between the north park access at RCC and the south access past Poverty Ridge is a mowed two-track trail that has been limited by recent park management decisions to hiking, or to horse- and/or tractor-drawn wagons. Historically, it provided motorized vehicle and non-motorized wagon access.

### 1.3. Project Description

The 10.85 km<sup>1</sup> low-profile, asphalt-topped, single lane (3.5 m wide) road (no ditches, road top flush to ground) is designed to accommodate two-way traffic at speeds of 20-30 km/h using a series of gravel or grass laybys (pullover spots) every ~400 m (see Figure 4 for single lane design principle and Figure 5). In addition to the laybys, there will be one stretch (~550 m) of double-lane road (~7 m roadtop width,

<sup>1</sup> This distance is according to McElhanney's most recent design dated Jan 2016 , which has been approved by the Field Unit Superintendent pending a SARA compliance review. The areas are roughly estimated using design drawings from January 6, 2016 and a shapefile of the road alignment (shapefile not including laybys or parking areas) provided to PCA on March 8, 2016.



between 0.5 - 1 km long, subject to final design changes) where sight lines are impaired. The additional lane will allow oncoming traffic to pass safely.

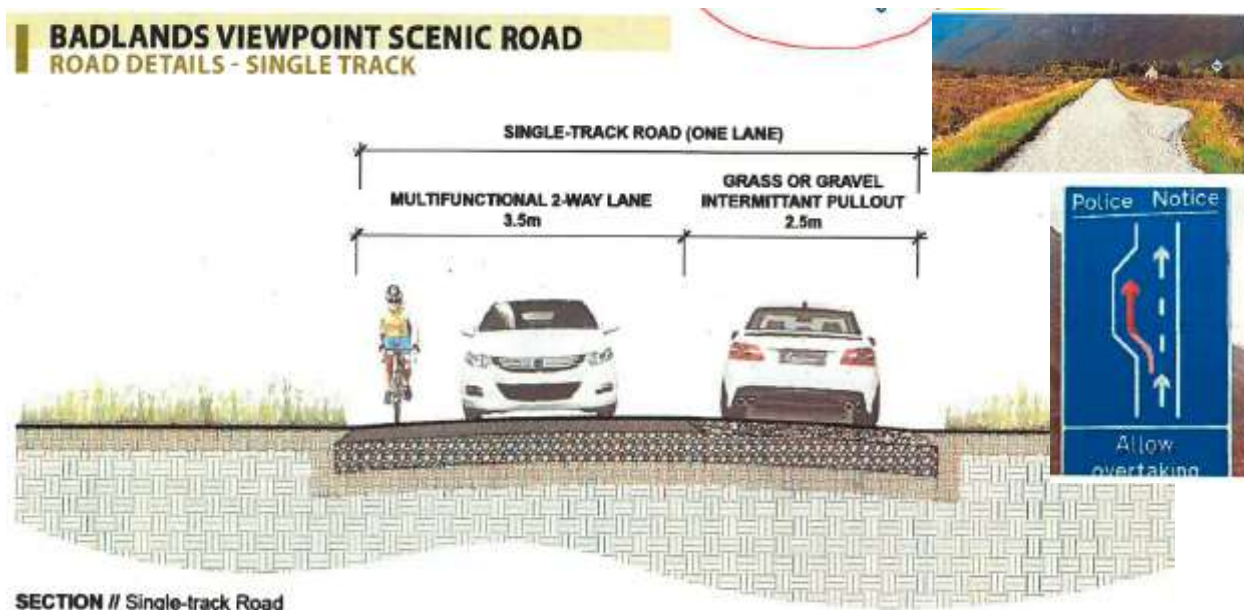


Figure 4: Page 16 of the Badlands Scenic Viewpoint Road Design by McElhanney showing concept of single-lane road accommodating two-way traffic.

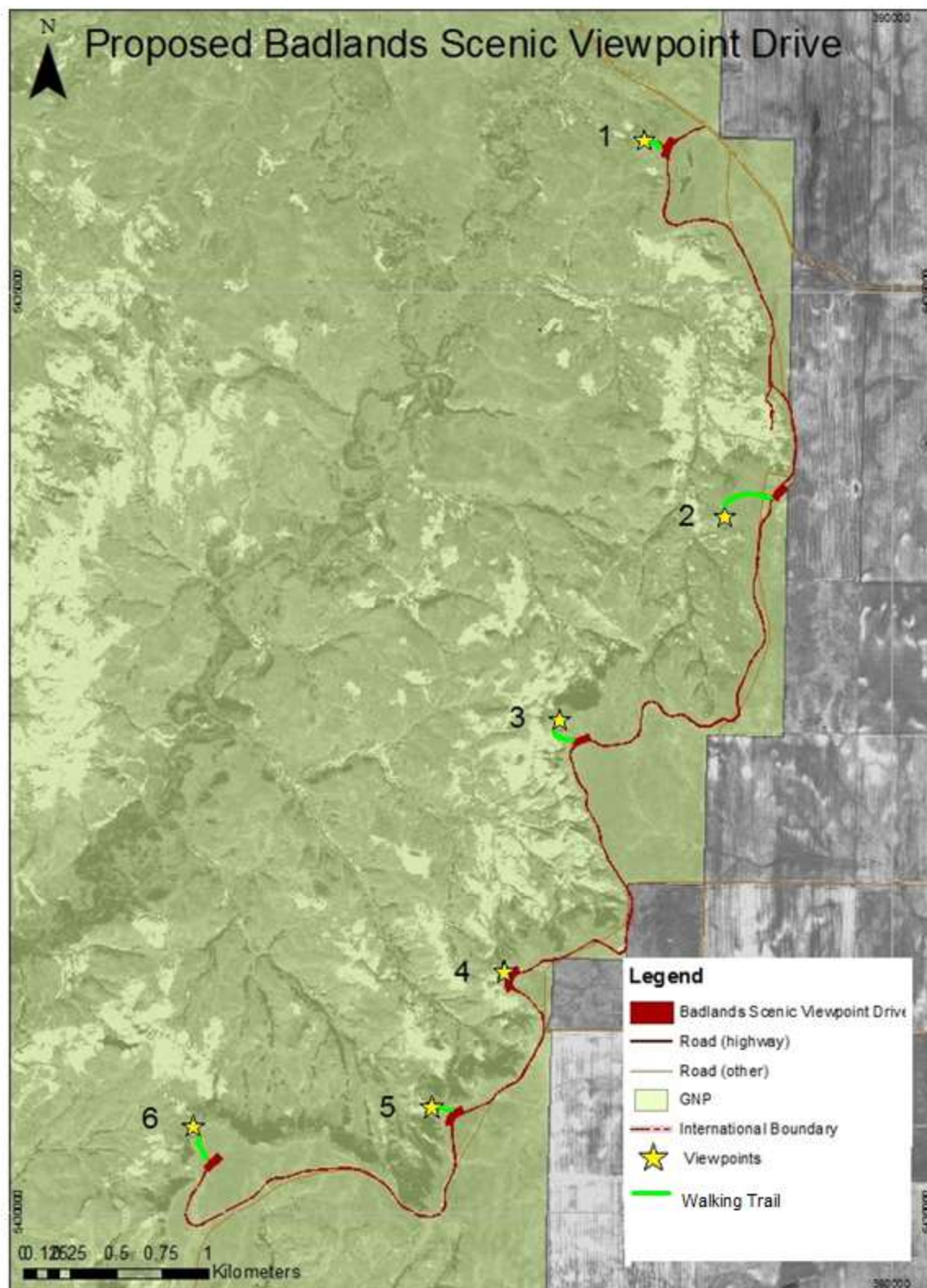


Figure 5: Map of the proposed Badlands Scenic Viewpoint Road. Parking areas and turn-arounds associated with each viewpoint are visible as a solid extension along the road development.

The scenic road will be open to the public during the regular visitor operating season, which is generally May 1<sup>st</sup> to Thanksgiving weekend. The road will not be maintained during the winter. The park may enact road closures during the off season or periodically to accommodate other public safety or species at risk needs. The road may be equipped with infrastructure to facilitate closures, such as steel gates. Access beyond the south end of the scenic road on to the existing trail will continue to be available to private landowners, PCA staff and researchers. Visitor traffic will be stopped at viewpoint #6.

Other roadworks associated with the project include parking at viewpoint accesses, vehicle turn-around areas, parking for day-use areas and an alternate access route at the south end for local, staff, researcher and emergency traffic. These elements are further described in section 1.4, but generally include:

- 3-4 turn-around loops with parking (Figure 6, Figure 8, Figure 10, Figure 11)
- 1 pull-over layby parking (Figure 7, Figure 9)
- day use areas associated with viewpoint 5 and 6
- 2.9 – 3.2 km access road at the south end of scenic drive (design incomplete, no figure available), 0.5-0.8 km within gazetted park lands and the remaining 2.4 km on federally-owned lands (this analysis will assume the largest footprint)

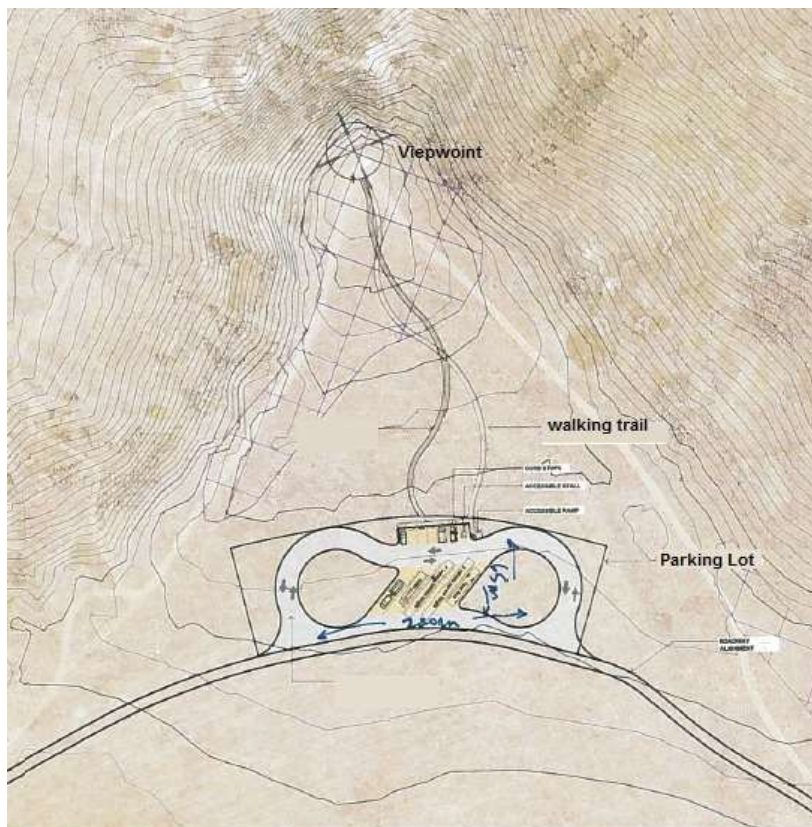


Figure 6: Proposed turn-around loop and parking lot at viewpoint 1





Figure 7: Proposed layby parking at viewpoint 2

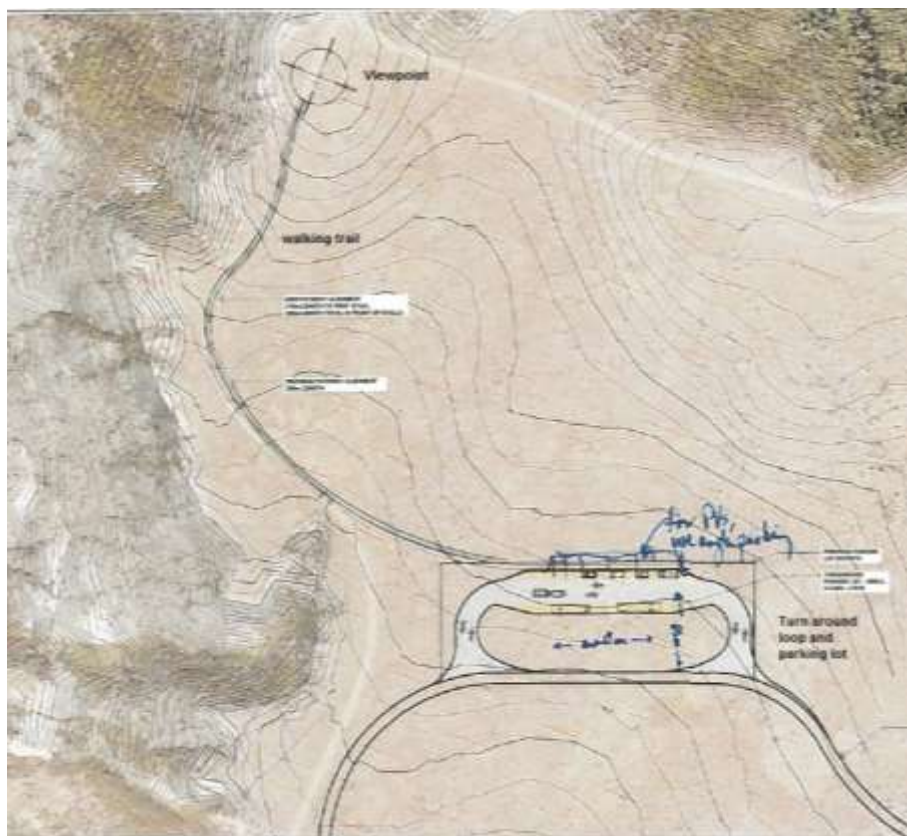


Figure 8: Proposed turn-around loop and parking lot at viewpoint 3

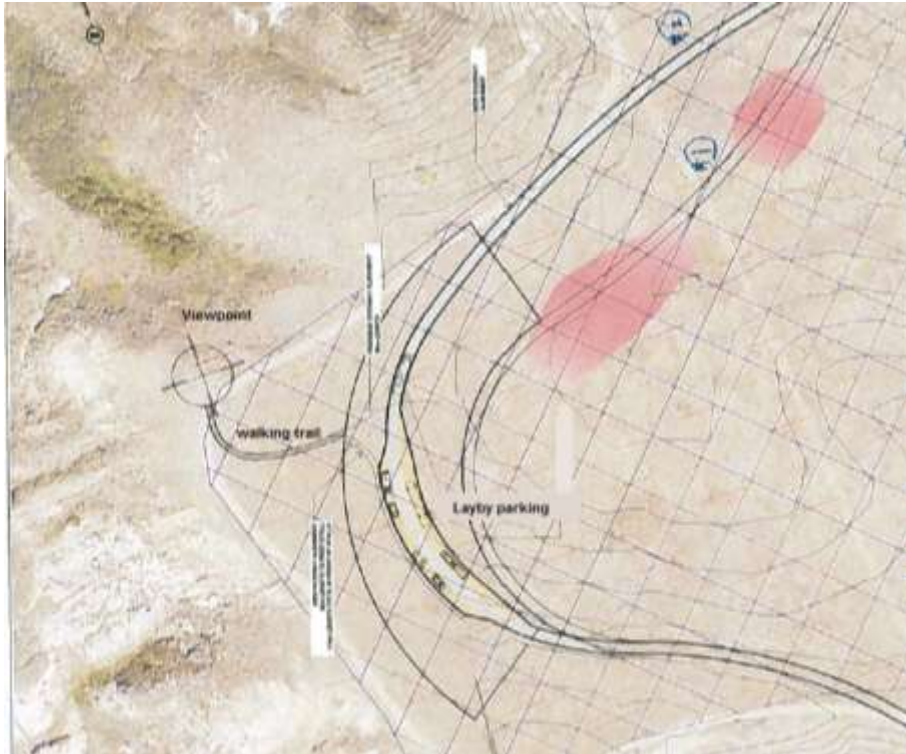


Figure 9: Proposed layby parking at viewpoint 4.

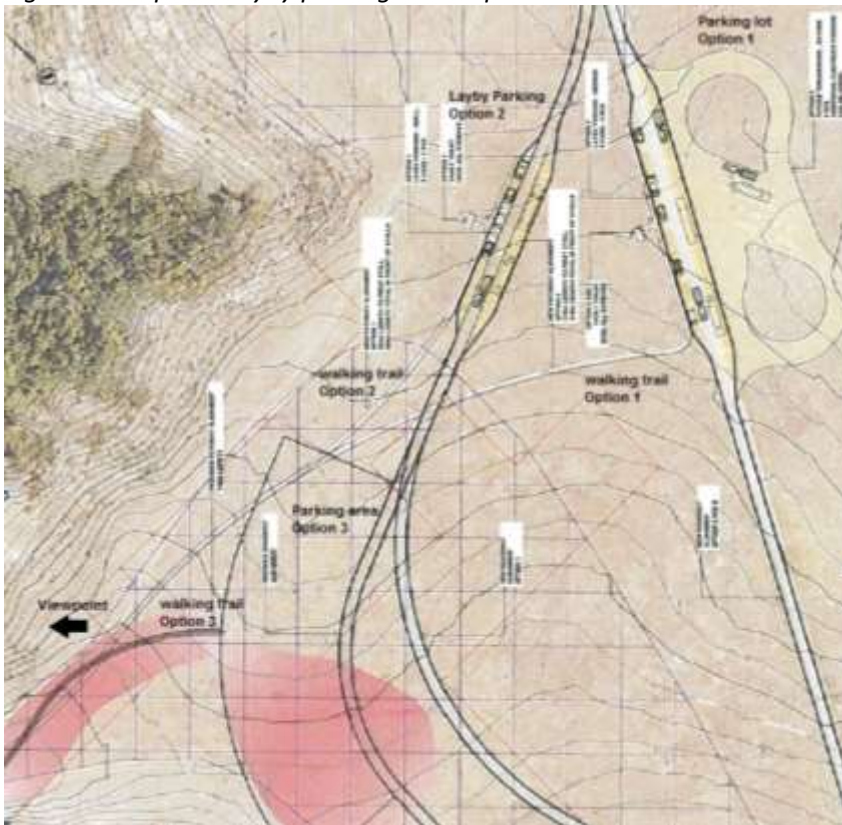


Figure 10: Proposed parking options for viewpoint 5.



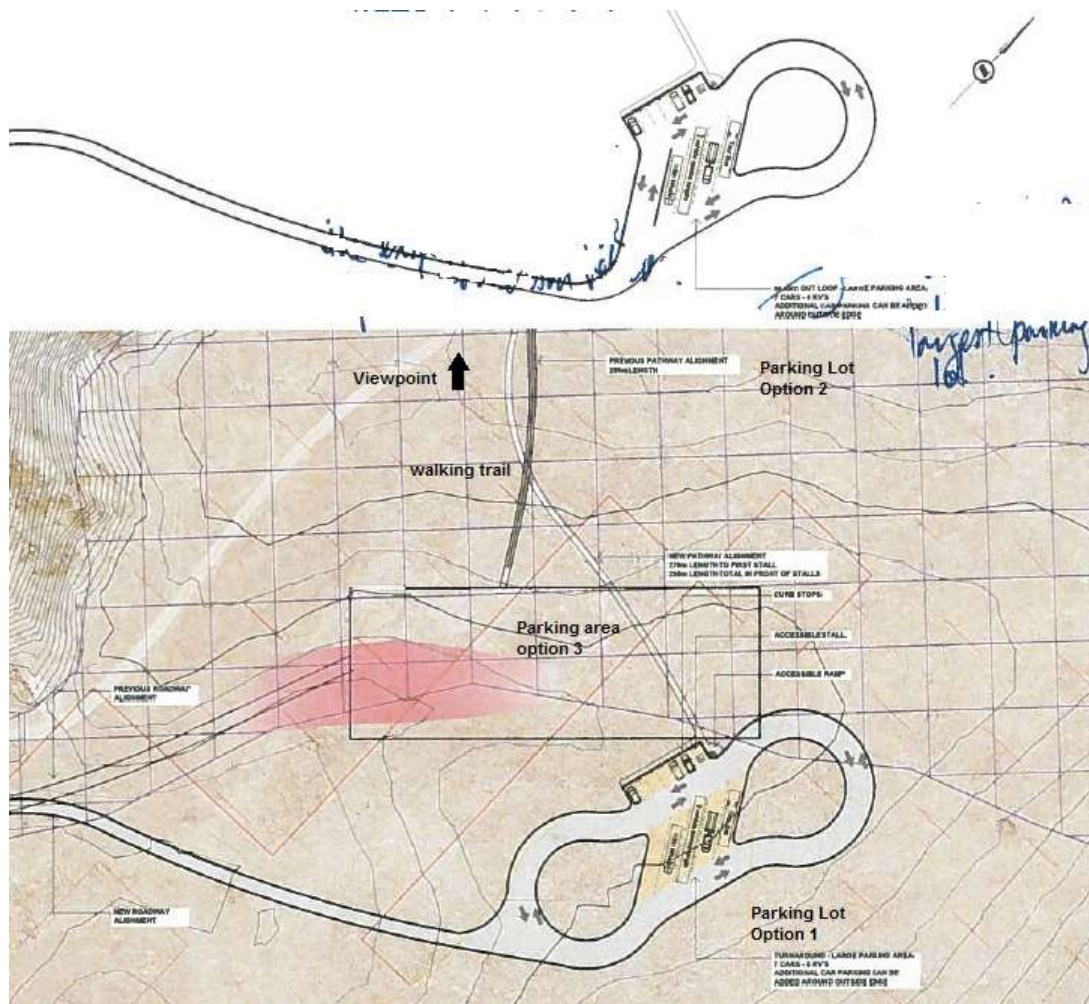


Figure 11: Proposed parking options for viewpoint 6

#### 1.4. Specific project components:

##### 1.4.1. Badlands Scenic Viewpoint Road (BSVR)

Badlands Scenic Viewpoint Road will be a linear transportation corridor, approximately 10.85 kilometre in length, to transport visitors to various scenic highlight look-outs. The road will be constructed at grade (i.e. road surface is no higher than surrounding grade), which will require excavation of subsurface material, the void replaced with compacted aggregates, then capped with a paved surface. The road will be restricted to a single lane, 3.5 metre wide permanent width. It will be built capable of supporting bicycles, cars, light trucks, recreational vehicles and tour buses.

There will be one segment of road, 500 metres or less, where the road will be constructed as two lane, 6.0 metre permanent width. This is to accommodate when sightlines (for oncoming traffic) are insufficient to ensure safe passage of vehicles.

#### **1.4.2. Laybys**

Laybys will be built to accommodate two-way traffic on the single lane design, allowing oncoming traffic to pull over and stop. Laybys will be situated approximately every 400 metres, add 2.5 metres additional width at those locations (total road width of 6.0 metres), and require sufficient length for 1 – 2 long vehicles to pull off (i.e. tour bus, RV). These will be surfaced with pavement, gravel or grass. All laybys will be constructed on the east side of the road to enable incoming traffic to focus on the scenery westward, and protect those vistas by keeping these components out of the views.

#### **1.4.3. Turnarounds and/or parking areas**

Turnarounds and/or parking areas will be built at six locations to allow vehicles to safely turn around and/or park:

3-4 turnaround loops with parking for approximately 5 vehicles (see Figure 6, Figure 8, Figure 10 and Figure 11)

Viewpoint 2 and 4 will have layby parking for approximately 4 vehicles along the road (see Figure 7 and Figure 9), with an option for layby parking in place of a turn-around loop and parking lot for Viewpoint 5 (see Figure 10)

Day use areas are proposed for viewpoints 5 and 6

#### **1.4.4. Scenic Viewpoints**

Scenic Viewpoints will be developed at six defined lookouts adjacent to the road, connected by pedestrian trails. Two viewpoints will include a day use area. Each of these viewpoints has been selected through an extensive consultation process (see Appendix B), and each presents a unique story element of the park. Scenic viewpoints will have a range of site furnishings and supporting infrastructure, depending on the viewpoint story and expected traffic volume. Each location will have a designated parking area to support 6 – 15 vehicles.

Viewpoint 1 – layby parking incorporated into the associated turnaround for approximately 5 vehicles, permanent connecting trail (e.g. elevated boardwalk) from parking area to viewpoint, curved accessible ramp, accessible paved patio incorporating current viewing telescope, benches and interpretive media (e.g. illustrated panels)

Viewpoint 2 – layby parking along road for approximately 5 vehicles, permanent connecting trail, arrival gallery with interpretive media, elevated boardwalk, second viewing platform with seating, additional elevated 'metal grate' boardwalk (over badlands) to final viewpoint node with more interpretive media

Viewpoint 3 – layby parking incorporated into the associated turnaround for approximately 5 vehicles, permanent connecting trail, static viewpoint with interpretive media and benches

Viewpoint 4 – layby parking along road for approximately four vehicles, permanent connecting trail, static viewpoint with interpretive media. Benches may be provided although this site is designed for shorter stays. This location was also chosen to avoid dense concentrations for cultural artifacts further south

Viewpoint 5 – day use area and layby parking incorporated into the associated turnaround for approximately ten personal vehicles and seven recreational vehicles or tour buses, permanent connecting trail, static viewpoint with interpretive media and benches. This location is also selected as a day use area with facilities such as shade structure, approximately four picnic tables (metal frame with recycled plastic or other durable top), Haul-All waste bins, one vault toilet (see below) and potable water (see below)

Viewpoint 6 – separate parking loop for approximately ten personal vehicles and seven recreational vehicles or tour buses, permanent ADA accessible connecting trail (e.g. elevated boardwalk), formal circular path (e.g. raised boardwalk), cantilevered walkway overhanging the badlands (e.g. glass platform), interpretive media and benches, plus an additional connecting trail to an informal gathering space. This site will be the culmination of all six viewpoint locations and will serve the highest traffic volumes. The decommissioned vehicle trail between viewpoint 5 and 6 will be maintained as a hiking and bicycling trail. Lastly, approximately four individual picnic shelters may be provided here for those visitors wanting a longer experience. Vault toilet and potable water will NOT be provided here, as this service will be available at viewpoint 5

#### **1.4.5. Walking Trails**

Walking trails approximately 1.5 m wide are proposed to connect parking areas to viewpoints. Trails will be constructed employing one of three different methods to best-fit the habitat, intended use and corresponding story element. The methods include:

Raised Tread construction; made by excavation of the organic layer, and replaced with compacted aggregate, and capped with aggregate ‘fines’ or ‘waste screenings’ with a crowned profile above grade. This is a method recommended by International Mountain Bicycling Association, and already employed within the park. This is best used for relatively flat areas expecting high traffic volumes as it will withstand water erosion and presents a very durable and comfortable walking surface. This will typically be the preferred approach.

Boardwalk construction; made by creation of parallel, linear support stringers (i.e. wooden or metal), overlaid with walking surface material (i.e. perpendicular wooden boards, or metal grate). The boardwalk may be elevated above grade with the use of screw pile anchors as supports for the parallel, linear stringers. This is a durable, inviting walking surface, but due to its higher initial cost and ongoing maintenance expense, this will not be the preferred approach. However, for either habitat or story element reasons, this approach may be applied in certain situations.

Mowed grass; made by passing a grass mower and removing the height of vegetation to approximately 2 – 3 inches height remaining. This will be used where expected traffic is light, as heavy traffic quickly compacts soil over time. The linear route from the parking to the viewpoint can be changed from season to season.

#### **1.4.6. South Emergency/Neighbour Access**

South Emergency/Neighbour Access at the south end between viewpoint 5 and viewpoint 6, will intersect with the main scenic viewpoint road. The entire access from where it connects to the scenic drive from the main grid is 3.2 km, 0.8 km within park boundaries and 2.4 km outside of



park boundaries. This access will serve the adjacent land manager(s) that must access private lands between Parks Canada lands west of the BSVR. Additionally, it will serve as an emergency exit for staff and visitors (fire, severe weather, injuries) and facilitate access to day use area for maintenance and cleaning. Lastly, it provides a future opportunity at making the BSVR a one-way circuit if visitation increases above the road's capacity as a two-way road. The access road will be built to the same dimension standards as the scenic road within park boundaries, although it may be gravel surfaced instead of paved. Outside of the park boundary to where it connects with the main grid, this access will be built to the conventional, raised crown standard as is typical within the Rural Municipalities of the area (8 or 9m top with 4:1 side slopes, 1.2m height, total of 17.6 or 18.6 width from ditch to ditch). This external portion may be double lane to serve the adjacent land manager (outside of the park) to more effectively move agricultural equipment.

#### **1.4.7. Potable Water Distribution System**

An upgraded treatment facility is being created at the Rock Creek Campground (RCC), at the north end of the BSVR. This will enable the park to deliver potable quality drinking water to a storage facility at the proposed day use area (viewpoint 5). This would require a storage tank, with an internal pressure system (i.e. small pump) and a single spigot for distribution. The tank may be buried below ground or remain above ground.

#### **1.4.8. Waste Disposal System**

1-2 double unit Haul-All waste bins (one side recyclable beverage containers, other side general waste) will be placed at high use viewpoints such as 1, 5 and 6 for general litter. More will be added as required. Garbage and recycling waste will be removed off-site to an appropriate facility during the operational season.

#### **1.4.9. Concrete vault pump-out toilet(s)**

Concrete vault pump-out toilet(s) will be used only at viewpoint 5. Vault toilet effluent will be pumped out and hauled off-site to an appropriate receiving facility.

No electrical or wastewater treatment systems are required for this project. These services will be available at the adjacent Rock Creek Campground, north of the project area.

### **1.5. Description of Activities within the scope of the Analysis**

Site mobilization:

- Locate and clear staging area and access/haul routes
- Install protection fencing and matting (as required)
- Erosion and Sediment Control measures
- Locate and install site office and temporary sanitary services (if required)

Earthwork and Rough Grading:

- Strip roadway of topsoil / vegetation and stockpile in approved location (adjacent to roadway or at other approved location)

- Cut and Fill of earthwork to achieve design subgrade elevation
- Haul excess material from Scenic Roadway to construct Access Roadway
- Sourcing and importing of common fill if required (not anticipated)
- Removal and disposal of material from job site that is not required or determined to be waste
- Working and compaction of subgrade (may require addition of water)

#### Service Installations:

- Trenching, excavation and backfilling for sub-drains
- All sub-drains and other servicing infrastructure installation

#### Granular Base Course Gravels (GBC) and Paving:

- Importation of GBC
- Placing, working and compacting GBC
- Installation of Geotextiles
- Importation of Asphalt Concrete Pavement (ACP)
- Installation of asphalt and surfacing gravels
- Tie-ins to adjacent construction or undisturbed areas

#### Soft Landscaping:

- Topsoil placement and fine grading
- Seeding and native species plant installation

#### Signage:

- Locating and installing sign posts and bases (as needed)
- Installation of Signs

#### Site Clean-up & Demobilization:

- Site Inspection and clean up
- Removal of site offices and laydown areas and remediation of laydown areas
- Removal of Rig Mats and remediation of area

### 1.6. Project Footprint

The total physical project footprint is 34.5 ha, and is divided into long-term disturbance, temporary disturbance, disturbance on gazetted park lands and disturbance outside of the gazetted park boundary.

Table 1 summarizes project footprint components:

Table 1: Footprint of proposed project

	Project Area		
	Total Area (ha)	Infrastructure Footprint (ha)	Temporary Disturbance (ha)
All	34.5	14.24	20.31
Inside Park	27.3	7.00	20.31
Outside Park	7.24	7.24	0

Of the total project area of 34.5 ha, 7.24 ha are on federally owned lands outside of the gazetted park boundary. Activities outside of gazetted park boundary will be the construction of an access road 2.40 km in length following provincial standard for country gravel road of 9 m road top width, 4:1 side slopes and 1.2 m crown height for a total ditch-to-ditch width of 30 m. The exact specifications of the road outside the park may vary depending on geotechnical investigation findings and expected usage, but will conform to provincial highways standards for safety reasons. The length of access road outside of park boundaries is not considered critical habitat as it follows a road allowance between cropland and hayfields.

The 20.31 ha of temporary disturbance is the area of ground disturbance potentially created by the use of vehicles and machinery during construction. The additional disturbance area is calculated using an 8.25 meter buffer extending out from either side of all road-works and a 2.5 meter buffer extending from the centreline of “minor” works (viewpoints and walking trails). This disturbance is considered temporary though restoration may be required in areas where ground cover has been disturbed. It is expected that some fine adjustments to road alignment may be made as the project moves forward, to accommodate new information or issues as they come up before and/or during construction phase. The portion of access road outside of park boundaries does not include a “buffer” of temporary disturbance. There are two reasons for this:

- 1) The proposed access road is sufficiently wide outside of park boundaries to allow vehicles and equipment required for construction to pass, and staging areas can be set up at the nearby yard site. This eliminates the need for a “zone of disturbance” above and beyond the area of road and ditching.
- 2) Ditches are considered more than a temporary disturbance for the purpose of this analysis. While they will be re-vegetated post-construction, they are part of the anthropogenic infrastructure and are expected to last the life of the road.

Of proposed 11.65 linear km of road (10.85 km in park and 1.5 km outside of park), roughly 2 km directly overlap with bladed portions of the existing trail (see Appendix A), 0.5 km travel through previously cultivated fields (since replanted to native species) and 1.13 km travel through areas with moderate to high levels of exotic grass invasion, inclusive of the previously cultivated areas (Fischer 2015). The remaining road is through upland prairie habitat dominated by native flora. Mitigations to avoid or reduce impacts to sensitive areas (for example, rig mats, designated turn around areas) will be required and approved by PCA.

## 2. Alternatives Considered

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### 2.1. No Motorized Vehicle Access

The idea to provide motor vehicle access in this area has been developed over years, as captured in the alternatives tables in sections 2.2 and 2.3. The project meets commitments outlined in GNP's 2010 Management Plan to improve road access, develop interpretive viewing and day-use areas, and to increase infrastructure to enhance visitor experience in this area of the park (Parks Canada, 2010). Public and local stakeholder feedback has indicated a strong public desire for a scenic driving experience in this area. Completion of this scenic drive and associated infrastructure will achieve a significant PMP commitments. Additional consultation activities guiding the development of this project are included in Appendix B.

### 2.2. Location of Road

When considering how to improve road access in the East Block of Grasslands National Park (GNP) to allow visitors to access key areas of the Park, the eastern edge of the GNP boundary along the existing Zahursky's Trail was the obvious choice when taking into account efficacy of access, avoiding disturbance of interior wilderness areas (also containing critical habitat for species at risk) and budget. In more detail:

Table 2: Decision making process for determining location of proposed road

Project requirement	Guiding principle	How location satisfies requirement
Access	Provide access to key areas and viewpoints identified in the park management plans and through various visitor and stakeholder consultation activities.	It provided exceptional scenic viewpoint opportunities while staying close (generally within 500 metre or less, except for the final viewpoint at 2000 metres) of the park boundary.
	Utilize existing access points where possible for ease of access (reduce travel times, keep navigation to/from scenic drive simple).	Scenic road in this location can make use of existing access points at Rock Creek Campground (former McGowan Ranch Yard) and southern access point past GNP's Poverty Ridge Field Station.
		Placing scenic road immediately adjacent (and thus accessible) to the Rock Creek Campground will compound the use of each facility, further justifying the investment in each facility and facilitating greater likelihood of increased visitation and revenue generation.
Minimize Disturbance	Develop in areas that are already disturbed by anthropogenic features, development and/or other factors that potentially compromise ecological function, meeting GNP's general principle (as per Park Management Plan (PMP)) of choosing pre-disturbed locations, when appropriate, for Visitor Experience (VE) developments.	This location was an historic vehicle access trail along eastern edge of the badlands used by owners, neighbours and regional members for several generations.
		The natural and cultural resource impacts are minimized due to existing ground disturbance created by historic motorized vehicle access and some areas of cultivation.
		The location follows the eastern boundary fence of the park for roughly 7.5 km, turning west from the boundary at that point to follow the ridge (and existing trail) for the remaining ~3.5 km. The lands on the other side of the boundary fence are mostly cropland (which do not provide valuable habitat for many species at risk due to lack of plant diversity, chemical control of weeds and insects and periodic mechanical disturbance of ground with heavy machinery during key breeding and/or brood rearing times). Therefore developing the scenic drive here would

		concentrate development next to existing and ongoing disturbance.
	Concentrate visitor experience infrastructure in a few key locations identified in 2002 and 2010 Management Plan in order to leave the vast majority of the park undeveloped.	The location is adjacent to the Rock Creek Campground, thereby consolidating all major visitor experience infrastructure within the eastern periphery of East Block, leaving interior wilderness area undeveloped.
Budget	Development must achieve other goals while remaining within budget	Cost benefits occur due to building the scenic road adjacent to the nearest (and only) park access – building a scenic road in any other part of the East Block would also require additional access and basic facilities, plus additional consultations, engineering and design challenges.

### 2.3. Road Alignment

Plans for motorized vehicles access in this area have been in development since preparations for the 2002 Grasslands National Park Management Plan identified the need to provide a scenic driving experience. Since then, the extent and location of road access has evolved based on public and stakeholder consultation, visitor experience strategies, the presence of existing anthropogenic disturbance, principles for minimizing environmental impacts and the on-going identification of critical habitat for species at risk. The first stages of this process are captured in the table below:

*Table 3: Process of determining and adjusting proposed road alignment*

Alignment	Rationale
The park selected portions of the historic vehicle trail alignment for vehicle access and for trail access. (Pre-2004)	As the historic vehicle trail had seen many decades of continual use, it seemed reasonable to consider it as the future road and trail alignment, at this stage of planning development.

<p>Following several focused consultation activities in 2004, park management began exploring more extensive vehicle access along the entire historic vehicle trail, including viewscapes of recently acquired lands at the south end of the current alignment (Million Dollar Viewpoints, formerly Dawson Viewpoints). (Fall 2004 – Summer 2005)</p>	<p>Consultation activities yielded very strong support for GNP to expand its ‘vision’ regarding motorized access to viewpoints along the East Block periphery. These viewpoints had been shared and appreciated by local ranchers, neighbours and their guests for many generations. Recent land acquisition of former Dawson lands without maintaining the historic access had disappointed many individuals and did not engender support for this ‘prairie’ national park. These regional stakeholders wanted to ‘show off’ this landscape to their visiting friends and family and ‘be proud’ of this park.</p> <p>The advantages of expanding the including the south Million Dollar Viewpoints are:</p> <ul style="list-style-type: none"> <li>• It provided a great opportunity to build support for the park among our regional community</li> <li>• It provided an opportunity to increase visitation as regional stakeholders returned to the park and brought guests</li> <li>• It enabled the park to provide a more satisfying VE opportunity while still maintaining the principles of working within largely pre-disturbed areas adjacent to the park boundary</li> <li>• It provided the only opportunity for visitors to access the East Block by road. The only other access is a ~1.75 km (within park boundary) dead end entrance that arrives at the Rock Creek Campground.</li> </ul>
<p>GNP seeks professional expertise to provide guidance in the development of vehicle access along the entire route (Fall/Winter 2008)</p>	<p>Expertise to guide initial planning stages needed to determine funding approaches and assist with understanding natural and cultural resource implications.</p> <p>Expertise will help to identify issues and solutions early in project</p>
<p>The decision to actively pursue a motorized vehicle, scenic viewpoints product is publically confirmed in the GNP Park Management Plan. (See PMP 6.2 “McGowan Ranch Yard, Zahursky Point Trail and Dawson Viewpoints” AREA MANAGEMENT APPROACH.) (2010)</p>	<p>The declaration of the scenic viewpoint road experience as a major goal demonstrated our commitment to our East Block stakeholders, our willingness to make the East Block more accessible, and our vision to increase visitors to the park.</p>

More recently, the park received funding to develop visitor products, enabling GNP to contract a landscape architecture firm to guide the design concept and help navigate the recent challenges of newly identified Species At Risk (SAR) Critical Habitat (CH) lands along the historic road alignment. It also gave the park an opportunity to present the challenge of both providing a scenic road while protecting the sensitive habitat and cultural landscapes found in this area to professionals trained and experienced in solving complex challenges. Services from McElhanney Landscape Architecture consultants were procured in 2015 to refine the design concept for BSVR, incorporating past consultation, archaeological information, recent species habitat information (new critical habitat identified in the area in 2014 and 2016), GNP 2010 Management Plan targets and visitor experience principles. McElhanney also utilized the draft Detailed Impact Analysis (DIA) being developed by Summit Environmental/EGE Engineering dated August 18<sup>th</sup>, 2015. The preliminary design went through critical habitat and identified archeological areas, and several adjustments were made to avoid and/or minimize the impact of infrastructure on critical habitat and cultural resources based on additional site assessments by McElhanney and PCA staff, and additional consultation with PCA and species at risk experts. In general, the design team made adjustments away from the historic alignment in the north half and stayed more to the historic alignment in the south half. The north half of the existing trail is less disturbed with greater potential for decommissioning when other values (habitat, public safety, cultural resources) suggested a diversion. In the south half, the existing trail had been maintained by grading for several decades. Given this extent of disturbance, the designers proposed staying to this alignment as much as possible, even if there would have been greater scenic, visitor reasons to veer from this alignment. Figure 12 and Figure 13 show specific changes to the proposed road alignment made based on the site visit reports. Changes are noted with numbers that correspond to specific recommendations made in McElhanney's site visit report, the applicable pages of which are included as Figure 14, Figure 15 and Figure 16.







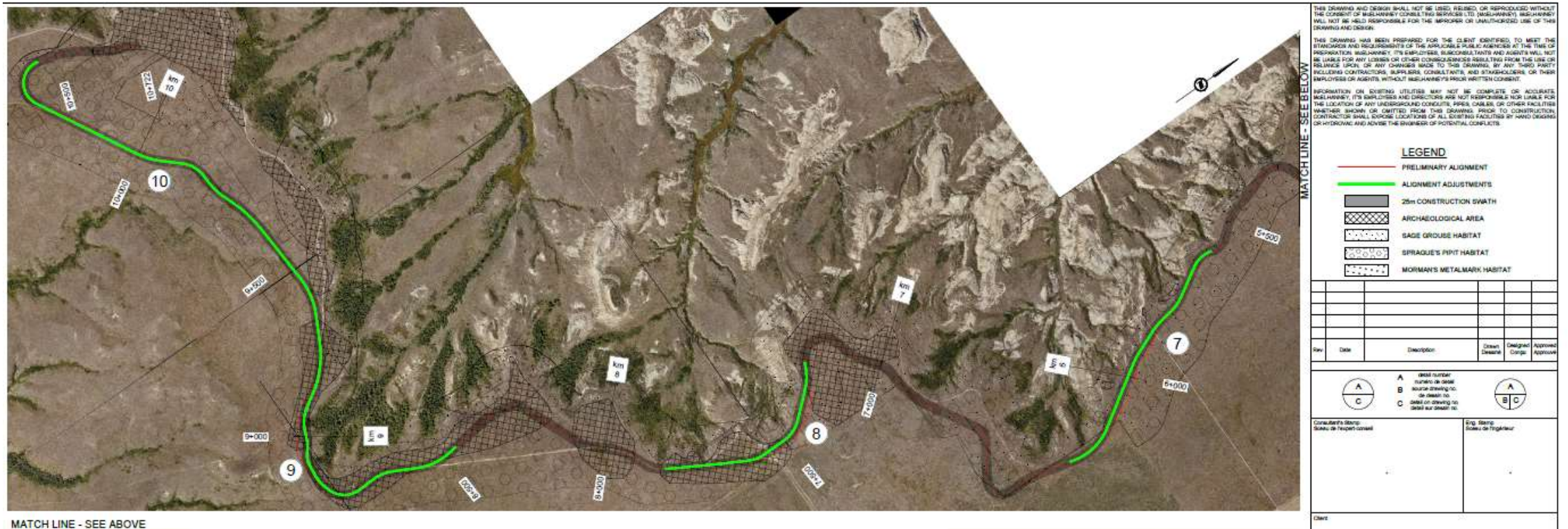
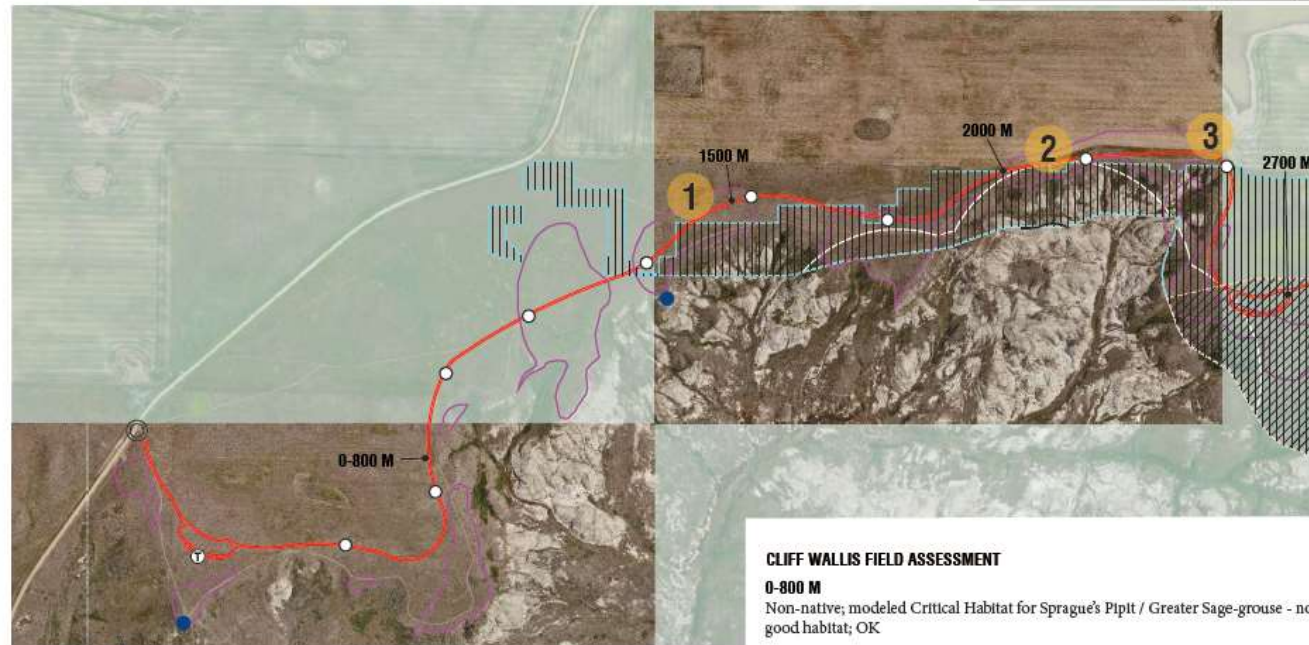


Figure 13: Map from McElhanney showing south half of previous proposed road alignment and the new alignment, based on recommendations from the November site visit. Each change in alignment corresponds to a recommendation from the site visit report.



## GRASSLANDS SITE VISIT CRITICAL ALTERATION AREAS (DETAIL) 0-2700 METRES INTO ROUTE



- 1 STAY ON BLADED TRAIL**  
This area contains a field of spread out sage brush just left of the previously disturbed trail. It is recommended to stay on disturbed trail to reduce harm to potential sage grouse habitat.
- 2 UTILIZE WHEAT-GRASS AND SETBACK TO FENCE-LINE 10M**  
Wheat-grass is prominent along fence-line and the disturbed road is close to escarpment edge, this section will require a decision whether to stay on road or hug the fence-line. This move is to prevent concerns with the proximity to the edge and increase the potential to re-vegetate the disturbed path which serves as potential sage grouse habitat.
- 3 REROUTE BACK TO DISTURBED PATH**  
At this point if we choose to utilize the fence-line option (previously mentioned in 2) we will track back to previously disturbed pathway. This is to prevent heading onward into a sage brush habitat.

### CLIFF WALLIS FIELD ASSESSMENT

#### 0-800 M

Non-native; modeled Critical Habitat for Sprague's Pipit / Greater Sage-grouse - not good habitat; OK

#### 800-1500 M

Native sagebrush - no Critical Habitat; lots of non-native in area; avoid patches of good sage but stay close to existing track; no laybys in this area; Mormon Metalmark habitat along entire proposed road including this area not directly affected; OK

#### 1500-2000 METRES

Non-native; modelled Critical Habitat for Greater Sage-grouse - not good habitat; use crested wheat grass along fence to avoid erosion concern at badland edge; ok

#### 2000-2700 METRES

Modelled Critical Habitat for Greater Sage-grouse / Sprague's Pipit - potentially good habitat; diverting south and east off existing track through non-native or non-critical native habitat to avoid better habitat along badland edge; helps maintain good habitat continuity; ok



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Figure 14: Page 10 of the site visit report from McElhanney which gives detailed comments corresponding to the road alignment map.



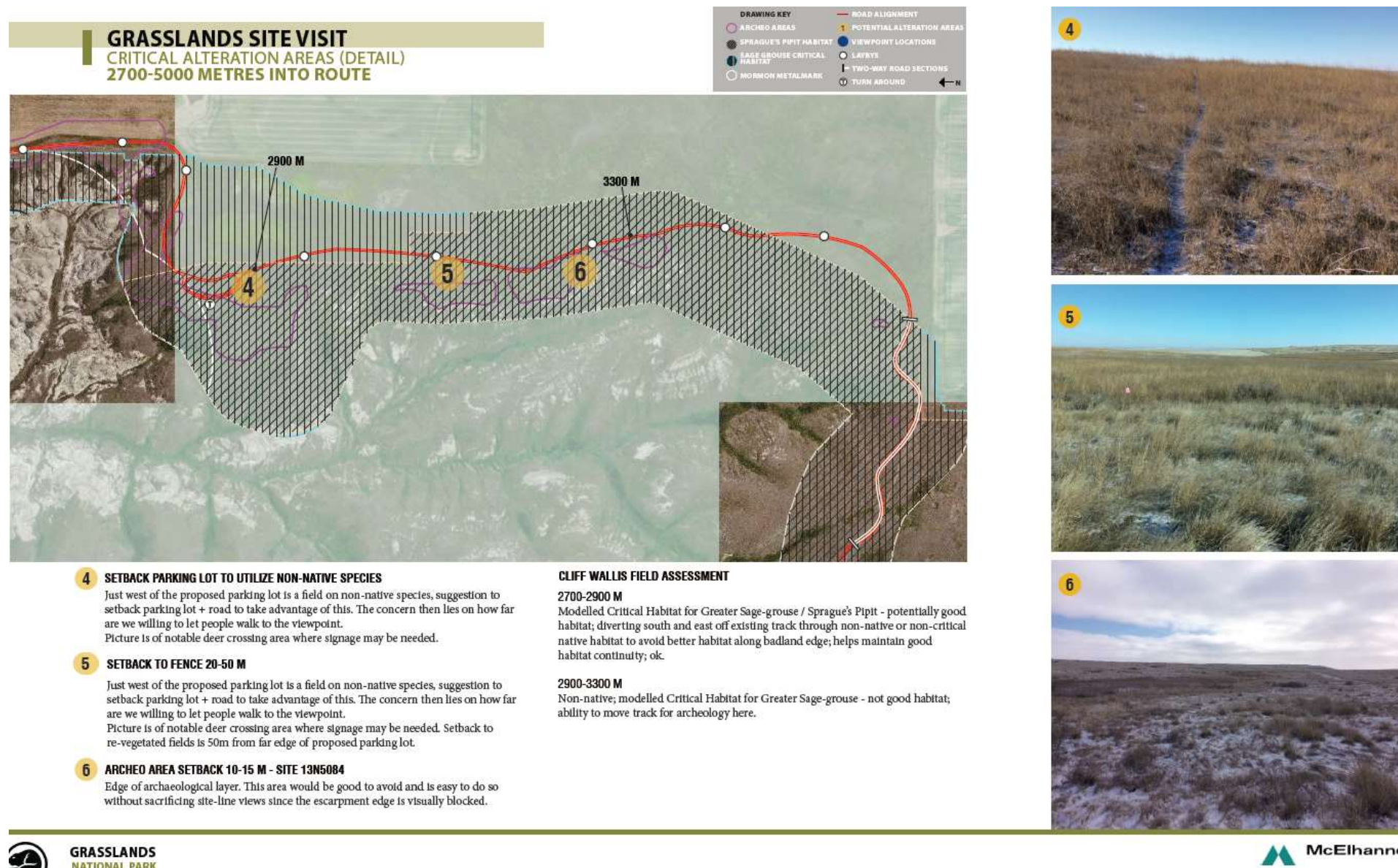
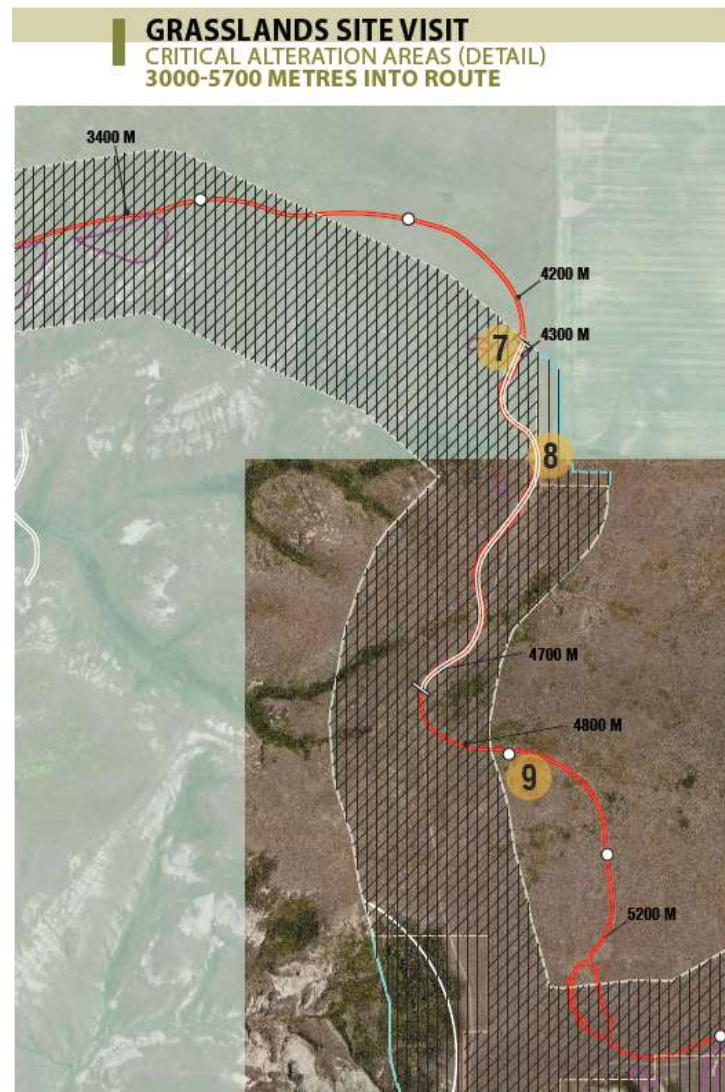


Figure 15: Page 11 of the of the site visit report from McElhanney which gives detailed comments corresponding to the road alignment map.





**7 QUALITY HABITAT IS DISTURBED - CW**  
This area is negotiable, and provides an interesting 'prairie like' driving experience since you are cradled by low rising hills on both sides. According to CW, this wide open space is ideal for Spragues pipit and he suggests an alternative route.

**8 CUT THROUGH OR DIAGONAL LINE TO SPLIT DIFFERENCE.**  
Possible option to cross this section diagonally to avoid sage brush patch.

**9 SETBACK 10 M + USE BROME GRASS**  
This area consists of non-native brome grass which would be reasonable to divert through. There are patches of Sage-Brush in this area that we should steer clear of. This area will require strategic diversion to avoid Sage-Brush

#### CLIFF WALLIS FIELD ASSESSMENT

**3400-4200 M**  
Potential problem area; survey in spring if planning to use; diverts off existing track but probably better to stay on existing track and avoid moisture rich area and maintain larger area of connected excellent grassland with some potential for Sprague's Pipit and Greater Sage-grouse; native grassland and moist lowland; modelled Critical Habitat for Sprague's Pipit / Greater Sage-grouse; ok if stay on existing track.

**4300-4700 M**  
Existing track; native sagebrush; modelled Critical Habitat for Sprague's Pipit / Greater Sage-grouse - no issues if on existing track/take advantage of non-native crested wheat grass here; ok.

**4800-5200 M**  
Potential problem area; diverts from existing track; native sagebrush; modelled Critical Habitat for Sprague's Pipit / Greater Sage-grouse - not good Sprague's Pipit habitat but potential Greater Sage-grouse habitat; allow existing trail to recover/ replant with sagebrush; may be shorter distance of disturbed with new alignment = larger patch of critical Greater Sage-grouse habitat and less potential footprint on sagebrush plants; needs detailed survey to take advantage of low buckbrush and brome patches and avoid sagebrush as much as possible.



Figure 16: Page 12 of the of the site visit report from McElhanney which gives detailed comments corresponding to the road alignment map.

More fine scale adjustments and mitigations may occur as a result of Archeological Impact Assessment in spring 2016 which will catalogue cultural artefacts in the project area.

#### 2.4. Road Design

The design concept for Badlands Scenic Viewpoint Road has been centered on keeping impacts to the surrounding landscape as minimal as possible while still meeting project goals. The following table documents the rationale behind key design elements.

*Table 4: Description and rationale for road design elements*

Design element	Decision	Rationale
Road Profile	Low profile	McElhanney proposed a low profile road in its design rather than the conventional higher profile, crowned road to minimize disturbance of vegetation and soil, thereby reducing level of impact to natural and cultural resources.
	No ditching	A low profile road requires approximately 30% less excavation and no ditching (September 24 <sup>th</sup> 2015) compared to a conventional high profile crowned road. Roads are typically “crowned” in the center and raised above grade (high profile) to shed water and stay above water plane. However, given the low precipitation levels typical of GNP, the seasonal nature of the proposed road, the outslope design approach to shed water and the natural and cultural resources in the area, the park determined that a low profile road would meet visitor experience objectives while minimizing impact on heritage resources.
Road Surface	Paved surface for road (excluding laybys, turn arounds and parking areas)	<p>Other options:</p> <ul style="list-style-type: none"> <li>Bladed soil surface: would not provide a durable, user friendly surface. It would be highly susceptible to erosion, become impassable with minimal moisture, many visitors would not choose to drive it or couldn't due to weather, and it potentially would invite the spread of noxious weeds when travelled. The existing soil surface trail, as well as unauthorized off-road trails, show signs of erosion, trail braiding and rutting where vegetation has been worn away. The minimal visual/physical delineation between soil surface trail and surrounding ground surface leads to increased off-roading and confusion about which trails are designated for what use (or are designated at all).</li> <li>Gravel surface: would provide a more durable, user friendly surface. However, it may still be impassable during rain events, and requires more maintenance due to the constant replacement of gravel.</li> </ul>

		<p>Decision for paved surface to meet the greatest range of visitor experience objectives, visitor needs and budgetary requirements while minimizing habitat and cultural resource impacts by:</p> <ul style="list-style-type: none"> <li>• Providing access to the widest range of motorized vehicle types (car, truck, RV, bicycle, etc.)</li> <li>• Minimizing ongoing maintenance (gravel roads require frequent gravel replacement, especially in clay soil conditions that exist in area)</li> <li>• Providing a clear, durable road which minimizes erosion created by rutting, trail braiding and general use,</li> <li>• Encouraging visitor compliance to follow dedicated access routes, limiting impact of motor vehicles to dedicated areas</li> <li>• Enabling law enforcement to more effectively pursue unauthorized off-road motorized vehicle use by providing a clear delineation of what is and isn't "off-road"</li> </ul> <p>Additionally, as the low profile nature of the road conforms best to goals and needs, a paved surface is the best option for shedding moisture, especially important to compensate for not raising road profile or building a crown down the centre to shed water.</p>
Road Width	Single Lane (3.5 meters wide)	<p>McElhanney proposed a single lane road (3.5 metres wide) instead of a two way road (6 metres wide) with intermittent laybys, as implemented in Iceland and Scotland for similar purposes. This single lane road creates a more intimate experience for the user while creating a much narrower footprint on the landscape.</p> <p>The park investigated several scenic driving road experiences in US and Canadian national parks. All of these were two lane roads. The park seriously considered the two lane approach for safety (a road type well understood by the Canadian visitor, and accommodating visitors who may be paying attention to scenery). However, we decided to pursue the single lane approach as it enabled the park to more discretely navigate the alignment within a complex natural and cultural protection environment, minimizing impacts on those resources, particularly at areas of potential concern. To compensate for safety concerns, other design principles have been implemented such as laybys, firm paved surface, slow driving speed and a short stretch of two-lane road where sight lines are poor. The advantages of the single lane approach are:</p> <ul style="list-style-type: none"> <li>• Allows the park and designers to more intimately navigate the road alignment towards scenic highlights and <i>away</i> from areas of sensitive habitat, rich cultural resources or both.</li> </ul>

		<ul style="list-style-type: none"> <li>• Creates a more ‘intimate’ user experience due to the close proximity that the driver and passengers have to the adjacent landscape. This is similar to the experience created by a single track trail vs. a double track.</li> <li>• It demonstrates Parks Canada’s commitment to utilize innovative methods (design and construction) to meet VE objectives while upholding resource protection values.</li> <li>• It minimizes disruption to habitat just by virtue of requiring less landscape to create the experience.</li> <li>• It encourages slower travel speeds, creating a more pleasant user experience and reducing the likelihood of wildlife collisions.</li> </ul>
Viewpoint locations	6 locations	<p>Following the 2004 consultation activities, the park further investigated the major viewpoint locations with supplementary consultation to confirm them (2005 – 2008). This was reviewed and discussed with our Park Open Houses as well as our Park Advisory Committee meetings. The extensive use of public consultation to determine the major viewpoints ensured public ‘buy-in’ for the development, and provided us with an ‘inside-out’ perspective on visitor preferences. The advantages are:</p> <ul style="list-style-type: none"> <li>• With regional stakeholder and visitor buy-in, there is greater likeliness that users will respect the locations and stay on the road knowing that it takes them to these scenic highlights.</li> <li>• Off road challenges had become much more pronounced, particularly with an open prairie environment and greater visitation, which lead to significant impacts on the landscape, potential damage to cultural resources and increased risk of fire due to vehicles in grass environments.</li> </ul>

### 3. EIA Pathway

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Consistent with PCA guidance in the *PCA Directive on Impact Assessment*, GNP determined that a detailed impact analysis process was appropriate for the proposed project. As well, GNP initially determined that for purposes of the detailed impact analysis, the Badlands Scenic Viewpoint Road (BSVD) would be combined with two other proposed projects in GNP: the adjacent Rock Creek Campground Upgrade and Expansion project in the East Block; and the Frenchman Valley Campground Upgrade and Expansion project in the West Block. An initial detailed impact analysis (initial DIA) of the three projects was completed by Summit Environmental in 2016 using a Parks Canada template. The initial DIA highlighted several areas where the proposed projects overlapped with valued components that may potentially be impacted. After review of the initial DIA, GNP determined that some valued components required additional information and analysis before the project could be recommended for



approval by the Field Unit Superintendent (FUS). Additional information on road design and construction for the BSVR also became available to inform the analysis. This additional information and analysis with respect to both project components and valued components is reflected in the current document. Therefore, this document, along with related documents and studies as listed in Attachments (section 14) constitutes the record of the detailed impact analysis for the BSVR. (The RCC and FVC impact analysis will be considered separately). This analysis provides a separate authorizing document to record the Field Unit recommendations and FUS approval for the project. An Archaeological Impact Assessment (AIA) to provide recommendations for archaeological mitigation measure(s) relative to the heritage value of the resource to be impacted will be completed following field testing and appended to this analysis. The project manager will coordinate with Parks Canada Terrestrial Archaeology Section on the implementation of mitigation measures.

#### 4. Value Components Likely to be Affected

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##### 4.1. Valued Components

The Effects Identification Matrix in the Guide to Parks Canada Environmental Impact Analysis Process (PCA, 2015) was used in a 3<sup>rd</sup> party report (Summit Environmental, 2016) to identify potential impacts of the project on valued components. In the Summit report, identified valued components potentially impacted by the project include:

- Air
- Soil and Landforms
- Water (surface and ground)
- Flora
- Fauna (including species at risk and migratory birds)
- Cultural Resources
- Socio-Economic Aspects
- Visitor Experience and Public Safety

Sections 6.2, 6.3.1 and 6.3.3 of the Summit 2016 report provide a description of the project's potential impacts to Air, Soils and Landforms, Water, Vegetation, Socio-Economic Aspects and Visitor Experience and Public Safety valued components. These valued components are sufficiently analyzed in sections 7.3.1 – 7.3.6, 7.3.9 and 7.3.10 of that report and not further analyzed here. This detailed impact assessment (DIA) will provide updated analysis of potential effects on species at risk, wildlife including migratory birds, and cultural resources, incorporating updated project information. An Assessment of Impacts to Archaeological resources (AIA) conducted in 2016 will be appended to this DIA upon its completion and recommended mitigation measures to protect cultural resources incorporated into this analysis. This DIA will provide the mitigations and effects significance of the project on all identified valued components, and will be the signing document for the Field Unit Superintendent, indicating a decision with respect to the significance of the adverse environmental effects of the project as determined by this DIA.

Species listed on Schedule 1 of the *Species at Risk Act* (2002) that have critical or important habitat in and/or near the project area are:

- Greater Sage-Grouse (Endangered)
- Sprague's Pipit (Threatened)
- Mormon Metalmark (Endangered)
- Chestnut-collared Longspur (Threatened)

Species at risk with important habitat in or near the project area:

- Long-billed curlew (Special Concern)
- McCown's longspur (Special Concern)

#### 4.2. Project Area / Spatial Scale for the Scope of Analysis

The spatial scale for consideration in this analysis will include the project footprint as described in 1.6. Where project activities have the potential to impact species at risk beyond this footprint (for example, sensory disturbances that can impact habitat adjacent to project), the spatial scale will be expanded based on the species' needs as described in its recovery strategy, action plan or management plan (the ecologically relevant area).

#### 4.3. Temporal Scale for the Scope of Analysis

Temporal scale for analysis includes all stages of construction and as well as the operational phase (long-term) of project.

#### 4.4. Site Visit for Initial Delineation of Presence/Absence of Critical Habitat

GNP staff and environmental consultants from McElhanney completed a site visit in November 2015 to provide a coarse initial visual delineation of critical habitat along the proposed route for the BSVR project. Route adjustments were made to avoid critical habitat for Mormon metalmark, which was confined to the eroded vegetation community type where it meets the escarpment edge. Areas along the route were prioritized as not suitable, marginal or good habitat for Sprague's Pipit and Sage-grouse based on presence or absence of biophysical attributes listed in the recovery strategies and/or action plans (see **Error! Reference source not found.** and **Error! Reference source not found.**). Areas were considered not suitable if dominant ground cover was invasive vegetation (crested wheatgrass, brome grass and/or sweet clover), if the area was previously cultivated and/or if the area was a bladed trail (see **Error! Reference source not found.** for a coarse scale ground cover classification). Areas prioritized as arginal or good habitat that are within the geographic scope of critical habitat are included as potential critical habitat for the purpose of this analysis. Summary reports of their methods and findings, along with recommendations on how to change road alignment to minimize impact to critical habitat, were provided by the contractor (McElhanney 2015 draft) and by PCA staff (Fischer 2015), see list of attachments. Changes have been made to the alignment based on these recommendations and are reflected in the McElhanney road alignment map dated 2016.02.18 (see Figure 12 and Figure 13). Changes include moving the proposed alignment on to the existing track to avoid disturbing areas of good habitat, moving the alignment into areas heavily invaded by exotic species that provide poor habitat or moving closer to the fence line or escarpment edge to avoid fragmenting good habitat (see section 2.3 which details changes made to the proposed road alignment). When proposing to move the

road alignment into/nearer to disturbed areas, an additional opportunity is created to reclaim the existing trail to create a more contiguous habitat patch.

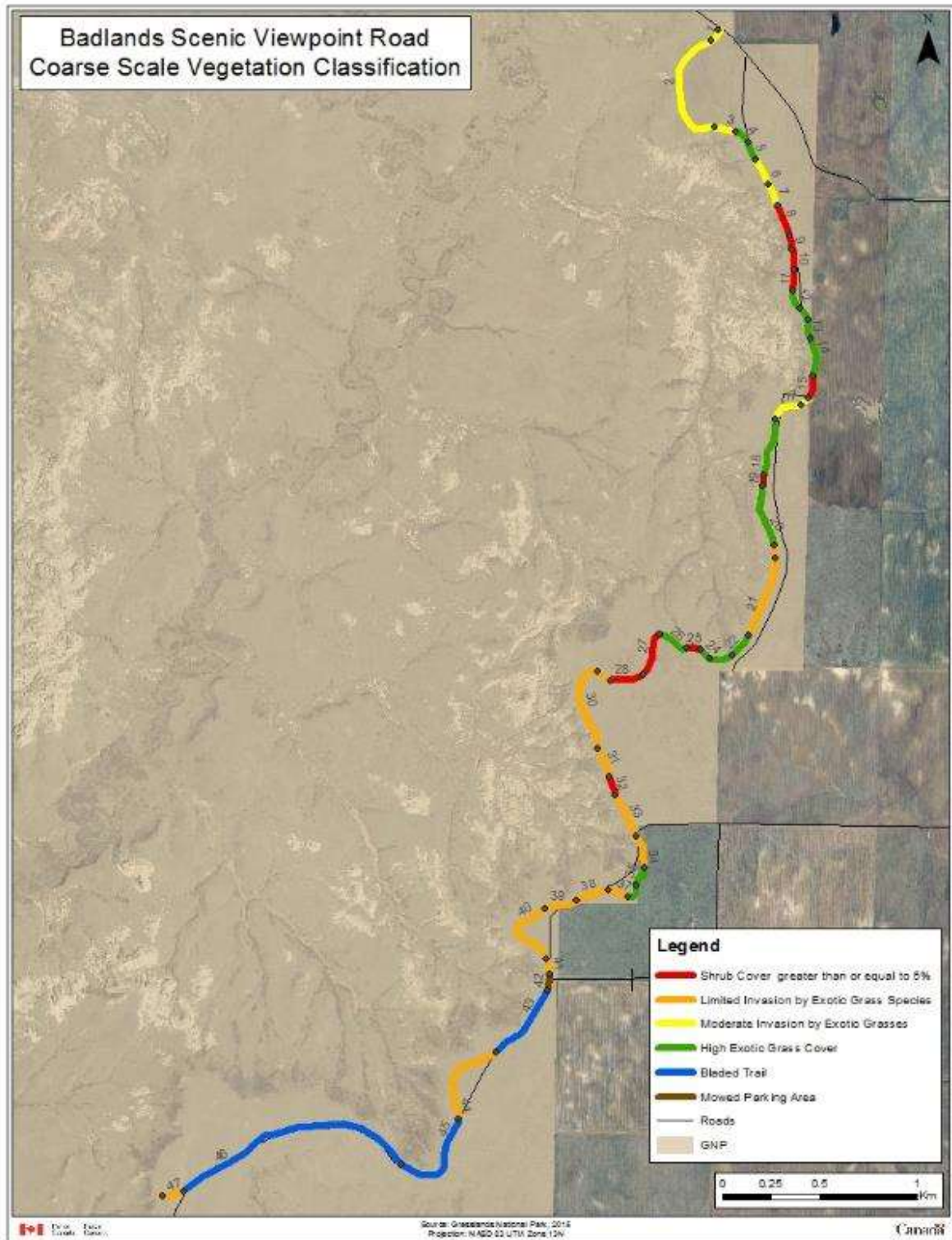


Figure 17: Coarse scale vegetation classification made by PCA staff during on-site visit in November 2015.

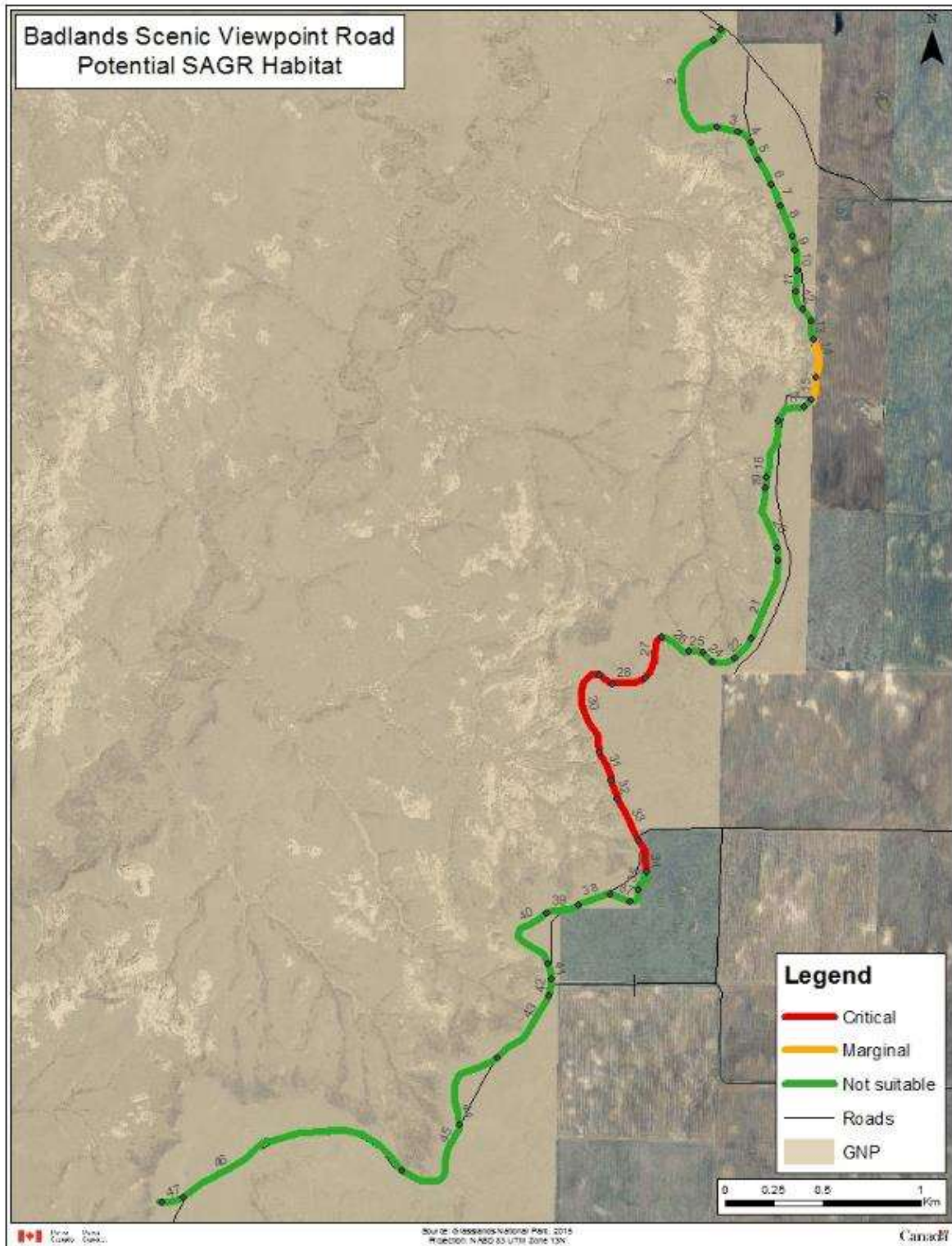


Figure 18: Coarse survey of habitat suitability for Greater Sage-grouse based on ground cover observations made by PCA staff during site visit in November 2015



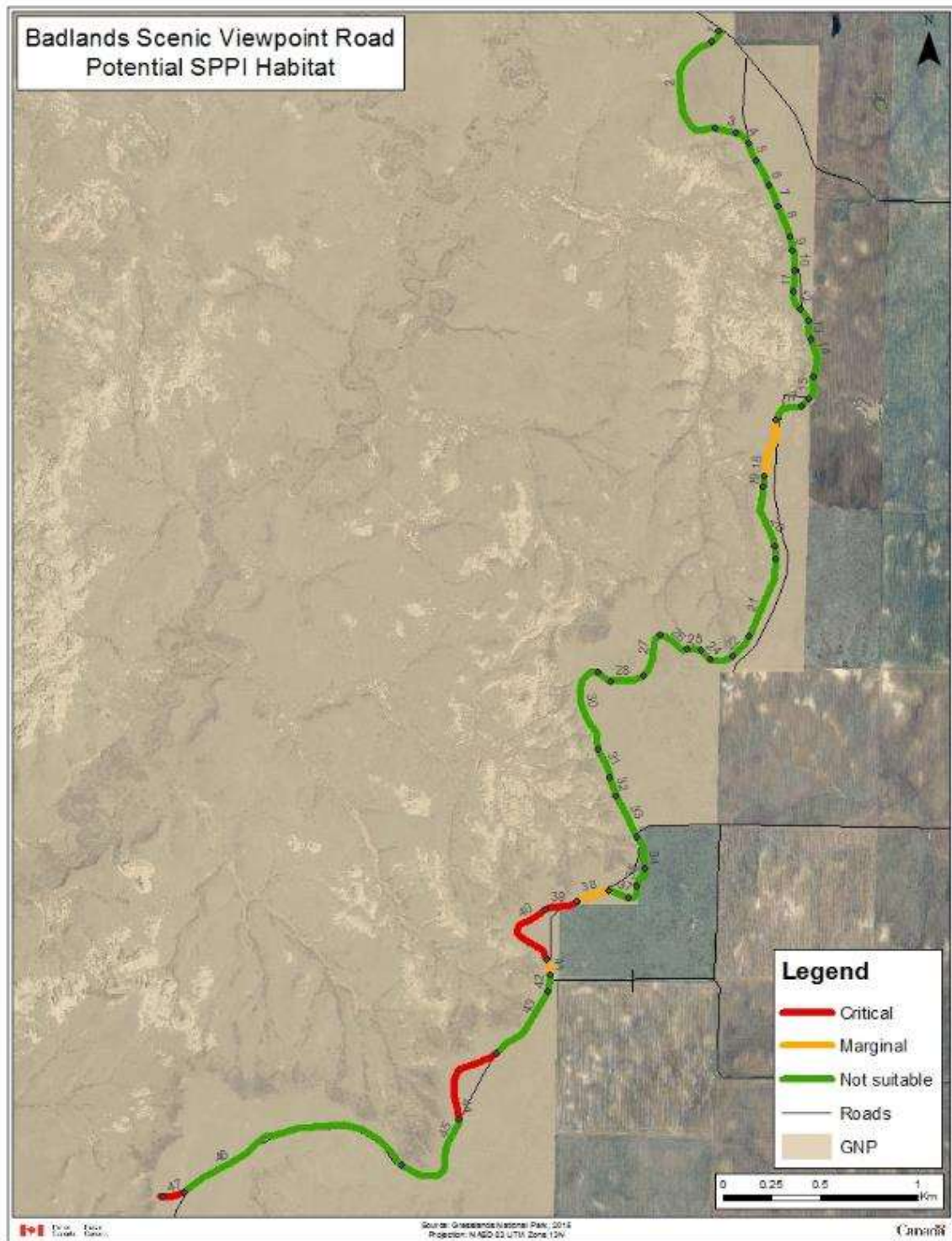


Figure 19: Coarse survey of habitat suitability for Spragues' pipit based on ground cover observations made by PCA staff during site visit in November 2015

## 5. Effects Analysis

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### 5.1. Wildlife

In general, potential impacts to wildlife typical for this type of project are:

- Damage to and/or removal of vegetation in immediate or adjacent areas. Activities associated with both construction and operation phases will remove and/or alter vegetation in the project area, making it unavailable as food or shelter for wildlife. Reestablishment of vegetation will occur post-construction.
- Introduction of non-native species, or expansion of existing non-native populations. The greatest risk for this is during construction phase before the reestablishment of vegetation on exposed and disturbed soils. Some risk associated with operational phase with visitors' vehicles and maintenance vehicles entering park from other areas.
- Impeded or altered wildlife movement or displacement. Sensory disturbances during construction and operation phases, as well as the newly installed infrastructure, may impede or alter wildlife movements or displace individuals from preferred habitat.
- Wildlife habituation/attraction to artificial food sources. Garbage, food and water may attract wildlife. Increased wildlife presence during construction and operations phase leads to habituation, increased human-wildlife conflicts, increased risk of road mortality and alters wildlife distribution and numbers.
- Mortality due to increased predator presence or activity. Predator species may be attracted by garbage, food or other substances at the work site. While predators are known to preferentially make use of anthropogenic corridors, this project is not likely to increase the predator usage of the area due to the existing trail and fence line creating corridors.
- Damage to nests/disruption of nesting animals. Ground-nesting birds in areas slotted for ground disturbance, vegetation clearing or other areas where motor vehicles will be used are vulnerable to disturbance during egg laying, incubation and brood-rearing before young are fledged and able to fly. The nest and/or young may be destroyed by vehicles and/or machinery. Nesting and brood-rearing season for migratory birds in Saskatchewan is *generally* April 1 – August 15.
- Mortality from project activities. The operation of vehicles and machinery for construction, maintenance and regular operations has the potential to result in vehicle collisions with wildlife. The installation of some types of infrastructure may attract and/or trap wildlife.

### 5.2. Species at Risk

Components of this project have the potential to impact individuals, residences and critical habitat of species at risk, including: Greater Sage-grouse, Sprague's Pipit, Mormon metalmark, Chestnut-collared Longspur, McCown's Longspur and Long-billed Curlew. These potential impacts are listed in Table 5 by species. SARA defines critical habitat as "the habitat that is necessary for the survival or recovery of a listed wildlife species and that is identified as the species' critical habitat in the recovery strategy or in

an action plan for the species” [SARA s. 2(1)]. The identification of a listed wildlife species’ critical habitat in a recovery strategy or action plan will (a) specify the geographical location of the critical habitat or describe the area within which the critical habitat is found and (b) describe the known biophysical attributes of that critical habitat that are required by the listed wildlife species in order to carry out life processes necessary for its survival or recovery.



*Table 5: Summary of species At Risk with critical or important habitat in or near the project area, description of required habitat components from each species' respective recovery strategy, management plan or action plan, and potential impacts to species at risk as a result of project activities.*

Species	Status	Critical or Important Habitat Present in Project Area?	Biophysical Attributes of Critical Habitat, or Habitat Needs	Project Activities' potential impact to SAR
Greater Sage-Grouse	Endangered	Yes – Critical Habitat. The project occurs within the geographic scope of critical habitat defined in the 2014 amended recovery strategy	<p>Biophysical Attributes for critical habitat:</p> <ul style="list-style-type: none"> <li>• Moderate shrub cover, typically silver sagebrush with a patchy distribution</li> <li>• Limited amounts of bare ground</li> <li>• Moderately moist habitats (under average weather conditions)</li> <li>• Limited amounts of lush green vegetative cover</li> <li>• Adequate availability of prey (insects) and forage (forbs)</li> </ul> <p>In addition, the following attributes are required for otherwise suitable habitat:</p> <ul style="list-style-type: none"> <li>• Limited human-modified areas</li> <li>• Limited chronic noise disturbances</li> <li>• Limited presence of artificial structures that serve as perches for large birds of prey</li> </ul>	<p>Degrading critical habitat through:</p> <ul style="list-style-type: none"> <li>• Constructing or widening a road</li> <li>• Constructing, erecting, or installing vertical structures over 1.2 m</li> <li>• Sensory disturbance</li> <li>• Removal, reduction, or degradation of sagebrush and surrounding habitat</li> <li>• Temporary increases in bare ground</li> </ul> <p>Destruction of individuals or nests by:</p> <ul style="list-style-type: none"> <li>• Collisions with vehicles or machinery</li> <li>• Increased predator activity/presence</li> </ul>
Sprague's Pipit	Threatened	Yes – Critical Habitat. The project occurs within the geographic scope of critical habitat defined in GNP's Multi-species Action Plan (in prep for posting by March 31 2016)	<p>Biophysical Attributes for critical habitat:</p> <ul style="list-style-type: none"> <li>• Open areas of upland native prairie ≥ 65 ha</li> <li>• Native prairie management units in fair to excellent range condition (Abouguendia 1990)</li> <li>• Limited woody vegetation</li> <li>• Limited invasion by exotic grasses</li> <li>• Flat to gently rolling topography</li> </ul>	<p>Degrading critical habitat through:</p> <ul style="list-style-type: none"> <li>• Construction of a road</li> <li>• Increased habitat fragmentation and edge:interior habitat ratio</li> </ul> <p>Destruction of individuals or nests by:</p> <ul style="list-style-type: none"> <li>• Collisions with vehicles or machinery</li> <li>• Increased predator or cowbird activity/presence</li> </ul>
Mormon Metalmark	Endangered	Yes – areas of critical habitat and of potential habitat were identified by PCA and McElhanney staff during site visit and the proposed route of the	Critical habitat identified in the GNP Multi-species Action Plan (draft 2016) consists of badland areas on eroded barren, sandy or gravelly soils and partial weathered shale and clay where moderate to high densities of branched umbrella plant and rubber rabbit-brush are found, and where Mormon metalmarks have been observed.	<p>Degrading critical habitat or harm to individuals by:</p> <ul style="list-style-type: none"> <li>• trampling of nearby host plants during construction or operation phase</li> <li>• damage to host plants through erosion during construction phase</li> <li>• displacement of host plants by exotic species</li> </ul>

		road was moved to avoid overlap with these areas. However, construction of the road could lead to damage and/or destruction of adjacent critical habitat.		<ul style="list-style-type: none"> <li>collisions with vehicles resulting in mortality</li> </ul>
Chestnut-collared Longspur	Threatened	No – although this project takes place within a bounding polygon of CH for the species, the project area is unsuitable as habitat for the longspur due to vegetation structure and litter depth.	This project will not impact critical habitat for the Chestnut-collared Longspur	Not applicable
McCown's Longspur	Special Concern	NO – although this project overlaps with a bounding polygon of important habitat for the species, the project area is unsuitable as habitat for the longspur due to vegetation structure and litter depth.	This project will not impact important habitat for the McCown's Longspur	Not applicable
Long-billed Curlew	Special Concern	Yes – Important Habitat The project overlaps with the geographic extent of important habitat identified by Environment Canada (GIS information provided to GNP)	Habitat Needs: 1) Nesting and brood-rearing sites: contiguous, open, short native, and to a lesser extent, non-native grasslands. Territories 6-20 ha + a 300-500 m buffer, exhibit site fidelity. 2) Foraging sites: wet lowlands, croplands, stubble fields, up to 10 km from nest. Avoid areas of dense vegetation. Feed on terrestrial insects and opportunistically on eggs and nestlings of other ground-nesting birds. 3) Stopover sites: Considered a short-distance migrant, not much is known of migration routes. Stopover sites have been noted in SK, though use of park as stopover site unknown	Degrading habitat by: <ul style="list-style-type: none"> <li>Creating corridors for mammalian predators that may lead to increased predation</li> <li>Fragmentation</li> </ul> Destruction of individuals or nests by: <ul style="list-style-type: none"> <li>Collisions with vehicles or machinery</li> <li>Increased predator activity/presence</li> </ul>

### 5.2.1. Greater Sage-Grouse

The 2014 Amended Recovery Strategy for the Greater Sage-grouse identified a total of 28,121,250 ha of sage grouse critical habitat in Canada, 46,580 ha of which fall within Grasslands National Park (19,758 ha within the East Block, see Figure 20). Two types of critical habitat were identified; lekking (breeding critical habitat) and year-round critical habitat (nesting, brood-rearing, winter habitat). The proposed Badlands Scenic Viewpoint Road (BSVR) in the East Block of GNP overlaps with the newly expanded geographic scope of year-round critical habitat identified in the 2014 amended strategy (see Figure 21).

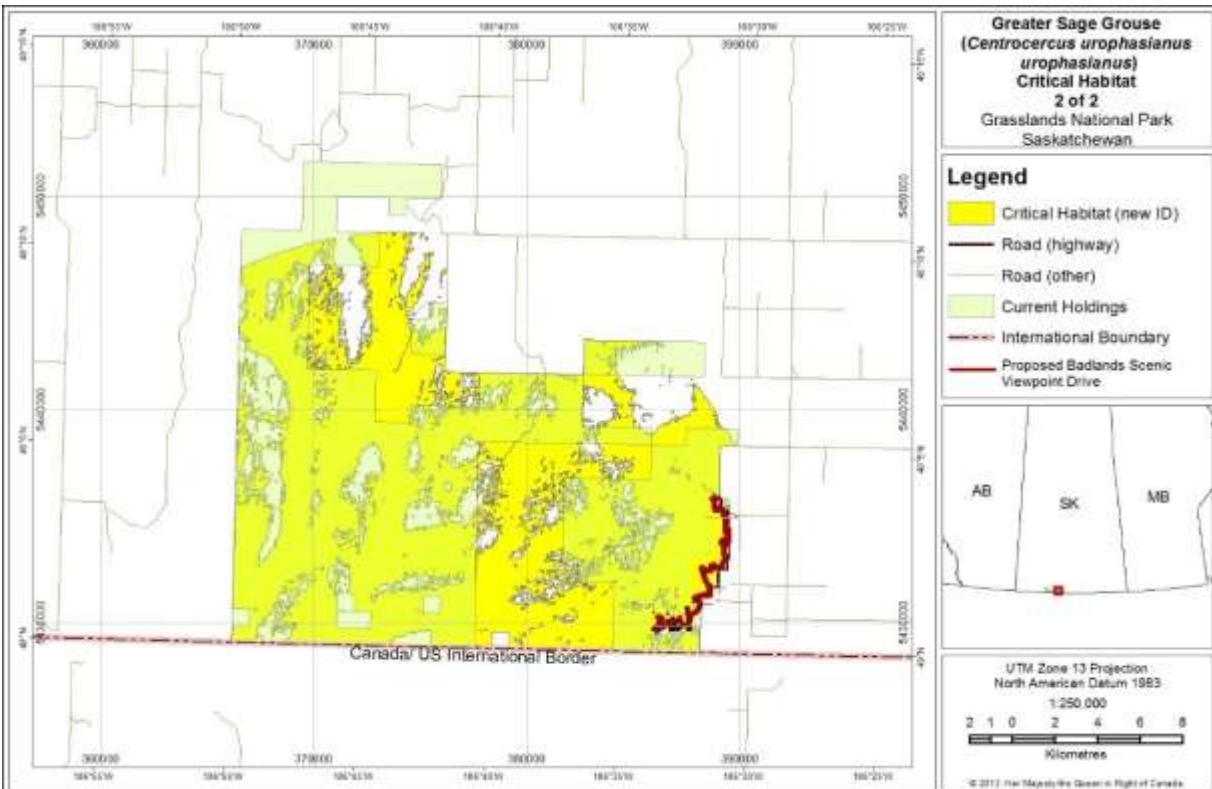


Figure 20: Location and geographic extent of critical habitat for Greater Sage-Grouse in and around the East Block of Grasslands National Park as listed in the 2012 Amended Recovery Strategy and the 2016 South of the Divide Multi-species Action Plan (for lands outside of park boundary) with the proposed Badlands Scenic Viewpoint Road (BSVR) highlighted in red. NOTE: the width of the BSVR shown in this figure is not representative of the actual area the road will take up, but has been exaggerated in order for the road to be visible at this scale.

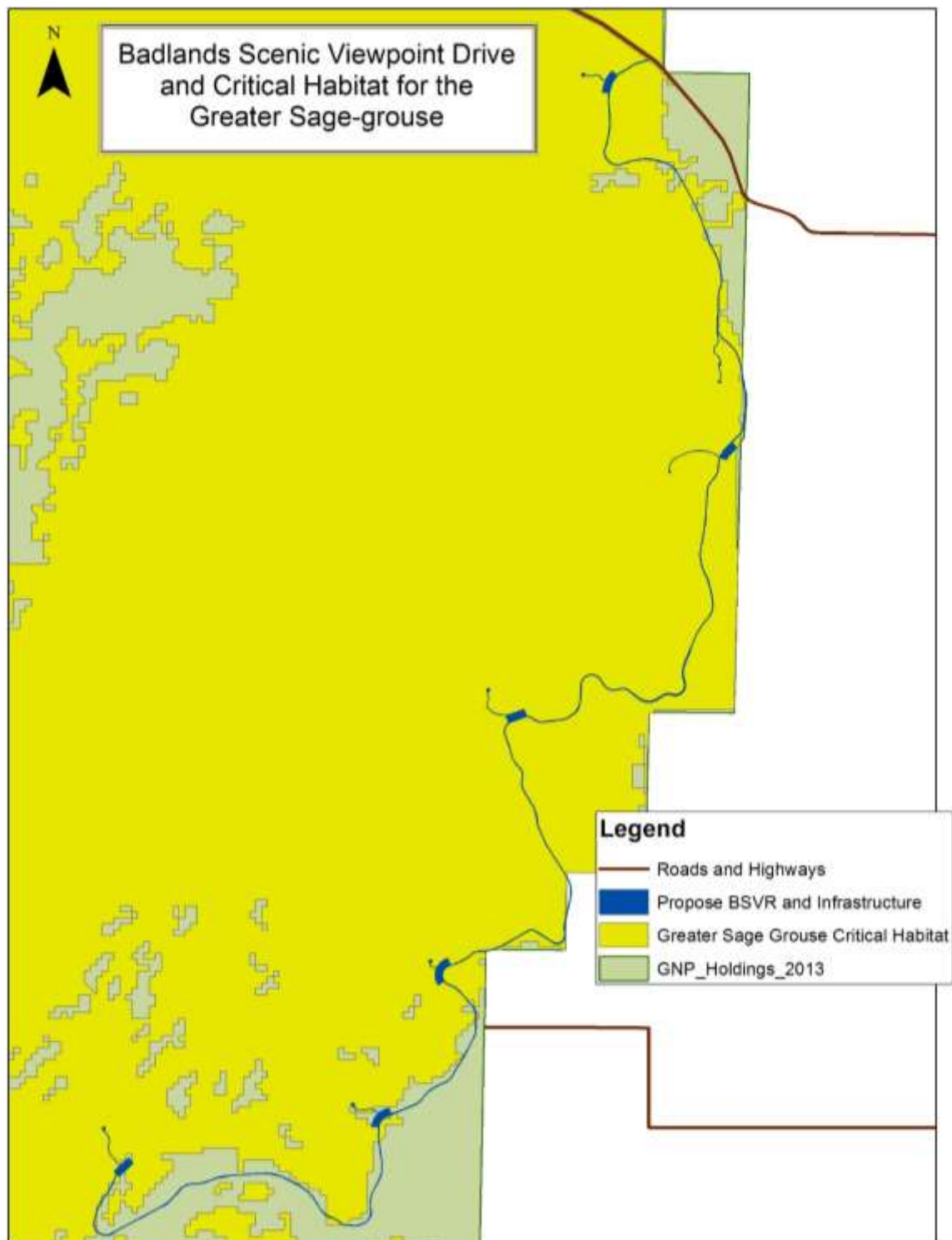


Figure 21: Badlands Scenic Viewpoint Road proposed alignment and infrastructure with year-round critical habitat for sage-grouse shown.

Activities associated with this project have the potential to affect sage grouse individuals and critical habitat during both the construction and operation phase, as summarized in Table 5 (above). Some of the potential impacts to individuals identified in Table 5 (increased chance of collisions with vehicles and/or predation) are not exclusive to sage-grouse, and mitigations to avoid affecting sage-grouse will be the same as for other wildlife. Potential effects to critical habitat require more in depth analysis and species-specific mitigations.

Breeding (lek) habitat has been identified in the amended recovery strategy, and all areas within identified leks are protected as critical habitat. No lek critical habitat occurs within or near the project area. The nearest leks to the proposed project are 2.58 - 2.81 km (historic leks, inactive) and 9.8-12.3 km (active leks) at the closest point. The predictive occurrence-based model used to identify year-round critical habitat is considered effective (capturing 88% of known nests, 82% of known brood-rearing locations and 96% of wintering sites), however not all areas identified by this model are protected as critical habitat. An area is not considered critical habitat if it fails to meet the required biophysical attributes outlined in the recovery strategy. Section 7.1 of the amended recovery describes year-round critical habitat (Environment Canada 2014a):

*Year-round (nesting, brood-rearing, and winter) critical habitat for Sage-Grouse was identified by a habitat suitability model through the calculation of optimal combinations of two or more of the following biophysical attributes:*

- *Moderate shrub cover, typically silver sagebrush with a patchy distribution*
- *Limited amounts of bare ground*
- *Moderately moist habitats (under average weather conditions)*
- *Limited amounts of lush green vegetative cover*
- *Adequate availability of prey (insects) and forage (forbs)*

*The presence of other human activities or structures can decrease the probability that Sage-Grouse will occupy otherwise suitable habitat, most likely because of behavioural avoidance of such areas by Sage-Grouse. As a result, the presence of Sage-Grouse in suitable habitat is related to low amounts of these human factors, so the following conditions (or 'attributes') are considered functionally important to nesting, brood-rearing, and winter critical habitat:*

- *Limited human-modified areas*
- *Limited chronic noise disturbances*
- *Limited presence of artificial structures that serve as perches for large birds of prey*

*Within these mapped areas, any remaining human settlements (including cities, towns, rural and agricultural residences, garages, shelters, barns, etc.), annual cropland, non-native hayland, water bodies, roads or roadsides (i.e., land within 15m of roads), which were not identified using satellite imagery, and therefore had not been removed from the mapped areas, are not to be considered critical habitat.*

In the absence of a detailed survey to ground-truth the model for year-round critical habitat in this area, all areas within the geographic extent of critical habitat in or near the project area are considered potential critical habitat for the purpose of this analysis, with the following exceptions:

- previously and/or currently cultivated fields,
- areas of steep relief + eroded vegetation community type (which fail to meet biophysical attributes for sage-grouse by definition, see D.A. Westworth & Associates Ltd. 1994),
- bladed trails, and
- areas where ground cover is predominantly invasive vegetation.

These exclusions were determined using descriptions of critical habitat and exclusions from the recovery strategy, existing GIS data, and reports generated from an on-site visit by McElhanney and PCA staff.

To accommodate the sensory component of critical habitat for sage-grouse, the total area of sage-grouse critical habitat being affected by the project is expanded to 261 ha (see Figure 22). Sage-grouse are sensitive to anthropogenic noise and structures, particularly at leks. The 261 ha area of auditory disturbance is being defined for the purpose of this analysis as the uplands within the geographic extent of critical habitat in and around the project area, the boundaries of which are delineated by areas of unsuitable habitat (primarily croplands to the east and badlands to the west). It is unlikely that sage grouse occurring outside of this 261 ha will be affected by sound from the construction or operation phase of project. This includes the closest historic lek that is located approximately 2.6 km to the west of the proposed road. Although the production of noise greater than 45 decibels within 3.2km of any lek during the critical lekking times (April 1 – May 30) is listed as an activity likely to destroy critical habitat in the recovery strategy, the topographic and geologic nature of the area provides a natural barrier to that noise in the form of a set of badlands between the road and the historic lek.

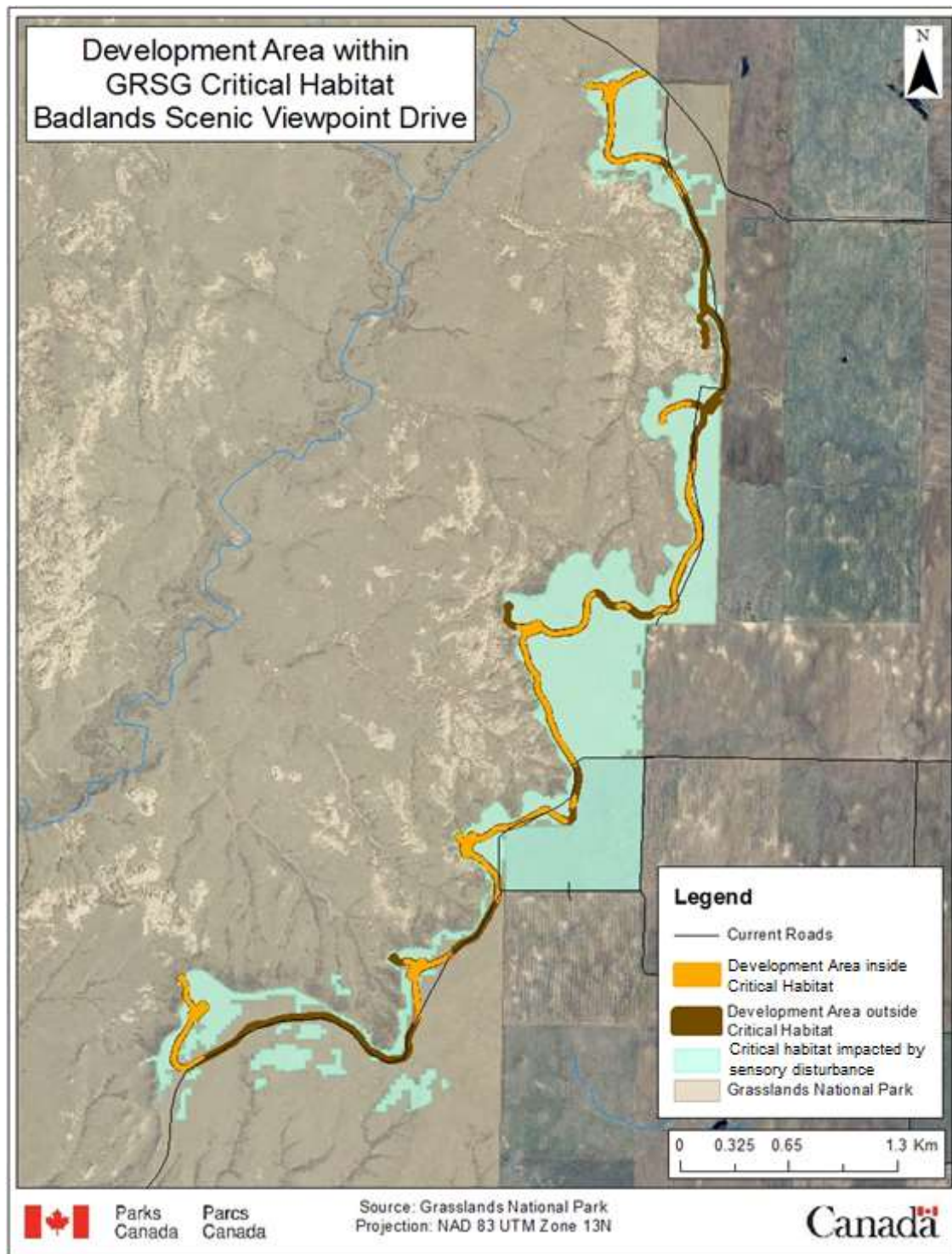


Figure 22: Extent of sensory disturbance (impact area = 261 ha) of project for Sage Grouse. The impacted area is limited by topography (deep gullies, eroded slopes and the escarpment between the uplands and the badlands/Rock Creek River Valley) west and south of proposed infrastructure, and by croplands and disturbed areas east and north that are breaks in critical habitat. The BSVR map feature (both within and outside of critical habitat) includes both the infrastructure footprint and the area of temporary ground disturbance, as these features cannot be identified separately at this resolution (8.5"x11" Letter).

The Amended Recovery Strategy (Environment Canada 2014a) lists road construction or the widening of an existing road as an activity likely to destroy critical habitat through the removal, reduction or degradation of sagebrush and surrounding habitat. It states:

*Sage-Grouse require year-round access to sagebrush for food and cover. Therefore, at any time of year, the killing or moving of sagebrush results in direct habitat loss, reduced food availability and nesting cover, and increased exposure of Sage-Grouse to predation and inclement weather. In addition, activities that do not result in the complete loss of sagebrush, but that significantly increase the proportion of bare ground, significantly decrease the proportion of native grasses and/or native forbs, or remove most of the leaves off sagebrush plants, may cause habitat degradation to the point where that habitat is no longer functional for Sage-Grouse. The population impact from such forms of habitat destruction can range from low to very high, depending on the amount of habitat removed or the severity and extent of habitat degradation by the given activity.*

#### **5.2.2. Sprague's Pipit**

Sprague's pipits are a migratory passerine bird endemic to North American mixed grass prairies of the northern great plains, designated as Threatened under Schedule 1 of the Species At Risk Act due to significant declines in populations in Canada as well as a contraction of its range at the periphery (Environment Canada 2012). Its breeding habitat in AB, SK and MB in Canada makes up 60% of its entire breeding range, with the rest occurring in Montana, South Dakota and Minnesota in the USA. Wintering grounds are in the southern USA and Mexico. Only the critical habitat required during breeding season is described in the recovery strategy. (Environment Canada 2012)

The Grasslands National Park Multi-species Action Plan (Parks Canada Agency, 2016 ) has subsequently identified 51,955 ha of breeding critical habitat for Sprague's pipit in the West and East blocks of the park at a finer scale than the recovery strategy. The proposed Badlands Scenic Viewpoint Road (BSVR) in the East Block of GNP overlaps with this critical habitat (Figure 23 coarse-scale and Figure 214 fine-scale).



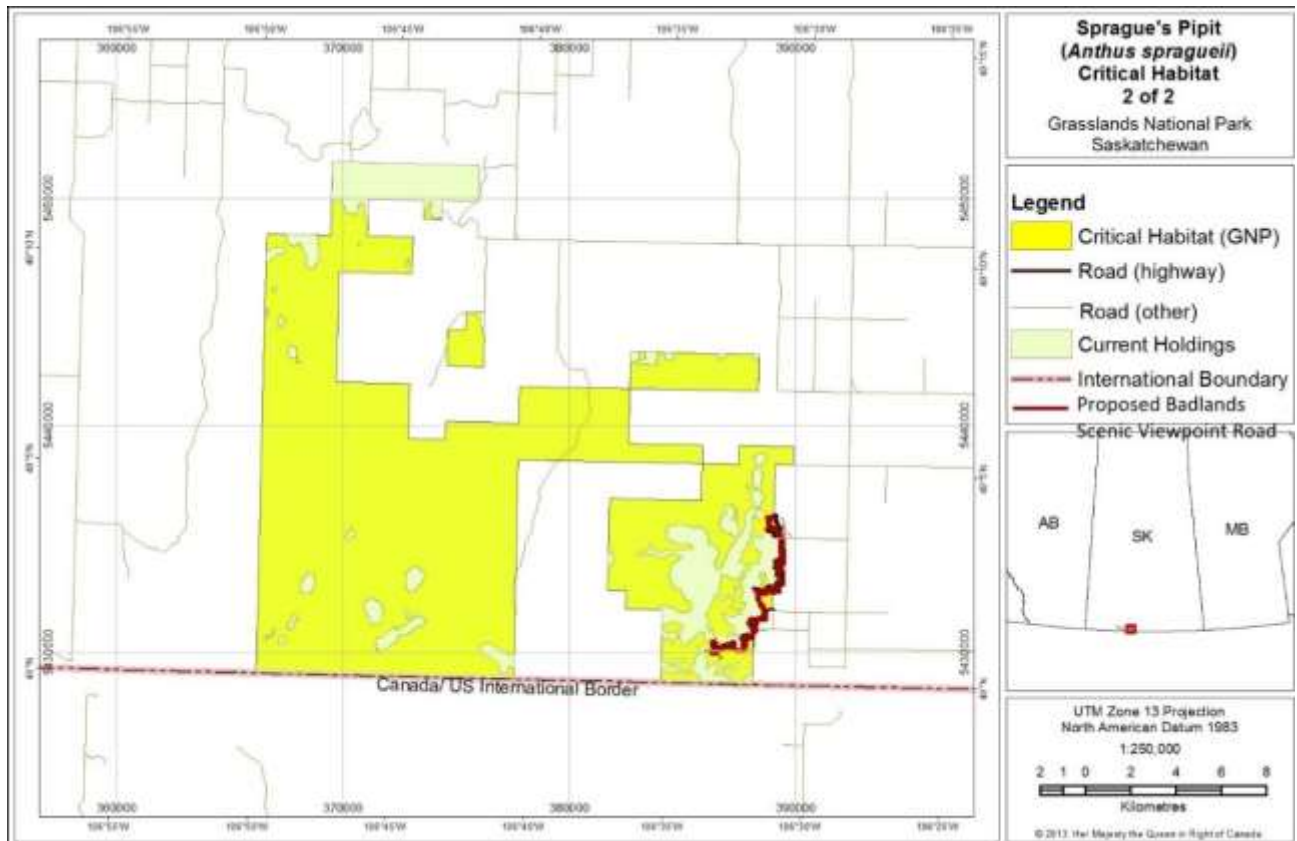
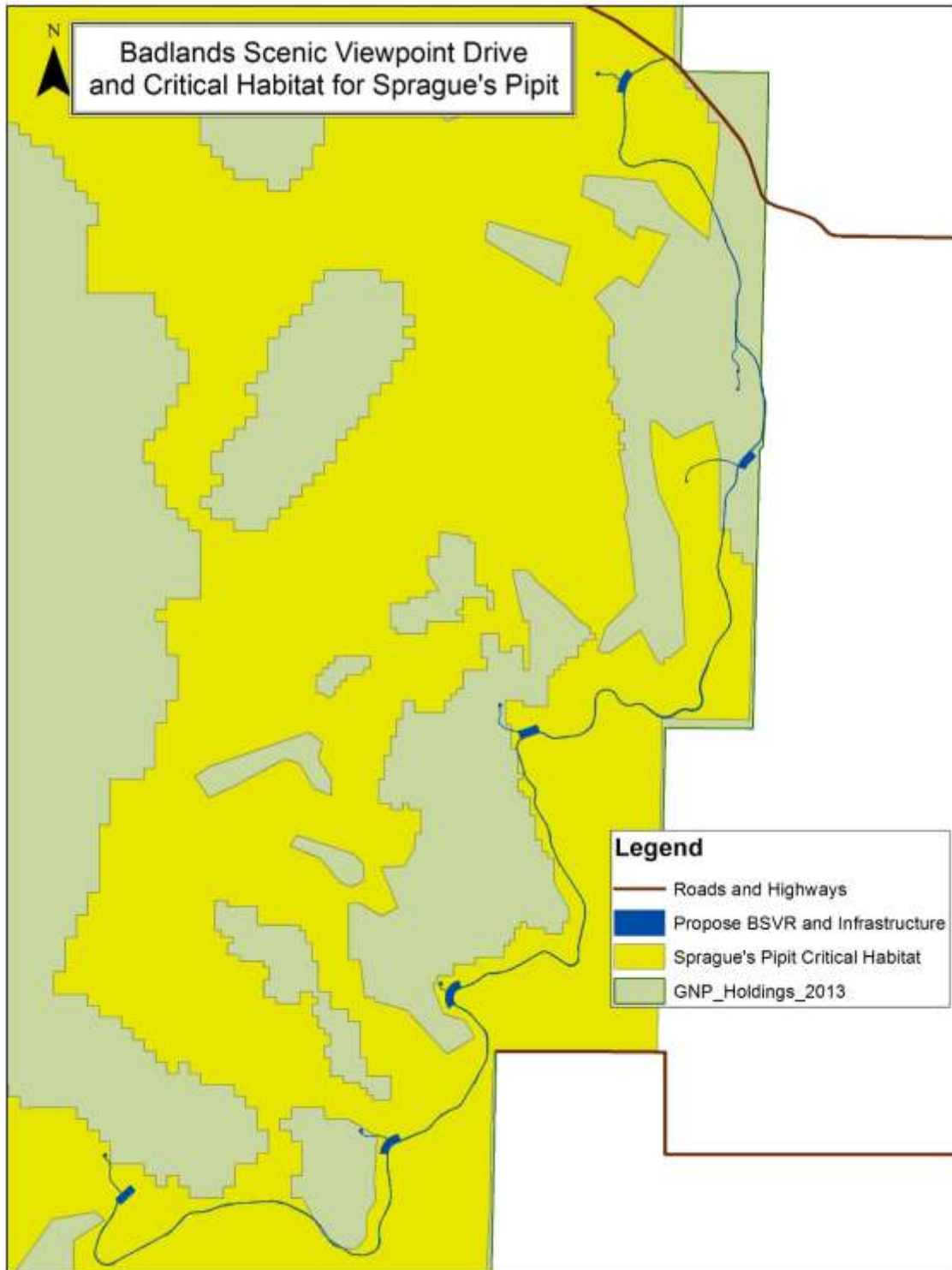


Figure 23: Location and extent of critical habitat for Sprague's Pipit in the East Block of Grasslands National Park.



*Figure 24: Map showing the geospatial extent Sprague's pipit critical habitat and the proposed road.*

The project area is within the breeding range of Sprague's pipits, which typically arrive on breeding grounds in late April/early May and leave by mid-September. Activities associated with this project have the potential to affect Sprague's pipits individuals, nests and critical habitat during both the construction and operation phase, as summarized in Table 5 (above). Potential impacts to individuals and nests

identified in Table 5 (increased chance of collisions with vehicles and/or predation) are not exclusive to pipits, and mitigations to avoid affecting pipits will be the same as for other wildlife and/or migratory birds. Potential effects to critical habitat require more in-depth analysis and species-specific mitigations.

Critical habitat in the 2016 GNP Multi-species Action Plan was identified using a spatially explicit predictive model based on pipit occurrence data from 2002-2011 as well as remotely-sensed habitat data. The plan explains,

*The models were based on 1,153 randomly selected sites where territorial Sprague's Pipits occurred, and a further 3,997 randomly selected sites that were used to characterize the habitat generally available in the South of the Divide area. Reliance on predictive models was necessary because surveys and observations are widely scattered and tend to sample only a small proportion of a given area. Use of predictive models is a precautionary approach that allows one to determine the potential suitability of sites that were not sampled but can reasonably be expected to be inhabited by pipits. Models were validated using independent data sets, which demonstrated that the final model correctly predicted 90% of known pipit locations. (Parks Canada Agency, 2016)*

While this is considered an effective model, not all area covered by the model will meet biophysical attributes required for critical habitat. Section 2.7.3 of the recovery strategy (Environment Canada 2012) describes the biophysical attributes that make up critical habitat as well as provides examples of unsuitable (ie – excluded) habitats:

*Biophysical Attributes that comprise critical habitat:*

- open areas of upland native prairie  $\geq 65$  ha (160 ac)
- native prairie management units in fair to excellent range condition
- limited woody vegetation
- limited invasion by exotic grasses
- flat to gently rolling topography

*Critical habitat for Sprague's Pipit excludes unsuitable habitat (e.g., dense patches of woody vegetation, open sand dunes, coulees, riparian areas, water bodies, grasslands planted with non-native species, eroded slopes badlands), existing infrastructure (e.g., roads, gas and oil wells, buildings, pipelines, fence lines, and watering sites) and perennial watering and salting sites for livestock.*

In the absence of a detailed survey to ground-truth the model for year-round critical habitat in this area, all area within the geographic extent of critical habitat in or near the project area is considered as potential critical habitat for the purpose of this analysis, with the following exceptions:

- previously and/or currently cultivated fields,
- areas of steep relief + eroded vegetation community type (which fail to meet biophysical attributes for Sprague's pipit by definition, see D.A. Westworth & Associates Ltd. 1994),
- bladed trails, and

- areas where ground cover is predominantly invasive vegetation.

These exclusions were determined using descriptions of critical habitat and exclusions from the recovery strategy, existing GIS data, and reports generated from an on-site visit by McElhanney and PCA staff (see section 2.4 for a summary of the on-site work and the attachments list for the reports generated from the site visit). After these exclusions the amount of critical habitat that falls within the project area is 18.2 ha: 4.2 ha within the footprint of infrastructure, and 13.9 ha within the area of temporary ground disturbance created during the construction phase.

In addition to the area of critical habitat being directly impacted (18.3 ha), the project may reduce the total number of pipits that the larger area (habitat patch) can support. While a handful of records of pipit observations exist from this area, there is no baseline pipit presence or abundance data available for this area. The recovery strategy cites research that shows pipit abundance and nest success are influenced by patch size and shape (Davis 2004, Davis 2006). Larger contiguous patches of native upland prairie are required for pipit critical habitat (the recovery strategy requires a minimum of 65 ha, Davis (2004) defined the minimum habitat patch size as 145 ha). The larger affected area (habitat patch) is defined by the area of overlap between the uplands prairie vegetation type (Westworth and Associates Ltd. 1994) and the geographic extent of critical habitat (identified in the 2016 Grasslands National Park Multi-Species Action Plan), with polygon edges being defined by unsuitable habitat types (badlands, croplands), see *Figure 25*. This area creates a large, mostly contiguous patch (some narrow corridors connecting larger swaths) of potential critical habitat totalling 248 ha. A  $\frac{3}{4}$  section of federally-owned land mentioned above that is outside of the park boundary but connected to critical habitat has been included as potential pipit habitat as a precaution, though critical habitat information for this area is not currently available. The uplands vegetation type was used to limit the affected area because this is the vegetation type required by pipits. Eroded, non-native and shrub vegetation communities are excluded by the recovery strategy, as are fence lines and other anthropomorphic structures. The strategy states that pipits are rarely found in cultivated lands, and work by Sliwinski and Koper (2012) found that pipit abundance declined by 25% or more in point counts within 0.91 km of cropland edges.

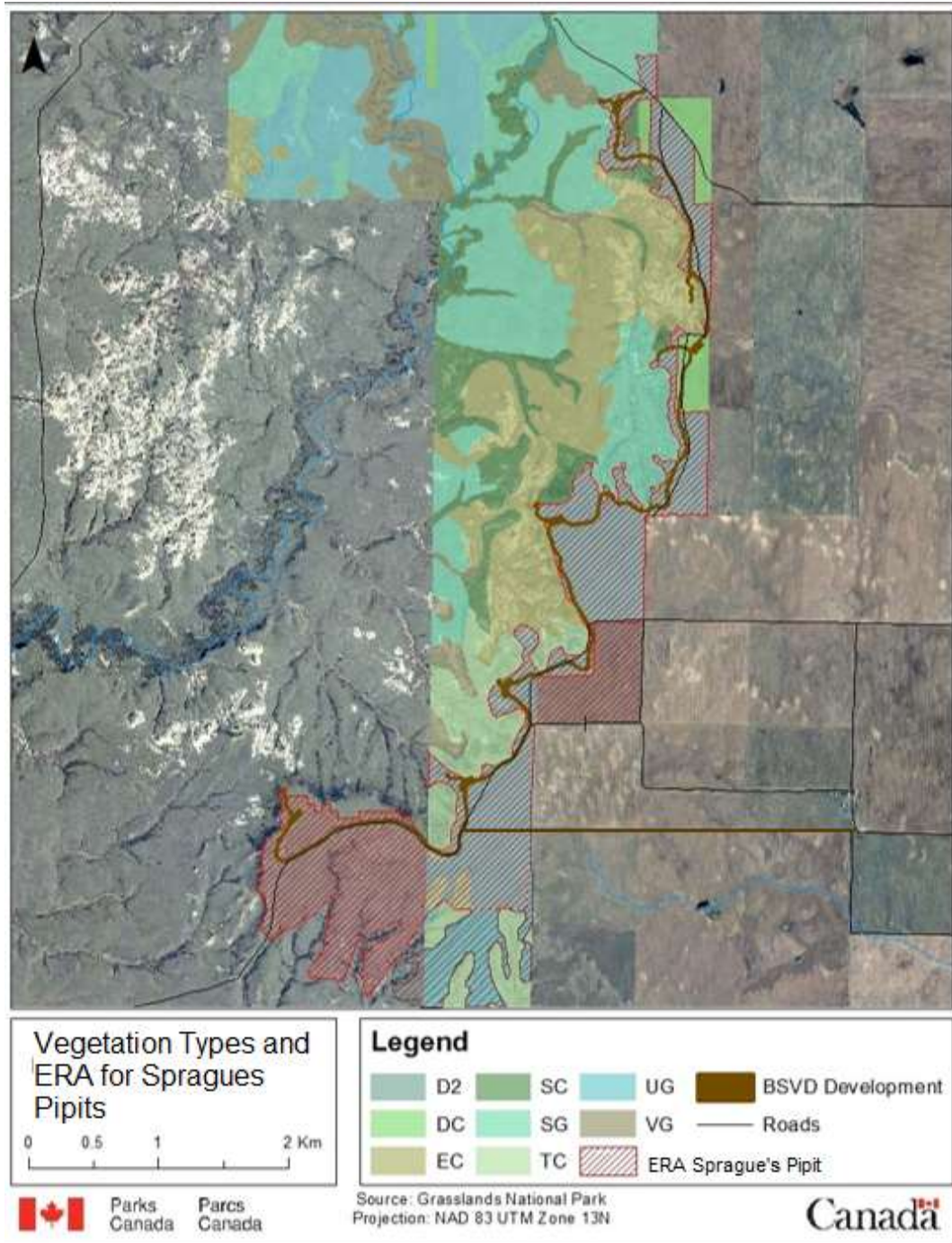


Figure 25: Map of vegetation types as described in a study by D.A. Westworth & Associates Ltd funded by Grasslands National Park in 1994. The red hatched area on the map shows the area of critical habitat that may be impacted by the project. Park boundaries have expanded since the survey, which is why vegetation type is missing for some areas. The Uplands Grassland (UG) vegetation type was used in conjunction with the critical habitat layer to define the boundary and extent of the critical habitat.

Roads are listed in the recovery strategy or action plan for these species as an activity likely to destroy critical habitat:



2) From the 2012 Amended Recovery Strategy for Sprague's Pipit (Environment Canada):

*Construction of roads: Roads (paved, gravel or dirt surfaces of > 2 m width with ditches or raised road bed) destroy and fragment native grassland habitat, facilitate invasion of native grassland by exotic plant species, concentrate activities of certain predators and increase the chance of pipits colliding with vehicles. As a possible consequence of these effects, abundance of pipits has been found to be lower along roads than along trails (Sutter et al. 2000).*

The Sutter et al. (2000) paper referenced define roads as having a drainage ditch typically planted with smooth brome and ending at a fence 11-18 m from travelling surface. The typical travelling surface (ie – road surface) in their study area was stated in the article to be 8-9 m wide. Conversely, they define trails as a single pair of wheel ruts with trailsides that are visually indistinguishable from surrounding habitat in terms of vegetation structure and plant species composition. While vegetation structure and species composition are not actually assessed in the article, the study area is defined as BBS routes within townships containing 80% grassland or more, and the grasslands is said to be characterized by Stipas, native wheatgrasses, blue grama, sedges club moss, pasture sage, snowberry and wolfwillow. When comparing the proposed road to these definitions, we see that the road will be narrower, low-profile with no ditches and the area will be monitored and managed to prevent and control the establishment and spread of invasive species. There are, however, invasive species already present in patches along the proposed road alignment, predominantly brome, crested wheatgrass and yellow sweet clover. Additionally, while the proposed road does not meet all of the criteria used to describe a road in Sutter et al., it does not match the definition of a trail either as it will be paved and create a larger linear disturbance than a two track trail. Sutter et al. finds that Pipits are 1.3 to 2.1 times more abundant in sample sites along trails than those along roads, and attributes the difference to the presence of smooth brome along roadsides (citing Dale 1983, Wilson and Belcher 1989 for pipits' avoidance of smooth brome areas) as well as possibly avoidance due to increased predation risk and vehicle disturbance.

Additional literature referenced in the Recovery Strategy suggests that Pipits are less likely to use edge habitat, and that a low edge:interior habitat ratio is a strong indicator of both pipit abundance and of nest success (Davis 2004, [placeholder]). Other literature suggests that pipits are significantly less abundance near cropland edges (Sliwinski and Koper 2012). Because these features exist in and near the habitat patch being impacted by the proposed project, this patch may already not support as many pipits as uplands prairie areas in the interior of the park.

Table 7 examines potential impacts and effects to pipits critical habitat in more detail, assigns scale and identifies where the potential effects of impacts can be avoided or mitigated.

### 5.2.3. Mormon metalmark

Critical habitat for the Mormon metalmark is identified in the draft 2016 Multi-Species Action Plan for Grasslands National Park. Some of this identified critical habitat is adjacent to the project area (area of infrastructure or area of temporary ground disturbance created by construction). Activities associated with the project have the potential to impact metalmarks and their critical habitat as identified in Table 5.

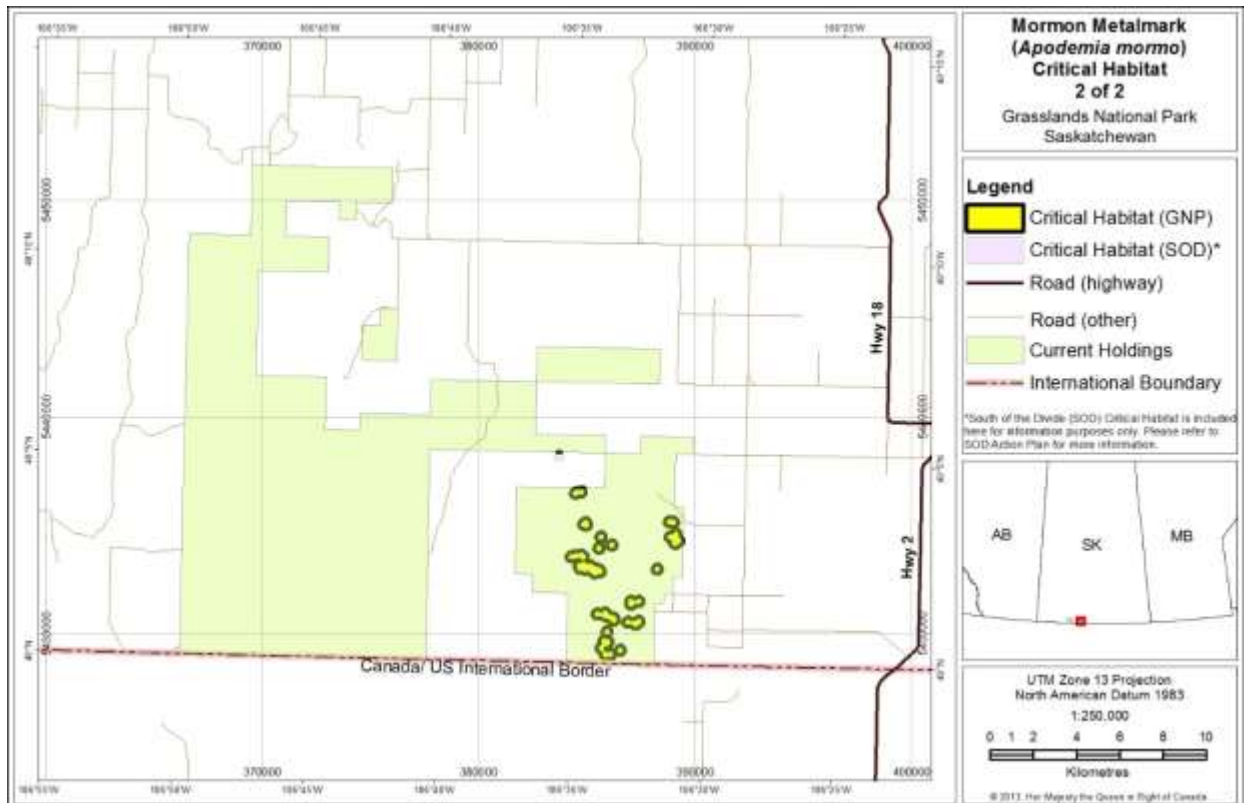


Figure 26: Critical Habitat for the Mormon Metalmark identified in the 2016 Grasslands National Park Multi-species Action Plan.

The draft action plan lists the following biophysical attributes required for habitat:

- Badland areas on eroded barren, sandy or gravelly soils; and
- Partially weathered shale and clay where moderate to high densities of branched umbrella plants and rubber rabbitbrush (*Ericameria nauseosus*) are found.

Branched umbrella plant and rubber rabbitbrush are primary and secondary nectar sources (respectively) for the species and are required to complete necessary life processes. A preliminary on-site was done to look for host plants (PCA unpublished report 2015) near the proposed road, and an additional on-site will be required prior to construction. Trampling of host plants may occur during the construction and operational phases. Erosion and/or the introduction/spread of exotic plants as a result of the project may also cause damage to host plants.

COSEWIC also identifies mortality of butterflies from collisions with vehicles traffic where colonies exist next to roads as a threat to the survival and recovery of this species (COSEWIC 2014). Because the eroded communities only occur west of the project area (see Figure 26), the road will not fragment critical habitat.

However critical habitat polygons exist adjacent to the road, it is possible that mortality from motorized vehicle traffic will occur. This potential is somewhat mitigated by the road being constructed on the uplands area above critical habitat according to an abundance study that suggests metalmark mortality is greater where colonies exist above roads compared to where they exist below roads (COSEWIC 2014). Additionally, road traffic during both phases of this project will be low – 30 km/h and under will reduce likelihood of collisions. Additional on-site visits prior to construction will be required to identify where critical habitat containing host plants exists within 100 m of the proposed road so appropriate mitigations can be applied to these areas to further reduce the potential for butterfly mortality as a result of increased traffic.

#### **5.2.4. Long-billed Curlew**

Long-billed curlews are a migratory upland shorebird whose breeding range extends into the southwestern grasslands of Canada. This ground-nesting bird has experienced population declines due to market hunting and a reduction in available habitat prior to 1900, particularly across its eastern range (Environment Canada 2013a). The project area is within the breeding range of the long-billed curlew, which typically arrive on breeding grounds in mid-April and leave by late August. Nesting is usually initiated late April/early May, eggs are incubated ~30 days and precocial chicks leave nest shortly after hatching, though parental care continues until August.

Critical habitat is not defined for species of special concern, however important habitat has been identified by Environment Canada and the geospatial data provided to GNP (see Figure 27). A management plan has been prepared to prevent long-billed curlews from becoming endangered or threatened; threats and management objectives identified by the plan will be used in this analysis to determine the potential effect to the species.

Some of the project falls within the geospatial extent of important habitat. Important habitat has been identified by Environment Canada as having the following features:

- Open contiguous rangeland with few tall shrubs and short ( $\leq 30$  cm) vegetation dominated by grasses

- Flat to gently rolling topography
- Nest sites typically associated with shorter and sparser vegetation than sites used for foraging by adults and young

The proposed Action Plan for Southwestern Saskatchewan (Environment and Climate Change Canada 2016) states that the habitat model used to identify important habitat is relatively poor due in part to a low number of records for the species, and should be interpreted with caution. Breeding habitat needs are further described in its management plan (Environment Canada 2013a) as contiguous, open and short native (and to a lesser extent non-native) grasslands, in Saskatchewan specifically areas with greater grass cover than forbs, grass height <10 cm and a low percentage of bare ground and dead litter, and grazed crested wheatgrass fields can also be important curlew habitat. Curlews show site fidelity, and occupy territories between 6 and 20 ha per pair. To be suitable habitat, the total area of available habitat should be 3x greater than the territory to "...accommodate the species' requirement of an unoccupied buffer strip of 300-500 m wide surrounding the territory..." (Environment Canada 2013a).

The proposed road alignment follows an area with existing trails along the periphery of identified important habitat. Figure 28 shows the proposed road, as well as existing trails with the geospatial extent of important habitat. A systematic survey of potential curlew habitat within the project area has not been done. GNP has no records of curlews from the project area. Some point count data exists at the north end of the road, however only two sample periods were collected and no curlews were recorded (see GNP's *Songbird data 2003-2015 ICE.xlsx*, GRASS-14 and GRASS-15 from years 2004 and 2007). If suitable curlew nesting habitat exists here, it would be converted to road infrastructure decreasing the overall amount of available habitat. This does not include stretches of the proposed road that are aligned with existing trails. Additionally, areas of trail not being incorporated into the proposed road alignment will be actively restored or allowed to return to native prairie naturally. The impacted polygon of potentially suitable habitat is isolated to the west by a natural break in habitat features (the eroded communities/badlands) and to the east by cultivated croplands. The proposed road follows along the edge of these features, and so overall impact to potential suitable habitat is expected to be

low due to the limited amount of fragmentation involved. Core, contiguous habitat exists on the other side of the badlands to the west.

The management plan for curlews states that a quantitative management objective is not possible at this time due to highly variable abundance and trend estimates and insufficient data. The long-term objective is to maintain or increase the recent breeding distribution in Canada by maintaining and improving the amount and quality of breeding and migration habitat available (Environment Canada 2013a). The GNP Multi-species Action Plan states with respect to curlews: *“No objective established due to no known threats in the park or no known management action can contribute to conservation within the park at this time; or GNP is of limited importance to the species’ national recovery”* (Parks Canada draft 2016). The project will not impair park management activities that would benefit long-billed curlews, such as crested wheatgrass control, leafy spurge (and other invasives) control or prescribed grazing (used by the park as a tool to manipulate vegetation community structure and species composition to create a patchwork of habitat types complimentary to surrounding land uses). Excessive fragmentation may expose curlews to higher rates of predation as well as disrupt connecting corridors between neighbouring areas of suitable habitat (Environment Canada 2013).

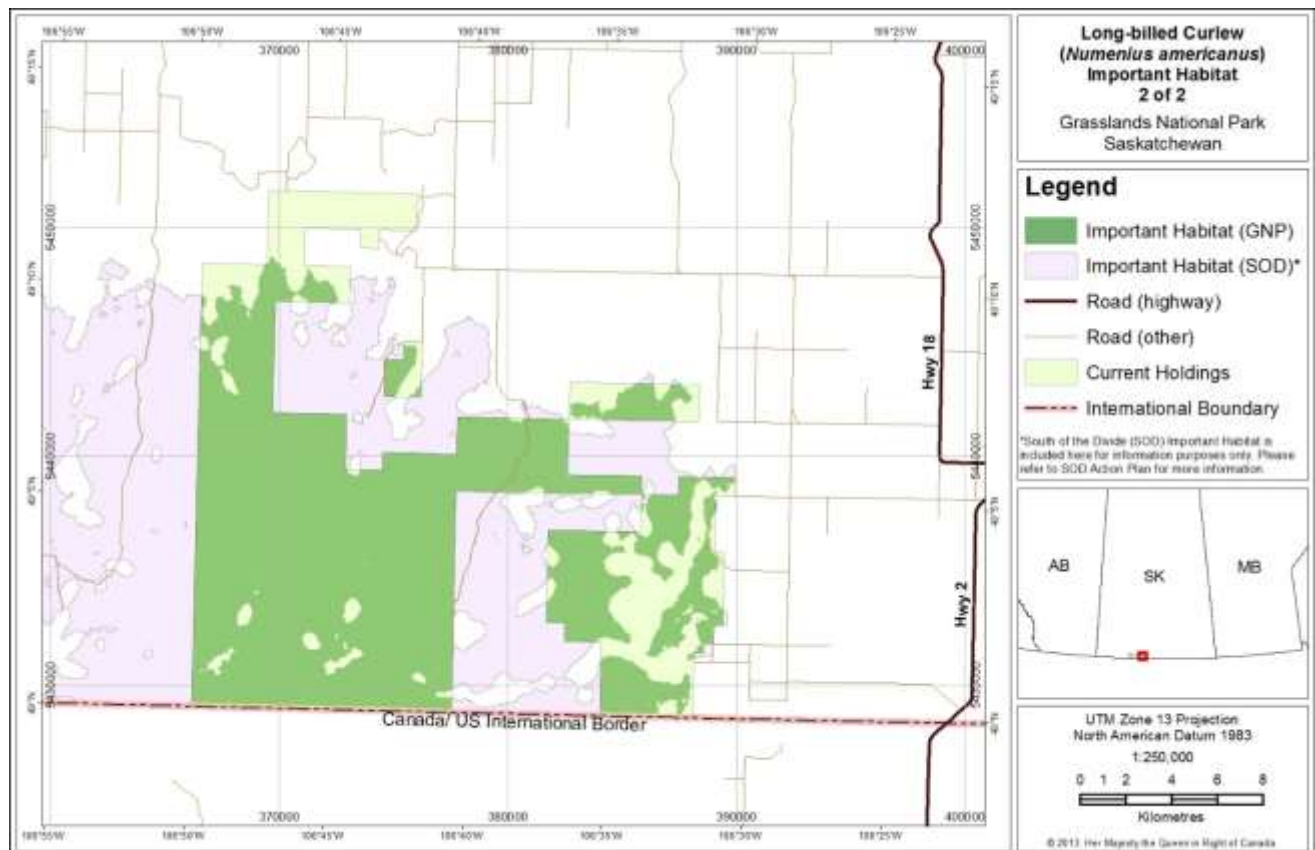


Figure 27: Map showing geographic extent of important long-billed curlew habitat defined in the South of the Divide Multi-species Action Plan (EC 2016) and the Grasslands National Park Multi-species Action Plan (2016).



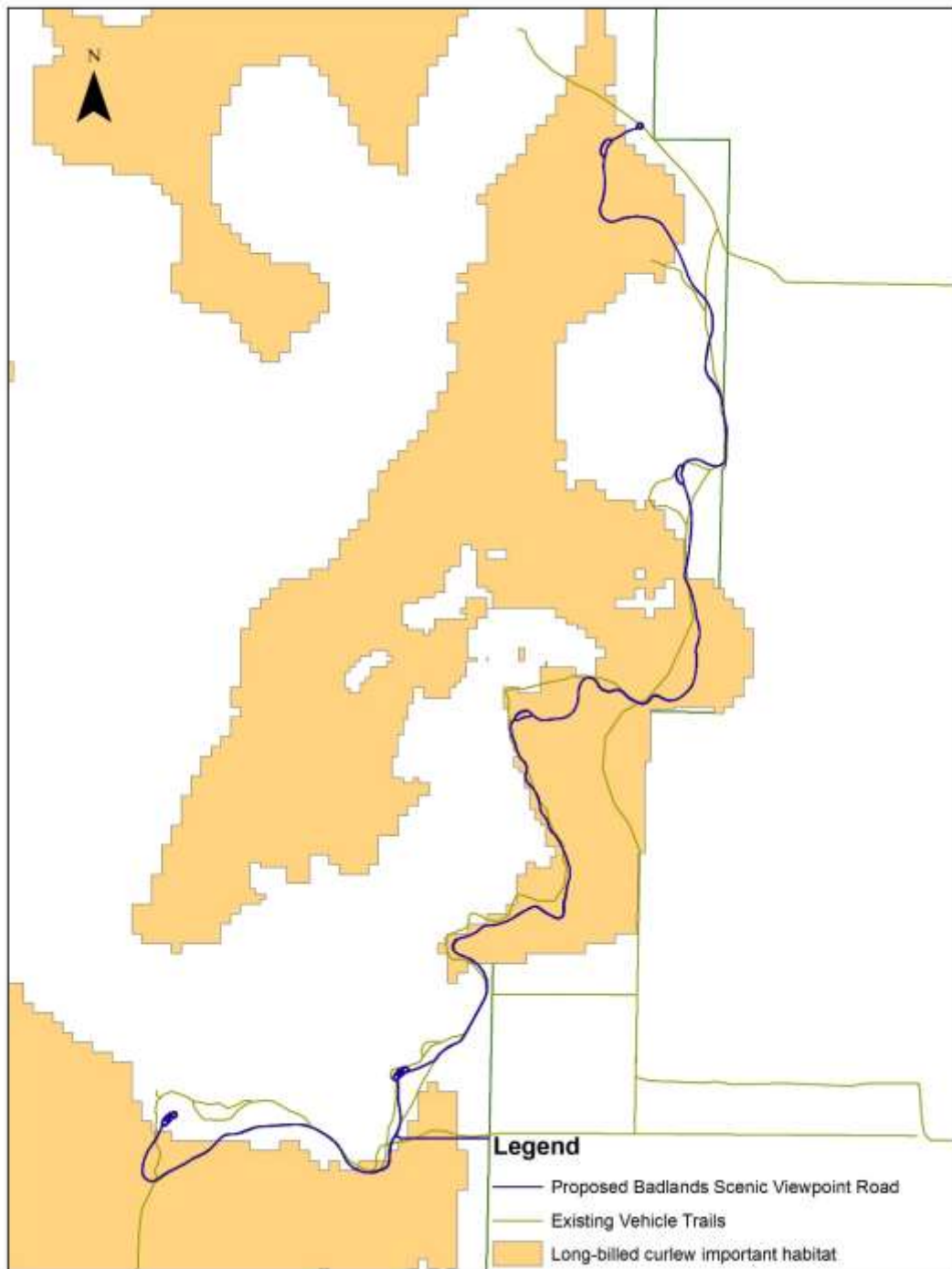


Figure 28: Map showing the geographic extent of long-billed curlew important habitat and the proposed project.

### **5.3. Cultural Resources**

An interim Archeological Impact Assessment (AIA) was provided to the project manager, Environmental Assessment Officer, PCA's archeologists and the design team April 25, 2016. Based on the interim report, some minor adjustments were made to the alignment of the road, parking areas and walking trails using a best-fit solution to prevent impacts to other valued components. Additional testing is required where adjustments have been made, as well as some block excavations where the road will pass through certain archeological resources. This work has been contracted to a 3<sup>rd</sup> party, who will complete all excavations and submit a report to PCA's Cultural Resources Management (CRM). This report, as well as other requirements of the contract, once fulfilled, reviewed and approved by CRM, will satisfy the cultural resources component of this analysis. Resulting reports, diagrams and mitigations will be appended to this analysis and communicated to the project manager before work starts.



## 6. Mitigation Measures

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This section includes a comprehensive list of mitigation measures required for the approval of this project. Mitigation measures have been compiled from multiple sources, including but not limited to the Summit Environmental Consultants Inc. 2016 report, and Parks Canada National Best Management Practices for Roadway, Highway, Parkway and Related Infrastructure.

Mitigations to avoid or reduce effecting wildlife as a result of road construction are available in the Parks Canada National Best Management Practices for Roadway, Highway, Parkway and Related Infrastructure. Relevant mitigations from this guideline, and other mitigations, will be included in the mitigations section. Parks Canada is the competent authority for individuals of the wildlife species listed in the SARA that are found on federal lands and water bodies administered by the Agency, including national parks.

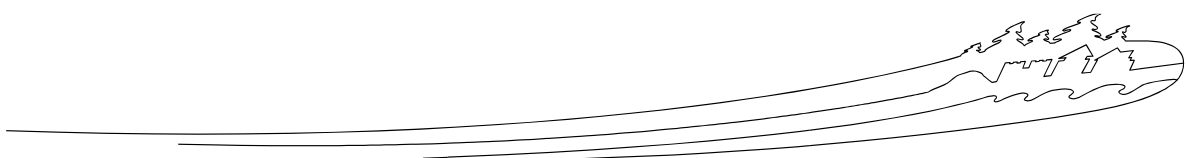
### 6.1. Environmental Protection Plan

To ensure environmental mitigation measures are communicated to contractors and other stakeholders involved in the project, an overarching Environmental Protection Plan is required prior to construction and must include:

- Erosion and sediment control plan: An Erosion and Sedimentation Management Plan shall be prepared for the components of the work undertaken in proximity to watercourses, wetlands or riparian environments. If sediment ponds are required, they shall be designed to settle all sediment particles 0.02 mm or larger. The ponds shall also be designed to handle 1:5 year storm events, with overflow spill capacity for 1:10 year storm events and emergency spillway capacity for 1:100 year storm events. All components require regular maintenance to ensure effectiveness.
- Emergency/Spill response plan: A Spill Response Plan will be prepared and detail the containment and storage, security, handling, use and disposal of empty containers, surplus product or waste generated in the application of these products in accordance with all applicable federal and provincial legislation. The Plan shall include a list of products and materials to be used or brought to the construction site that are considered or defined as hazardous or toxic to the environment. Such products include, but are not limited to, waterproofing agents, grout, cement, concrete finishing agents, hot poured rubber membrane materials, asphalt cement and sand blasting agents.
- Weed control plan
- Reclamation plan
- Waste management plan

### 6.2. General Construction Mitigations

#### 6.2.1. Work Site Conditions/Staging/Laydown





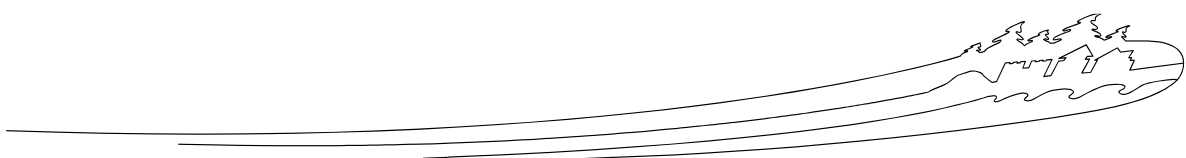
- All employees must attend a briefing with an Impact Assessment Officer (IAO), Surveillance Officer (SO) or delegate before beginning work at the site to review and explain the mitigations that are conditions of the project approvals.
- Minimize vegetation-clearing activities and ground disturbance by staging on existing hardened areas wherever possible.
- Avoid or terminate activities on site that attract or disturb wildlife. Vacate the area and stay away from the immediate location if wildlife display aggressive behaviour or persistent intrusion.
- Control materials that might attract wildlife (e.g. petroleum products, human food and garbage).
- Notify the SO immediately about dens, litters, nests, carcasses (road kills), wildlife activity or encounters on or around the site or crew accommodation. Other wildlife-related encounters are to be reported to SO within 24 hours.
- Delineate the work zone; clearly mark the limits to active construction and the access and egress locations.
- Staging and laydown areas, as well as portable chemical toilet locations, will be approved by GNP staff and be situated at least 100 m away from Rock Creek and other wetlands.
- When work involves the disturbance of soils or the use of erodible materials (e.g. sands, topsoil), prevent the transport of sediment by the installation of appropriate erosion and sediment control.
- In the event of a work program shutdown during inclement weather (e.g. winter conditions unfavourable for construction, heavy rain events, construction delays, etc.) erosion control of bared soils or excavated material stockpiles is required.

#### 6.2.2. Equipment Operations

- Equipment movements and vehicles shall be restricted to designated roads, staging areas, or within the project footprint.
- Ensure machinery arrives on site in a clean condition and is maintained free of fluid leaks, invasive species, noxious weeds and soils from off-site. A certificate or on-site inspection by PCA staff will be required prior to equipment arrival on site.
- Construction vehicles and equipment will have dampening equipment installed and operational.

#### 6.2.3. Air, Soil and Aquatic

- Vehicles and equipment will be in good working order and compliant with provincial and federal emissions standards.
- Limit height of stockpiles and cover as required.
- Limit area of exposed soil and re-establish approved vegetation as soon as possible.
- Use water spraying on granular surfaces as required to reduce dust generation.
- Keep vehicle and equipment idling to a minimum.





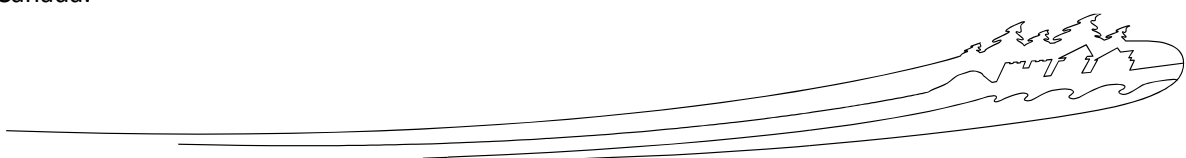
- Fill brought in from offsite must be clean. A certification and/or site inspection of source will be required.
- Potable water and wastewater systems will conform to PCA guidelines and best management practices.
- Vehicle use will be minimized in areas with potential for sediment to be transported into waterways.
- Pump out stations, vault toilets, etc. will be situated according to Parks Canada

#### 6.2.4. Gravel Crushing and Washing

- Gravel will be obtained from an approved operational borrow pit only. Certificate of inspection required prior to bringing materials on site.
- Gravel will not be crushed within 30 meters of any water body.
- If gravel requires washing, the water used will not be returned directly to any watercourse.
- Water free from chemical contaminants will be discharged into ground where further erosion and runoff into surface water is prevented. Discharging into well vegetated ground surface, at a rate which prevents erosion can often provide increased absorption and reduction of sediment load.
- Contaminated water must be treated to meet CCME guidelines or transported outside of the Parks Canada protected heritage place for disposal at an approved facility.
- For waste removed from the park a detailed receipt of delivery to an approved facility will be provided to the SO.

#### 6.2.5. Fuel Storage and Refueling/Emergency Plans

- Spill kits shall be provided at re-fuelling, lubrication, and repair locations that are capable of dealing with 110% of the largest potential spill and shall be maintained in good working order. Site staff shall be informed of the location of the spill response kit(s) and be trained in its use.
- If potentially hazardous materials (e.g. cement-based products, sealants or paints) are used on site ensure raw material, mixed compounds and wash water are not released to any watercourse or soils. Measures such as collection/drip trays and berms lined with occlusive material such as plastic and a layer of sand, and double-lined fuel tanks can prevent spills into the environment.
- Hazardous or toxic products shall be stored no closer than 100 metres from streams, wetlands, water bodies or waterways.
- Timely and effective action shall be taken to stop, contain and clean-up all spills as long as the site is safe to enter. The SO shall be notified immediately of any spill. In the event of a major spill, all other work shall be stopped and all personnel devoted to spill containment and clean-up.
- The costs involved in a spill incident (the control, clean up, disposal of contaminants and site remediation to pre-spill conditions), shall be the responsibility of the proponent. The site will be inspected to ensure completion to the expected standard and to the satisfaction of Parks Canada.





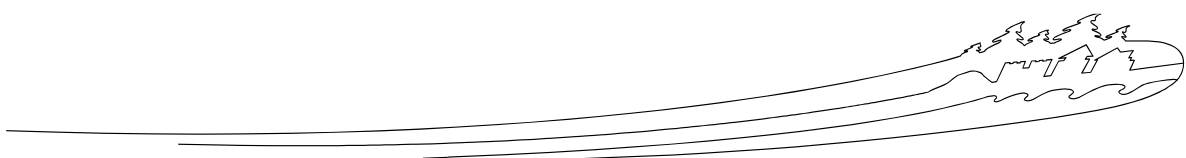


#### 6.2.6. Site Clean Up/Waste Disposal

- Tools and equipment may only be cleaned in a designated area that has been approved by PCA to prevent wash water contaminated with deleterious substances from entering riparian areas or other sensitive areas. Designated cleaning areas will be clearly marked prior to the start of work. Wash water from designated cleaning areas must not be allowed to enter Rock Creek or other riparian or sensitive areas.
- Where possible, sweep up loose material or debris. Any material thought to pose a risk of contamination to soils, surface water or groundwater should be disposed of appropriately off-site.
- Construction, trade, hazardous waste and domestic waste materials shall not be burned, buried or discarded at the construction site or elsewhere in Parks Canada protected heritage places. These wastes shall be contained and removed in a timely and approved manner and disposed at an appropriate waste landfill site located outside the Parks Canada protected heritage place as approved by the SO and/or PM. Construction waste storage containers, shall be emptied when 90% full. Waste containers will have lids, be wildlife proof if there attractants and waste loads shall be covered while being transported.
- Sanitary facilities, such as a portable container toilet, shall be provided and maintained in a clean condition.
- Salvage topsoil at all excavation sites for reclamation purposes. Appropriate equipment and methods will be used to avoid mixing topsoil with underlying material during excavation.
- Replace topsoil to all areas immediately following fine grading.
- Do not compact topsoil.
- Where remaining soils are unstable due to steepness or soil characteristics, immediate installation of sod or erosion control blanket is required.

#### 6.2.7. Resurfacing and Grading

- Works are preferably undertaken during periods of dry weather as this allows easier control of contaminated runoff and sediment.
- If the work schedule requires working in the rain, the area of work must be isolated and appropriate sediment controls must be installed to prevent the release of sediment-laden water or any other deleterious substances into surface waters, particularly for surface repair works requiring the application of patching and sealing compounds, tar, asphalt, and chemical surface sealants.
- During grade construction conducted close to any watercourse, water body or wetland, ensure materials are not pushed, fall or are eroded into the water or wetlands.
- No grade building shall occur outside of the delineated work area. Any material inadvertently falling outside the work limits will be removed promptly in a manner that does not damage vegetation.

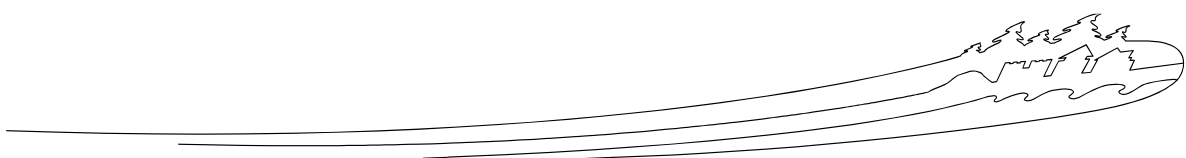




- Materials shall be placed at storage sites or on the grade without spillage outside the work limits. Any material inadvertently falling outside the work limits will be removed promptly in a manner that does not damage vegetation.
- Do not disturb vegetation within 30 meters of riparian areas to retain a natural sediment buffer, or install runoff management structures.
- Ensure gravel or road bed material is free of weeds and comes from an approved operational gravel source free of other contaminants. Certification and/or site inspection of source by PCA staff will be required prior to arrival of material on site.
- Minimize changes to the surface that could affect infiltration and runoff characteristics and maintain effective surface drainage to limit direct runoff into surface waters.
- Minimize application of seal coats in wet conditions. Attempt to apply only to dry surfaces and not prior to (within 24 hrs.) or during rainfall. If unforeseen rain arrives ensure runoff from recently seal coated surfaces are prevented from entering surface waters.

#### 6.2.8. Concrete and Asphalt Handling

- Temporary concrete washout facilities shall be located a minimum of 30m from storm drain inlets, open drainage facilities, and watercourses.
- Temporary concrete washout facilities shall be temporary pit or bermed areas constructed and maintained in sufficient quantity and size to contain all liquid and concrete waste generated by washout operations.
- Wood stakes, or sandbag materials can be used to construct temporary containment walls or “barriers”.
- Plastic lining material shall be a minimum of 10-mil polyethylene sheeting and shall be free of holes, tears or other defects that compromise the impermeability of the material.
- The soil base shall be prepared free of rocks or other debris that may cause tears or holes in the plastic lining material.
- Perform washout of concrete mixer trucks in designated areas only.
- Wash concrete from mixer truck chutes and/or concrete pump bin into approved concrete washout facility or collect in an impermeable bag for disposal offsite.
- Once concrete wastes are washed into the designated area and allowed to harden, the concrete shall be broken up, removed, and disposed of per federal and provincial regulations. Proof of appropriate disposal required.
- Temporary concrete washout facilities shall be maintained to provide adequate holding capacity with a minimum freeboard of 100 mm (4 inches) for above grade facilities and 300 mm (12 inches) for below grade facilities.
- Maintaining temporary concrete washout facilities shall include removing and disposing of hardened concrete and returning the facilities to a functional condition.
- Holes, depressions or other ground disturbance caused by the removal of the temporary concrete washout facilities shall be backfilled and restored.





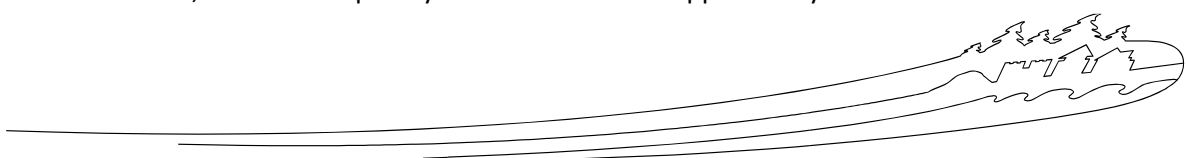
- Rolling concrete mixers with surplus concrete in amounts less than one cubic metre of wet concrete may waste this concrete in the grade right-of-way as directed by the Parks Canada Representative in areas that drain well away from watercourses. Surplus amounts in excess of one cubic metre are to be removed offsite.
- Water contaminated in the placing of cement and curing of concrete shall be contained and removed from the site to an approved disposal facility.
- Waste, solidified concrete from rolling concrete mixers in amounts less than 1 cubic meter and waste solidified concrete from construction pour shall be buried in the grade within 48 hours of the pour, subject to approval and direction from the Departmental Representative

#### 6.2.9. Vegetation Clearing and Removal

- Vegetation clearing and/or removal can negatively impact nesting birds in spring and summer, generally April 15 – August 15 for this area. Avoid all vegetation removal during this time. If vegetation removal must occur within these times, then a biologist/ecologist should further clarify the species presence and timing particular to the work site and any occupied bird nests, eggs, or nests of species protected under the Migratory Bird Convention Act (MBCA).
- If vegetation clearing is done within the nesting window, a survey of the area must be conducted by a trained technician (provided by the contractor) prior to work. If a nest is found during the pre-work surveys, the area will be left intact with a suitable sized buffer of vegetation around it until the young have fledged and left the nest. Size of buffer is species dependent, to be determined in consultation with professional biologist or park ecologist.
- Grass mowing and trimming should not occur during peak spring or fall reptile/amphibian migrations and hatching. Consult a local biologist/ecologist for site and species specific timing windows. Use the park Best Management Practices for vegetation maintenance once it becomes available.
- Minimize disturbance to ground cover and vegetation within project area to retain vegetation to reduce erosion and maintain islands of native vegetation which will help with vegetation restoration in disturbed areas.
- If wildlife is observed during work, if possible, give animals the opportunity to escape the work area.
- Avoid ground vegetation removal during dry, windy periods to prevent erosion of topsoil and reduction of air quality with dirt/dust.
- Vegetation removed for construction that contains prohibited and/or noxious species will be piled and burnt or bagged and removed off site to an approved disposal facility.
- Store removed vegetation on already disturbed areas to minimize disturbance area.

#### 6.2.10. Site Reclamation

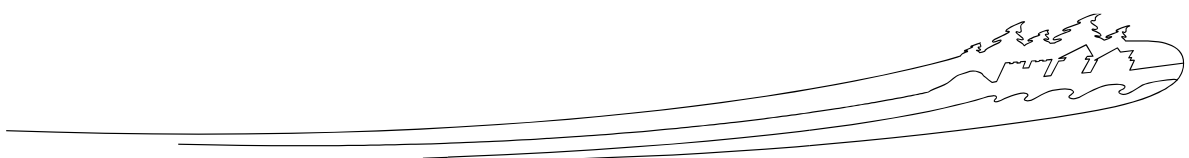
- Areas where vegetation has been damaged or destroyed during construction that is outside of the Landscaping Plan will be replanted with native grass and forb seeds according to the Restoration Plan, to be developed by the contractor and approved by PCA.





- Natural revegetation will be encouraged on reclaimed disturbed areas within grassland habitat.
- Landscaping and grass reclamation (species composition, seeding rates, methods, etc), must be approved by Grasslands National Park.
- Replace topsoil to all areas immediately following fine grading.
- Do not compact topsoil.
- Where remaining soils are unstable due to steepness or soil characteristics, immediate installation of sod or erosion control blanket is required as directed by SO and/or PM.
- Avoid use of fertilizer to limit non-native vegetation growth and allow for local species to use available nutrients.
- Avoid importing soil.
- The seedbed will be scarified if seeding takes place more than 7 days after final grading or if there has been a rainfall between final grading and the seeding date.
- Align cleat marks at right angles on slopes to trap seed and sediment and reduce erosion.
- Select seed lots based on indigenous species variety and quality (guaranteed weed seed free content and highest purity and germination), seed certificated will be provided to Grasslands National Park Resource Conservation Manager or delegate for review and approval. Seed lots containing any seed of undesirable crop or weed species will be rejected.
- Conduct broadcast seeding under calm wind conditions.
- Ensure seed is integrated with the soil by light rake or harrow.
- Monitor temporary erosion control measures to prevent seed loss.
- Some seeding procedures may have to be completed by the contractor within the warranty period.
- Use native transplants in areas where conventional seeding applications are not applicable or where slope stability is an issue.
- Exclude species designated as weeds in the work sites from the plant density standard consult local vegetation ecologist for current site specific non-native vegetation management program.
- To monitor reclamation, select 50 plots of 1 square meter along a representative transect(s) through reclamation area. Measure the plant density, cover and composition in each of the 100 square meter plots. The reclamation standard will have been met if 90 of the 100 plots match or exceed 25 plants/m<sup>2</sup>.
- Minimum reclamation standard, as above, to be met within one season post planting.
- Inspect site annually during the growing season.
- Apply amendments annually, depending on reclamation progress.
- Re-seed site if the plant density standard is not expected to be achievable within 5 years.
- A new restoration plan will be prepared and implemented when reclamation standards have not been met after 5 years.

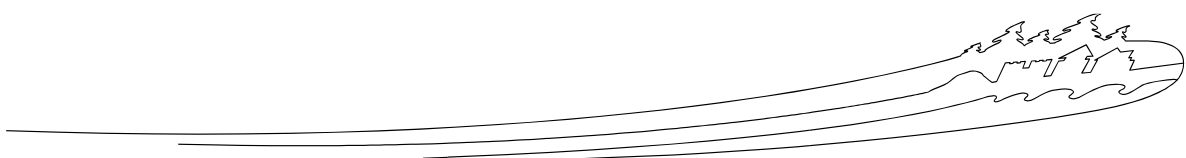
### 6.3 Species at Risk





#### 6.4 General

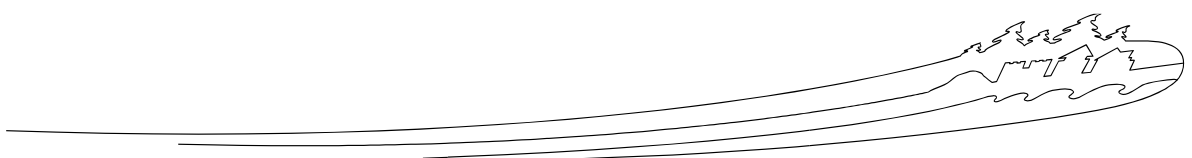
- Reduce vehicle speeds within park boundaries. Vehicle speed will not exceed 40 km/h within the project area.
- Information will be provided to contractors, visitors, staff and researchers to reduce the risk of introducing and/or spreading exotic species (weed free forage for horses, cleaning vehicles, reporting invasive species, etc.)
- Information on the conservation of species at risk and how to reduce anthropogenic disturbances while visiting GNP will be incorporated into the visitor experience plan for Rock Creek Campground.
- Information on identifying species at risk will be made available to staff and crew during construction phase, and a qualified person capable of identifying species at risk must be on site during construction activities.
- A site visit with the PM, SO and contractor will be conducted prior to starting work to address any last-minute concerns or questions.
- The project area will be checked for species at risk prior to beginning work. Findings will be reported to the PM, SO and park ecologist.
- Construction activities will be conducted during daylight hours. Any exceptions must be planned and presented to PCA and approved by the SO and PM before the activity may proceed.
- Ground clearing activities should occur in early spring or late fall before freeze up to avoid breeding/nesting/migration of birds and amphibians. Exact dates are species-specific and/or temperature dependant, but peak activity is generally April – September. Where ground clearing activities occur between April and September, the area will be checked for wildlife prior to work and if nests/species at risk are found, the park ecologist will be consulted.
- All species at risk sightings will be reported to the PM and SO, who will consult with the park ecologist. Where sightings are in or near the project area, work will stop until otherwise directed by the park ecologist.
- Construction activities are limited to the project area defined in this analysis, boundaries will be marked and clearly delineated to construction crews.
- Road infrastructure will be monitored for signs of roadkill and recorded in GNP's incident database.
- Vertical structures will be monitored for signs of use by predatory birds. Anti-perching strategies will be incorporated as needed to reduce increased predation risks.
- Unused fence present within the project area and surrounding area will be removed to reduce the total number of available perches.
- The road and surrounding area will require invasive species monitoring to assess if and where invasive species are establishing and/or spreading out into critical habitat.
- Ground disturbance created during construction will be monitored and recorded by the surveillance officer. A re-vegetation program to reseed the area to a representative native prairie community will be established to assist natural regeneration or to prevent exotic species







from establishing and/or spreading. Re-vegetation activities will follow standard GNP protocols for sourcing seed, developing seed mix, ground prep and seeding, follow-up monitoring and follow-up management.





6.4.1 Greater Sage-Grouse

Table 6: Impacts of project to sage grouse, scale and mitigation requirements

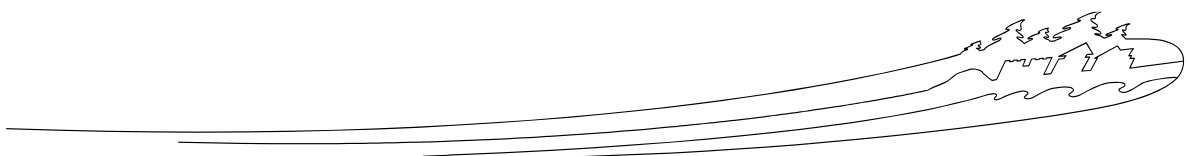
Impact	Potential Effect to Species	Temporal Scale	Geographic Scale	Can effects to sage grouse and/or their habitat be mitigated?
Some shrubs may be killed or damaged.	Loss of habitat function (cover and forage)	Long-term within the footprint of infrastructure, short-term (duration of construction plus 1-2 growing seasons) in area of temporary disturbance	Limited to the footprint of infrastructure (long-term impact) and the area of disturbance (short-term)	Design (narrow) and placement (sticking to habitat edges) of road, viewpoints and associated infrastructure will minimize impacts to shrubs. The alignment was adjusted during the November 2015 on-site to avoid areas of shrubs, or where shrubs could not be practically avoided to align with existing trail. Some destruction of shrubs is still likely to occur. The project will convert some prairie habitat to infrastructure, which may result in the long-term, immitigable loss of shrubs for cover and forage. A temporary loss of shrubs may occur within the area of temporary disturbance during construction. This temporary loss is expected to last for the duration of construction plus 1-2 growing seasons, and can be mitigated.
Conversion and temporary disturbance of native prairie habitat.	Loss of habitat function (cover, forage and prey availability)	Long-term within the footprint of infrastructure, short-term (duration of construction plus 1-2 growing seasons) in area of temporary disturbance	Limited to the footprint of infrastructure (long-term impact) and the area of disturbance (short-term)	Design and placement of infrastructure has been adjusted to limit the conversion of native prairie, however some conversion of native prairie to infrastructure will occur, resulting in the long-term, immitigable loss of vegetation. Offsetting to improve the function of nesting and brood rearing habitat in the park will reduce the impact of the effect of the conversion of prairie resulting from this project. A temporary loss of prairie may occur within the area of temporary disturbance during construction. This temporary loss is expected to last for the duration of construction plus 1-2 growing seasons and can be mitigated to help limit the extent of impacts to cover, forage and prey availability.
New infrastructure may fragment shrub habitat	Reduction or loss of contiguous habitat	Long-term	Habitat fragmentation would be limited to the uplands prairie vegetation area between the croplands to the east	By definition, shrubs are few to absent in this habitat type. However some patches of silver sagebrush do exist. Placement of road has been adjusted to avoid travelling though patches of sagebrush, moving further towards the escarpment edge, closer to the boundary fence, into heavily invaded areas or staying on existing trail to avoid destruction of sagebrush where alignment continues through shrub areas. Mitigations will not be possible where infrastructure still travels through sagebrush



			and the badlands to the west (see Figure 20) where breaks in critical habitat already occur.	areas, and it is expected that the total amount of available habitat will be somewhat reduced. Offsetting will reduce the impact of the effect off fragmentation (see attachment list for Offsetting form). Mitigations will also be required to reduce impact of infrastructure on remaining critical habitat shown in Figure 20.
Project construction will lead to a temporary increase in bare ground during construction, as well as a long-term increase in what is functionally bare ground by converting prairie to road surface.	Loss of habitat function (cover and forage)	Long-term within the footprint of infrastructure, short-term (duration of construction plus time for recovery, estimated 1-2 years post construction) in area of temporary disturbance (buffer defined in project description)	Limited to the footprint of infrastructure (long-term impact) and the area of disturbance (short-term)	Long-term conversion of prairie to what is functionally bare ground will occur with this project. While this impact is not avoidable, the effect on the species may be reduced by minimizing the overall infrastructure footprint. Existing areas of bladed trail that deviate from the proposed road alignment will be allowed to recover or be reclaimed, which will provide more contiguous habitat in some areas. Erosion control measures and strategies to avoid creating bare ground in sensitive areas are required. The area of temporary disturbance will be monitored during and post-construction to assess extent and severity of exposed soil, and to assess the need for followup actions to remediate (speed up establishment of native plants and/or control invasives).
The project will increase the amount of infrastructure, visitation & vehicle traffic (anthropogenic noise) and artificial perches.	Loss of habitat function, increase predator pressure, avoidance of the area	Long-term	Area of impacts limited to the uplands prairie vegetation area between the croplands to the east and the badlands to the west (see Figure 20) where breaks in critical habitat already occur.	<p>The project during operational phase (long-term) will increase the total area of anthropogenic infrastructure, will increase the amount of vehicle traffic and anthropogenic noise, and viewing and parking areas will encourage visitors to walk around the area. The construction phase will be a short-term (roughly 10 weeks of construction), more acute disturbance with increased noise, vehicle/human presence. Short-term and long-term noise cannot be mitigated to prevent increasing ambient noise levels above 45 dB, however timing of construction and road use can be used to limit noise during sensitive lekking times.</p> <p>The project will not significantly increase the number of functional perches. A 1-km stretch of fence will be removed as a part of this project. Vertical structures will be monitored for signs of perching. Perch deterrents or other strategies to limit height or ability of predators to perch on structures will be employed as required.</p>



- No vehicles or equipment may be operated on site between 90 minutes before sunset to 90 minutes after sunrise starting April 1 to May 30 during the construction phase. Any work in April and May will be coordinated with annual sage grouse lek surveys to prevent interfering with lek survey results.
- If an active lek is detected within 3.2 km of the road during its operation, a closure to all vehicular traffic (with exception for those travelling to/from a residence and/or an agricultural operation) will be enforced between 90 minutes before sunset to 90 minutes after sunrise April 1 to May 30.
- Overall height of structures not meant to house humans will be  $\leq 1.2$  m from the ground. Where required for public safety or to accommodate people (such as vault toilets or roadside safety messaging) structures over 1.2 m will be monitored for signs of perching and employ anti-perching strategies as required to deter large predatory birds. Structures over 1.2 m will be strategically placed to avoid or minimize their visual impact on the surrounding landscape.
- Ground-clearing activities should occur outside of nesting periods for sage-grouse wherever possible. Nesting period tends to be April 27 – July 19 (COSEWIC 2008). If ground clearing activities must occur between April 27 and July 19, areas of sagebrush will be checked for sage-grouse nests prior to start of work. If nests are found, the project manager (PM) and SO will be notified immediately and work will stop until young have fledged the nest or until otherwise advised by the park ecologist.
- Vehicles and machinery will avoid areas of sagebrush wherever reasonably possible (ie – outside of the immediate footprint of infrastructure and/or areas to be excavated).
- Visitor experience events and activities that have the potential to impact sage-grouse and/or their critical habitat must undergo an EIA process.
- Messaging for visitors will be developed to promote awareness of Sprague's pipit critical habitat and conservation.





6.4.2 Sprague’s Pipit

Table 7: Impacts of project to Sprague’s Pipits, scale and mitigation requirements

Impact	Potential Effect to Species	Temporal Scale	Geographic Scale	Can effects to pipits and/or their habitat be mitigated?
Fragmenting upland native prairie habitat patches below 65 ha	Reduced pipit abundance	Long-term	248 ha of the uplands prairie habitat patch shown in <i>Figure 25</i> .	Design (narrow) and placement (sticking to habitat edges) of road, viewpoints and associated infrastructure will minimize fragmentation of critical habitat so that no patches will be reduced to less than 65 ha. Where the existing trail is not being incorporated into proposed infrastructure, remediation is required to restore contiguity.
Reducing the condition of prairie management units to less than fair (Abouguendia 1990)	Loss of habitat function (cover availability)	Long-term within the footprint of infrastructure, short-term (duration of construction plus 3-4 growing seasons to accumulate thatch) in area of temporary disturbance	Limited to the footprint of infrastructure (long-term impact) and the area of disturbance (short-term).	<p>The rangeland condition (Abouguendia 1990) of this area has not been assessed, but can be estimated to be fair, good or excellent based on similar upland areas under park management (South Gillespie, West Block) where groups of large herbivore grazing have been excluded.</p> <p>This project will convert potential rangeland to anthropomorphic infrastructure, and temporarily disturb surface vegetation surrounding infrastructure during the construction phase which will likely require remediation. This is not likely to reduce the range condition of the habitat beyond the project footprint.</p>
Establish or spread exotic grass species	Loss of habitat function	Long-term	Initial establishment and spread would be limited to the project area, but may spread out into adjacent areas if not managed.	Mitigations to prevent the introduction and/or spread of exotic species are required. A management plan for follow-up monitoring and remediation as required to prevent the establishment and/or spread of exotic species is required.





- Ground clearing work will occur before May 15 or after August 15 to avoid disturbing pipits that may be nesting in the area. If ground clearing activities occur between May 15 and August 15, ground surveys and point counts will be conducted prior to work in order to determine presence of territorial pipits and pipit nests. If pipits are detected, ground clearing and other activities may not occur within a buffer of the pipit and/or nest as determined by the park ecologist. Work may be postponed until the young have fledged the nest.
- Messaging for visitors will be developed to promote awareness of Sprague's pipit critical habitat and conservation.

#### 6.4.3 Mormon Metalmark

- Areas of critical habitat adjacent to the project area will be searched for butterfly activity in August prior to work beginning. Any colonies occurring adjacent to the project area will be clearly delineated during construction, and host plants occurring within these areas as well as the soil beneath host plants are not to be disturbed. Additional erosion control may be required in these areas.
- Messaging for visitors will be developed to promote awareness of Mormon metalmark habitat, encouraging compliance to avoid sensitive areas.

#### 6.4.4 McCown's Longspur

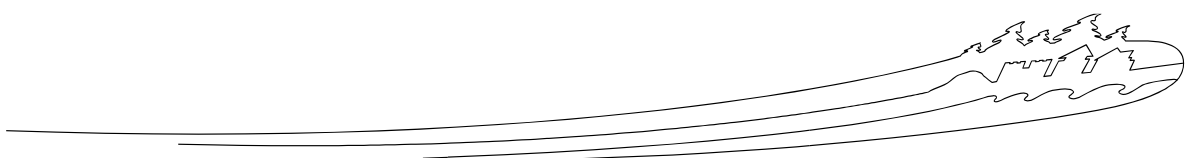
- Avoid ground clearing activities between April 15 and August 15 (longspurs are likely to renest if nest fails or after a first successful clutch). Where ground clearing activities must occur within this time, potentially suitable areas (those areas where vegetation is relatively low and litter is sparse) will be checked for evidence of nesting birds prior to work starting.

#### 6.4.5 Long-billed Curlew

- Avoid ground clearing activities between April 15 and June 15 (curlews typically do not renest). Where ground clearing activities must occur within this time, potentially suitable areas (grass of ~10 cm height with some bare ground and thatch) will be checked for evidence of nesting birds prior to work starting. Curlews will circle and alarm call when the nest is approached; if this behaviour is observed, it will be assumed that a nest is nearby and work in that area will stop. Work may resume once the park ecologist has been consulted to determine appropriate mitigations.

### 6.5 Cultural Resources

An Archaeological Impact Assessment (AIA) will be completed for the project area, and reviewed by Parks Canada Terrestrial Archaeology prior to the start of road/campground construction to ensure that potential impacts to significant cultural resources have been properly mitigated. The AIA will be provided to the PM and appended to this analysis, and the need for any additional mitigations (for example, block excavation of threatened cultural resources) identified as necessary by Parks Canada Terrestrial Archaeology will be communicated to the project team and contractors. These additional mitigations are to be completed to professional archaeological standards and to the satisfaction of Parks Canada Terrestrial Archaeology within 6 months of the DIA's approval.





- Ground excavation for the road and campground development will be confined to only those areas within the project footprint reviewed by Terrestrial Archaeology for cultural resource impacts.
- Development infrastructure related to interpretive signage and amenities such as comfort stations, viewpoint benches and day use areas is outside the scope of this DIA and must be assessed separately for archaeological concerns when development plans are finalised and prior to the installation of any such facilities within the project area.
- Unpermitted collection and/or removal of cultural artefacts is prohibited.
- Cultural resources found during the construction and/or operation of the scenic road will be subject to the *Accidental Finds Protocol*\*\*. They will be left in situ, flagged and reported to the PM or SO on site, who will in turn report to Terrestrial Archaeology for direction on how to proceed.
- If suspected human remains are uncovered, work will be stopped immediately pending verification of the remains by a Parks Canada Terrestrial Archaeologist or other professional archaeologist with knowledge of human remains.
- Messaging will be developed to inform visitors that the removal of archeological resources is illegal and to educate them on the value of leaving them in place for others to enjoy.

#### **\*\* Accidental Finds Protocol**

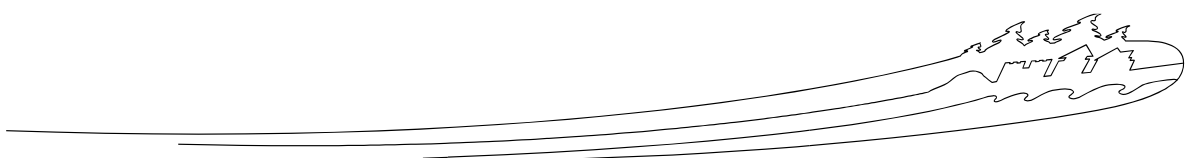
There is a chance, however low, that features or artifact concentrations will be encountered during construction activities. If significant features (i.e., previously unknown structural remains and/or high artifact concentrations) or human remains are encountered, work should cease in the immediate area. The work area in relation to the find should be photographed and geo-referenced, and the Parks Canada project manager informed. The project manager should then contact Parks Canada's Terrestrial Archaeology section for advice and assessment of significance that will in turn determine what will be required to mitigate the chance find.

#### **6.6 Visitor Experience and Public Safety**

- A communications strategy will be developed to inform visitors, stakeholders, staff, researchers and the local community of scenic road developments and construction to minimize potential conflicts.
- The PM will work with Visitor Experience and contractors to determine when construction activities need to be scheduled around park events to minimize potential conflicts.
- Work areas will be clearly marked to clearly delineate for visitors what areas are not open to the public.
- Temporary alternate visitor offerings and information packages should be developed to provide visitors during construction with resources and options for experiencing the park.

#### **7. Other Considerations**

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### 7.1. Public/Stakeholder Engagement

The 2010 Grasslands National Park Management Plan highlights the Dawson's viewpoints and The Zahursky Point Trail as focal areas for development. The management plan links the management approach for this area to Providing the Grasslands Experience, Grasslands Restored – The Prairie Persists and History Abounds key strategies (see section 6.2 of the 2010 Management Plan for complete area management approach). Additional consultation activities guiding the development of this project are included in Appendix B.

### 7.2. Aboriginal Engagement or Consultation

Grasslands National Park provided project information and carried out consultation for the Badlands Scenic Viewpoint Road with their Indigenous Partners in southern Saskatchewan. A package was sent to each group and included project purpose, scenic road details, and portion of the concept plan, and an invitation to contact the project manager to discuss concerns if any existed. This was sent to the following people in August 2016 for review and feedback:

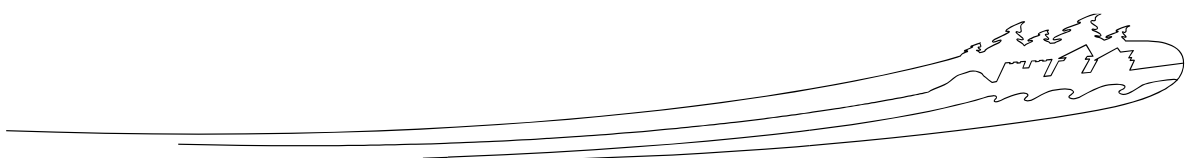
Chief Ellen LeCaine and Council  
Wood Mountain Lakota First Nation  
Box 1792  
Assiniboia, SK S0H 0B0

Chief Esleie Jack and Council  
Carry The Kettle First Nation  
P.O. Box 57  
Sintaluta, SK S0G 4N0

Chief Jordi Fourhorns and Council  
Nekaneet First Nation  
P.O. Box 548  
Maple Creek, SK S0N 1N0

President Cecile Blanke  
Prairie Dog Metis Local  
780 – 8<sup>th</sup> Avenue NE  
Swift Current, SK S9H 2R5

The project manager did not receive any feedback nor a request for further discussion. Additionally, the field unit superintendent of the Saskatchewan South Field Unit met recently with members of the Wood Mountain Lakota First Nation - our closest Indigenous Partners and neighbours - to discuss a wide range of topics. The new developments of the East Block, such as the Badlands Scenic Viewpoint Road and the Rock Creek Campground, were discussed with no further outcomes or concerns.





### 7.3. Surveillance

Site surveillance to look for species at risk, sensitive wildlife and cultural resources is required before start of project work, as outlined in the mitigations. Site meetings are required prior to work to delineate work areas, staging areas, set buffers around sensitive features and review contract requirements including mitigations. Surveillance throughout project to ensure compliance with contract requirements including mitigations will be done by Parks Canada.

### 7.4. Follow-up Monitoring to Evaluate the Effectiveness of Mitigation Measures and/or Assess Restoration Success

Monitoring during and post work is required to evaluate effectiveness of mitigation measures and will be done by parks Canada, in conjunction with other expertise as required. Site restoration will be done by the contractor, and monitored for success by contractor within the warranty period to PCA approval. All reports will be filed in the surveillance and monitoring database, as well as in the corresponding Environmental Impact Analysis folder in GNP's in-house filing system.

### 7.5. Follow-up Monitoring, Required by Legislation or Policy (Indicate Basis of Requirement, e.g. required by the *Species at Risk Act*)

The project occurs within and adjacent to areas identified as critical habitat by recovery strategies and/or action plans, and as such is subject to the *Species at Risk Act*. Point counts to detect presence/absence of pipits in the project area were established in 2016, and will continue to be monitored in conjunction with other point count conducted by GNP. Annual lek surveys to assess sage grouse population dynamics will continue as outlined in GNP's Multi-species Action Plan. Mitigations to avoid impacts to species at risk will be monitored as per section 7.4. To offset the 261 ha of potential sage grouse critical habitat impacted by the project, active management activities to improve sage grouse habitat are required (see offsets form, attached to this document as Appendix F) and habitat assessments will be conducted to determine the effectiveness of treatment. Results of habitat assessments will be available on PCA's ICE website, results of the annual lek surveys will be available both on GNP's Annual Lek Survey Kestrel database as well as a summary on ICE.

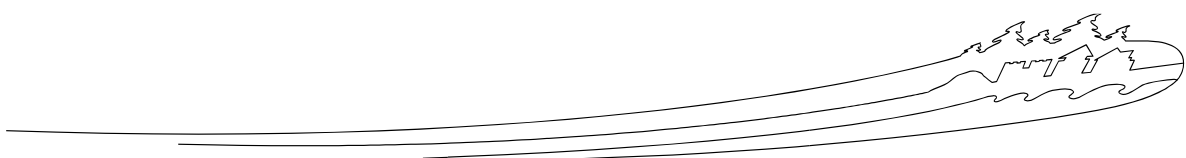
### 7.6. SARA Notification

Because this project occurs within the defined critical habitat for the greater sage-grouse and Sprague's pipit, the project may only proceed if permitted under the *Species at Risk Act*. A SARA Authorization Decision Tool to determine if the activity can be permitted is attached to this analysis as Appendix E. If the project is issued a permit, a notice will be posted on the SARA Registry within 30 days of the permit issue date. Because this project impacts individual species at risk that also use lands beyond the park boundary, Environment and Climate Change Canada will be notified of the project.

## 8. Significance of Residual Adverse Effects

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The scale of the project is small, just over 8 ha of the total 26,548 ha within the East Block of Grasslands National Park. The location of the project is in a previously disturbed location on the East side of the East Block, where the dominant landscape use of land bordering the park is cultivation. The construction phase is short-term and timing will used to reduce adverse effects to valued components. The





operational phase including scenic road use and maintenance is long-term, and will increase the anthropogenic presence and structures in the area. The historic and current use of the site has already introduced a level of disturbance on the landscape, and the project design has concentrated most of the development into existing areas of disturbance. This project has been considered in conjunction with the Rock Creek Campground upgrade and expansion project, the other major development planned for the East Block.

The limited scale, limited planned and/or potential development in the area, the proximity of the project on the park periphery bordering cultivated lands, the limited value of habitat within the proposed project area and mitigations in place to prevent adverse effects to adjacent habitat reduce the risk of adverse effects to valued components. Each component is further examined in the following subsections, however it is the conclusion of this analysis that residual adverse effects of this project are not significant.

### **8.1. Air**

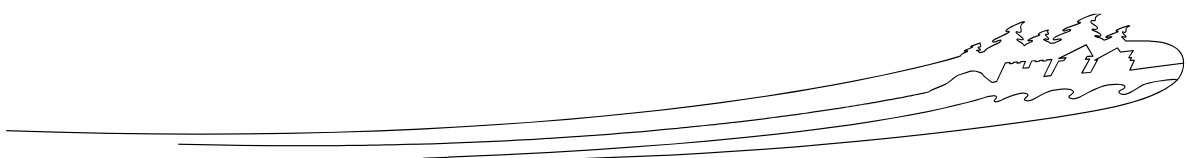
Short-term emissions, decreased air quality and increased ambient noise from the operation of vehicles and machinery during the construction phase are expected. There is a predicted long-term increase of emissions, decreased air quality and increase in ambient noise as a result of continuous operation of the scenic road. Changes are likely to be low in magnitude and small in geographic extent.

### **8.2 Soil and Landforms**

Short-term increased potential for soil erosion exists during construction and reclamation, when ground cover is being disturbed and/or removed and before vegetation has been re-established in exposed areas. Short-term increased potential for soil contamination exists during construction from the use of vehicles and machinery on site. To a lesser extent, there will be an increase in the long-term potential for soil contamination from vehicles using the road as visitation is expected to increase as a result of this project. Long-term loss of soil and compaction will result from the construction of hardened surfaces for roadworks. Other areas within the construction area will experience long-term compaction as a result of operating vehicles and machinery. Landforms will be altered by excavation and grading. Alterations will be small in geographic extent.

### **8.3 Water**

There will be a short-term increase in potential for surface water contamination from erosion (increased sedimentation) or deleterious substances as a result of ground-clearing and construction activities, and the use and maintenance of vehicles and machinery on site. To a lesser extent, there will be a long-term increase in the potential for surface water contamination from increased vehicle traffic and increased anthropogenic presence from increased visitation expected as a result of this project. The proposed road is half a km away from Rock Creek at its nearest point at the northern end (viewpoint #1, see Figure 5), however is >1km from the Rock Creek for the rest of the proposed alignment. At this distance, the risk of contamination from runoff in the project area is mostly limited to major rainfall/melt events. Ongoing wastewater storage for vault toilet facilities increases the potential impacts to ground and surface waters by accidental releases to the environment. Impacts are either short term or low probability of occurring.







#### 8.4 Flora

Construction will result in the short term disturbance and/or removal of vegetation as a result of operating vehicles and machinery, temporary staging areas, materials storage, excavation and grading. There will be a long-term removal of vegetation within the footprint of infrastructure, as well as the increased potential for the establishment and spread of non-native and/or invasive species as a result of increased visitation (source), increased disturbance (creating ideal areas for establishment) and increased maintenance (potentially spreading unidentified plants). Outside of the infrastructure footprint, vegetation will be actively restored where deemed necessary by the SO which will increase the potential for the introduction of novel non-native and/or invasive species from externally sourced materials. Where reasonable, natural regeneration may be encouraged, depending on risk of invasion. Non-native and invasive species already exist in the project area, which have the potential to be spread to other areas during both construction and operational phase of project. The project may benefit local flora by removing areas of invasive vegetation during site restoration. Increased anthropogenic use of the area will have long-term impacts as areas will be mowed by staff for aesthetics and public safety, altering the vegetation structure and incidentally selecting for mowing- and trampling-tolerant species. Overall effects to vegetation are in a small geographic extent.

#### 8.5 Fauna

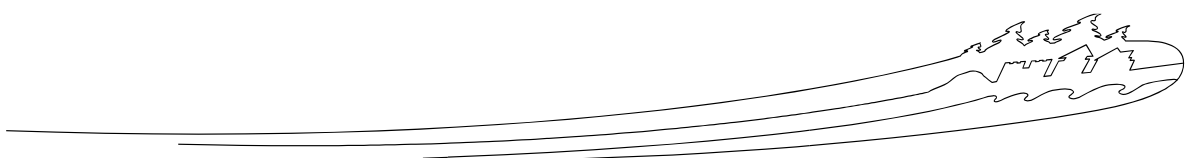
The installation of infrastructure and the long-term increase in human presence in the area may exclude the project area as habitat for some local wildlife and/or alter their movements as they seek to avoid the development. Roads may have a cumulative impact on wildlife movements, though it is not expected that any additional roads outside of the proposed project will be developed in the park or surrounding area. Some anthropogenic-tolerant species may continue to use the project area, though the increase in anthropogenic disturbance may cause the area to act as a population sink (road mortalities, decreased reproductive success, decreased over-winter survival, etc.) for some species. Predator species (badgers, coyotes, weasels, owls) may increase in response to the construction of a linear disturbance, though the degree to which is unknown as trails and fence lines are already present in the same area following a similar alignment. Larger wildlife typically use trails and low-use roads more than high-usage roads, however no baseline data exists for the project area. Impacts to fauna are expected to be low in magnitude and low in geographic extent.

#### 8.6 Species at Risk

##### 8.6.1 Greater Sage Grouse

While this project will include the development of a paved road and is expected to increase the amount of visitor traffic to this area, the project will have a minimal effect on the area's ability to support life processes (lekking, nesting, brood-rearing and wintering) as the impacted area only likely supports foraging. The impacted area does not match the description of habitat needs in the Recovery Strategy; sagebrush cover is too sparse and low-growing to provide adequate forage or cover. The uplands vegetation type is too xeric to support more than a few areas of sparse shrubs under typical moisture regimes.

Although the biophysical or function attributes for critical habitat of sage-grouse might not actually be met within the area and the area is marginal habitat for sage-grouse, we are applying the precautionary principle, and considering the area to be critical habitat for the sake of this assessment. Lek critical habitat will not be affected. Impacts to the species are minimal but 261 hectares of year-round critical





habitat will be destroyed. This destruction constitutes a decreased value in the area for foraging and is likely to support fewer foraging birds. Given that the area is not very suitable for foraging currently, this project will likely impact very few birds. No other impacts to individuals or residences are expected. As a precaution, the residual effects of this project will be offset (see the Offsetting Plan for Effects to Critical Habitat for Greater Sage-grouse).

#### 8.6.2 Sprague's Pipit

The amount of critical habitat being destroyed by this project is 18.2 ha: 4.24 ha within the footprint of infrastructure, and 13.9 ha within the area of temporary ground disturbance created during the construction phase. In addition to the area of critical habitat being directly impacted (18.3 ha), the project may reduce the total number of pipits that the larger area (habitat patch) can support. No baseline pipit abundance data exists for this area, though point counts were established along the proposed road in 2016 as a requirement of this project. While it is recognized that the habitat patch could support fewer pipits as a result of this project, the effect is expected to be minimal and not expected to be measurable (Steve David, pers comm 2016). However, as a precaution, the residual effects of this project will be offset (see the Offsetting plan for Effects to Critical Habitat for Sprague's Pipits).

#### 8.6.3 Mormon Metalmark

After mitigations to avoid critical habitat and reduce likelihood of harm to individuals, no significant residual adverse effects to the survival and/or recovery of the species are expected as a result of this project.

#### 8.6.4 Long-billed Curlew

Only a small amount of the geographic extent of important habitat falls within the project area. With mitigations in place, the project is not expected to prevent management objectives in the Management Plan (Environment Canada 2013) or GNP's Action Plan (Parks Canada, 2016) from being achieved.

#### 8.7 Cultural Resources

If all mitigations are applied, then the impacts will have been ~~reduced~~ mitigated to an acceptable degree from a cultural resource management point of view.

### 9. Experts Consulted

Department/Agency/Institution: Parks Canada Agency	Date of Request: YYYY-MM-DD
Expert's Name & Contact Information: Wendy Botkin 145 McDermot Ave Winnipeg, MB T: 204-984-5719 E: wendy.botkin@pc.gc.ca	Title: Environmental Assessment Scientist
Expertise Requested: To provide Environmental Impact Analysis expert support during the preparation of the DIA.	



Response:

Department/Agency/Institution: Parks Canada Agency	Date of Request: YYYY-MM-DD
Expert's Name & Contact Information: Katherine Cumming 145 McDermot Ave Winnipeg, MB T: 204-984-1929 E: Katherine.cumming@pc.gc.ca	Title: Manager, Environmental Services, Infrastructure Planning, Natural Resource Conservation Branch
Expertise Requested: To provide Environmental Impact Analysis expert review of the draft DIA.	
Response:	

Department/Agency/Institution: Parks Canada Agency	Date of Request: YYYY-MM-DD
Expert's Name & Contact Information: Joanne Tuckwell Species Conservation and Management 145 McDermot Ave Winnipeg, MB T: 204-984-2416 E: joanne.tuckwell@pc.gc.ca	Title: Species Conservation Specialist
Expertise Requested: To review the draft DIA with other Species Conservations and Management team members to provide feedback on species at risk and critical habitat aspects of analysis. To provide guidance on PCA policy and directives. Assistance and guidance in drafting the SARA Auth Tool and Offsets Form.	
Response:	

Department/Agency/Institution: Environment Canada	Date of Request: YYYY-MM-DD
Expert's Name & Contact Information: Steve Davis	Title:
Expertise Requested: To provide additional context and information on the potential impact of anthropogenic features such as trails, roads, fences and crops as well as invasive species on the abundance and/or distribution of pipits.	
Response: Communications via email with respect to the above question. Responses were considered by the author and used to inform this analysis. A copy of these communications are available upon request.	

Department/Agency/Institution: Parks Canada Agency	Date of Request: YYYY-MM-DD
Expert's Name & Contact Information: Sharon Thomson	Title:
Expertise Requested: To oversee and provide a review of the archeological testing and reporting in the project area and the assessment of the impacts of the project to these resources. To provide a statement of significance of the impact of this project to GNP's cultural resources.	



Response:

Department/Agency/Institution: Parks Canada Agency	Date of Request: YYYY-MM-DD
Expert's Name & Contact Information: Brian Smith	Title:
Expertise Requested: To oversee and provide a review of the archeological testing and reporting in the project area and the assessment of the impacts of the project to these resources. To provide a statement of significance of the impact of this project to GNP's cultural resources.	
Response:	

Department/Agency/Institution: Parks Canada Agency	Date of Request: YYYY-MM-DD
Expert's Name & Contact Information: Colin Schmidt	Title:
Expertise Requested: To provide content and review of project design, supporting social science, summaries of consultations and management planning, potential impacts of the project to visitor experience values and mitigations for those impacts. Also provided overall review of document.	
Response: Input has been incorporated throughout all stages and drafts of the analysis.	

Department/Agency/Institution:	Date of Request: YYYY-MM-DD
Expert's Name & Contact Information:	Title:
Expertise Requested: Indicate the discipline or subject area of expertise.	
Response:	

## 10. Decision

Taking into account implementation of mitigation measures outlined in the analysis, the project is:

☒ not likely to cause significant adverse environmental effects.

☐ likely to cause significant adverse environmental effects.

### FOR SARA REQUIREMENTS:

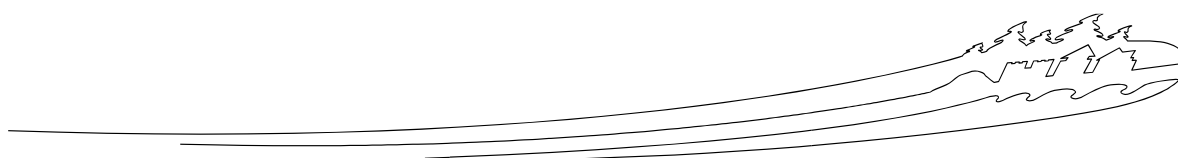
☐ There are no residual adverse effects to species at risk and therefore the SARA-Compliant Authorization Decision Tool was not required

OR, the SARA-Compliant Authorization Decision Tool ([Appendix 2](#)) was used and determined:

☐ There is no contravention of SARA prohibitions

☒ Project activities contravene a SARA prohibition and CAN be authorized under SARA

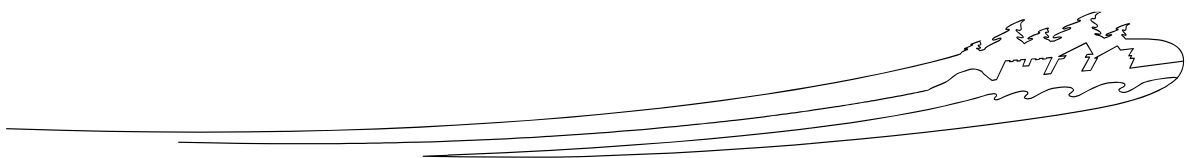
☐ Project activities contravene a SARA prohibition and CANNOT be authorized





## 11. Recommendation and Approval

Prepared by: EIA author (name & position): Krista Cairns Environmental Assessment Officer, Resource Conservation, SSFU	Date:
Recommended by: Functional manager of the project (name):	Date:
Approval signature: Name & position ( <i>Field Unit Superintendent, Director of a Waterway</i> ): Kevin Moore Superintendent, Saskatchewan South Field Unit  _____	Date:





## 12. List of Attachments

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2016 Environment Impact Assessment Report by Summit Environmental on the Frenchman Valley Campground Upgrade and Expansion, the Rock Creek Campground Upgrade and Expansion and the Badland Scenic Viewpoint Road project.

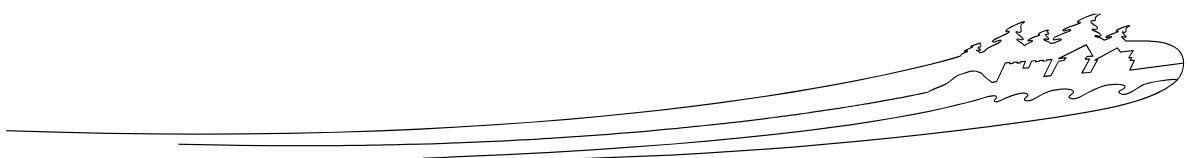
Detailed Conceptual Design Report for Badlands Scenic Viewpoint Road from McElhanney dated January 6 2016.

Environment Canada, Department of Fisheries and Ocean and Parks Canada. 2015. Guidelines for the Use of Biodiversity Offsets as Part of an Application for a Species at Risk Act Section 73 Permit.

November 2015 Site Visit Report completed by McElhanney.

November 2015 Site Visit Report completed by Samantha Fisher, GNP.

Visitor Experience Strategy and Area Concept Plan 2012 – 2017 for Grasslands National Park.



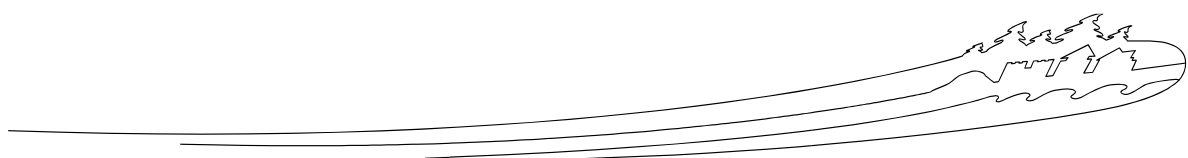




### 13. References

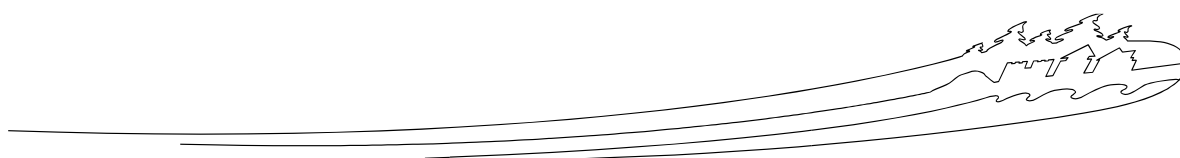
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- COSEWIC 2010. COSEWIC status appraisal summary on the Long-billed Curlew *Numenius americanus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. iv pp.
- COSEWIC 2010. COSEWIC assessment and status report on the Sprague's Pipit *Anthus spragueii* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 34 pp.
- COSEWIC 2008. COSEWIC assessment and update status report on the Greater Sage-Grouse *Centrocercus urophasianus*, *Phaios* subspecies and *Urophasianus* subspecies, *Centrocercus urophasianus urophasianus*, in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 38 pp.
- COSEWIC 2006. COSEWIC assessment and status report on the McCown's Longspur *Calcarius mccownii* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 23 pp.
- COSEWIC 2002. COSEWIC assessment and status report on the Long-billed Curlew *Numenius americanus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 31 pp.
- Environment Canada 2015. Action plan for Multiple Species at Risk in Southwestern Saskatchewan: South of the Divide [Proposed]. *Species at Risk Act* Action Plan Series. Environment Canada, Ottawa. x + 127 pp.
- Environment Canada 2014a. Amended Recovery Strategy for the Greater Sage-Grouse (*Centrocercus urophasianus urophasianus*) in Canada. *Species at Risk Act* Recovery Strategy Series. Environment Canada, Ottawa. vi + 53 pp.
- Environment Canada 2014b. Management Plan for McCown's Longspur (*Rhynchophanes mccownii*) in Canada. *Species at Risk Act* Management Plan Series. Environment Canada, Ottawa. iii + 20 pp.
- Environment Canada 2013a. Management Plan for the Long-billed Curlew (*Numenius americanus*) in Canada. *Species at Risk Act* Management Plan Series. Environment Canada, Ottawa. iii + 24 pp.
- Environment Canada 2013b. Management Plan for the Northern Leopard Frog (*Lithobates pipiens*), Western Boreal/Prairie Populations, in Canada. *Species at Risk Act* Management Plan Series. Environment Canada, Ottawa. iii + 28 pp.
- Environment Canada 2012. Amended Recovery Strategy for the Sprague's Pipit (*Anthus spragueii*) in Canada. *Species at Risk Act* Recovery Strategy Series. Environment Canada, Ottawa. vi + 44 pp.





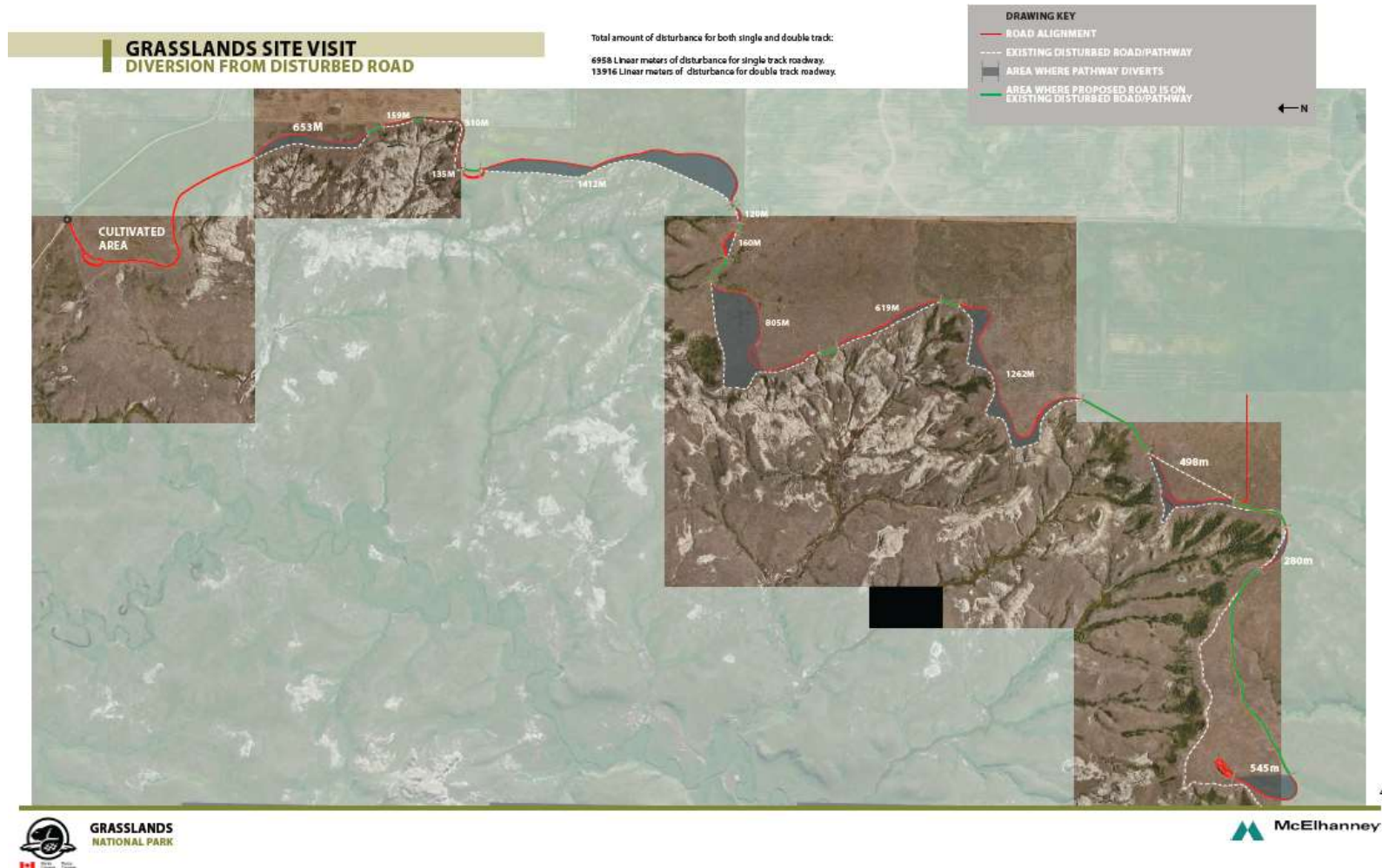
- Fellows, S. D., and S. L. Jones. 2009. Status assessment and conservation action plan for the Long-billed Curlew (*Numenius americanus*). U.S. Department of Interior, Fish and Wildlife Service, Biological Technical Publication, FWS/BTP-R6012- 2009, Washington, D.C.
- Tack, J.D., D.E. Naugle, J.C. Carlson and P.J. Fargey. 2012. Greater sage-grouse *Centrocercus urophasianus* migration links the USA and Canada: a biological basis for international prairie conservation. *Oryx*, 46, pp 64-68. doi:10.1017/S003060531000147X.
- Parks Canada. 2010. Grasslands National Park of Canada Management Plan 2010 [electronic resource].
- Parks Canada Agency. 2016. Multi-species Action Plan for Grasslands National Park of Canada. *Species at Risk Act* Action Plan Series. Parks Canada Agency, Ottawa. iv + 57 pp.
- Stevens, S.D., D. Page, and D.R.C. Prescott. 2010. Habitat suitability index for the northern leopard frog in Alberta: model derivation and validation. Alberta Sustainable Resource Development, Fish and Wildlife Division, Alberta Species at Risk Report No. 132, Edmonton, AB. 16 pp.
- University of Regina Canadian Plains Research Centre. 2001. Selected Mammals of Saskatchewan. University of Regina Press, Regina, SK. 206 pp.





## Appendix A

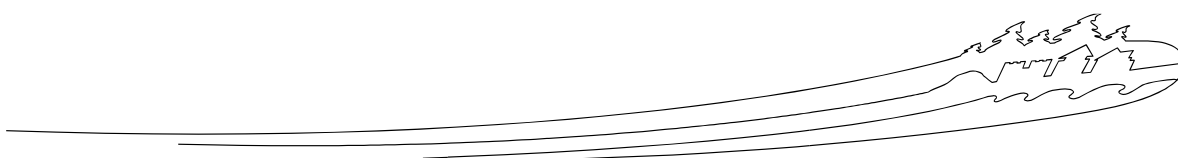
The following map was provided by McElhanney and shows where the original proposed alignment deviates from the existing trail





#### Reasons for deviations

- Road alignment brought in from edge of badlands to avoid critical habitat of Mormon Metalmark and/or greater short-horned lizard, to avoid bringing cars right to cliff edge in order to preserve sightlines and protect the sense of place for other visitors, to be cost effective. Decided instead to have people drive a little further back from cliff edge and walk a little further to access viewpoints,
- Where moving road alignment closer to existing disturbances, such as the boundary fence bordered by croplands or crested wheatgrass stands, and reclaiming the existing trail would provide larger, more contiguous uplands prairie habitat patch
- Avoid or minimize damage to archeological resources





## Appendix B

Over the past decade, the Grasslands National Park (GNP) management and visitor experience teams have conducted a range of activities to acquire feedback, ideas, concerns, interests and support in the development of the visitor experience offer for the East Block. Most of the feedback and consultation has focused on the east periphery of the East Block, with particular focus on campground development at the former McGowan homestead, now the Rock Creek Campground, and the viewpoints of the former Dawson lands, now the Badlands Viewpoints.

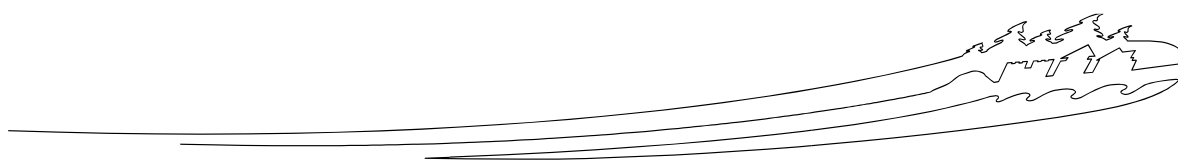
The feedback opportunities have ranged from informal hike events and wagon rides with visitors, stakeholders and neighbours, to more formal open house gatherings, advisory committee meetings and special events.

This document attempts to document the history of consultation activities for these two projects. Additionally, it will summarize highlights or ‘themes’ of that consultation. This is intended to demonstrate the public’s support, as well as guide planning and environmental review, for the Rock Creek Campground and Day Use Area and the Badlands Scenic Viewpoint Road.

Consultation Activity	Date	Relevant Details	What Was Learned
Parks Canada Web-based Consultation	October 2 <sup>nd</sup> – 13 <sup>th</sup> , 2015	<p>This was a transparent, open-for-all consultation activity accessed via the Grasslands National Park (GNP) main page. Being open and transparent about a significant range of upcoming Visitor Experience focused capital projects within GNP was the consultation activity’s purpose.</p> <p>It focused on the Rock Creek Campground rehabilitation, Badlands Scenic Viewpoint Road improvements, Frenchman Valley Campground upgrades, and Dixon Bridge replacement. The site generated the following engagement;</p> <ul style="list-style-type: none"><li>• 64 total visits</li><li>• 69 page views (went to the next page)</li><li>• 80 seconds average time/page</li></ul>	There were no comments received by Parks Canada through this activity, neither via the web-based comment page nor by electronic or physical mail.
Regional Stakeholder Site Visit Consultation II	September 1 <sup>st</sup> – 2 <sup>nd</sup> , 2015	This was the second event whereby regional representatives from several organizations with an East Block interest were invited to provide feedback on the Rock Creek Campground and the Badlands Scenic	Comments are included in summary reports provided by McElhanney Landscape Architecture (August 2015).



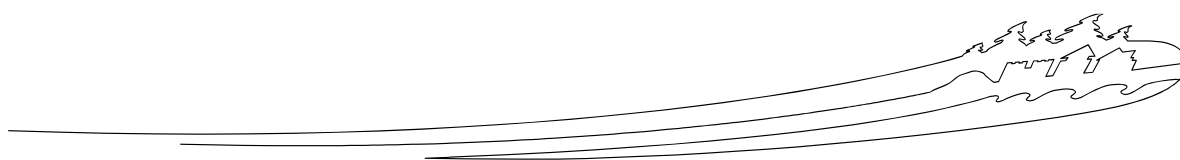
Consultation Activity	Date	Relevant Details	What Was Learned
		<p>Viewpoint Road. This opportunity was organized by the Landscape Architecture firm, McElhanney, responsible for designing the concepts for each project. Revisiting past consultation (2004) and re-confirming regional stakeholder support was the consultation activity's purpose.</p> <p>The following organizations, many similar to the 2004 Regional Stakeholder Site Visit Consultation I, were participants;</p> <ul style="list-style-type: none"> <li>• Park Adjacent Neighbours – seven representatives</li> <li>• Park Regional Neighbours – three representatives</li> <li>• Rural Municipality of #44 – one representative</li> <li>• Wood Mountain Historic Society (Rodeo Ranch Museum) – two representatives</li> <li>• Sitting Bull Tours and Rockglen &amp; District Tourism – one representative</li> <li>• Wood Mountain Lakota First Nations – one representative</li> <li>• Wood Mountain Regional Park – one representative</li> <li>• McCord Museum – two representatives</li> <li>• Saskatchewan Wildlife Federation – one representative</li> <li>• Royal Astronomical Society of Canada – one representative</li> <li>• Johnson Tour Guide Service – one representative</li> <li>• Moose Jaw Express – one representative</li> <li>• General Visitors – ten representatives</li> </ul>	<p>Essentially, they reiterate their on-going support for development of the Rock Creek Campground and, more particularly, development of a Badlands Scenic Viewpoint Road experience.</p>
Parks Canada Facilities Design Workshop	May 29 <sup>th</sup> – 30 <sup>th</sup> , 2008	<p>This was a preliminary design workshop comprised of internal and external technical specialists, and a wide range of Grasslands National Park staff. Initiating the thinking and design process for Visitor Experience developments in the park's East Block, as</p>	<p>Comments are included in <u>Facilities Design Workshop Meeting Report</u> (September 2008).</p>





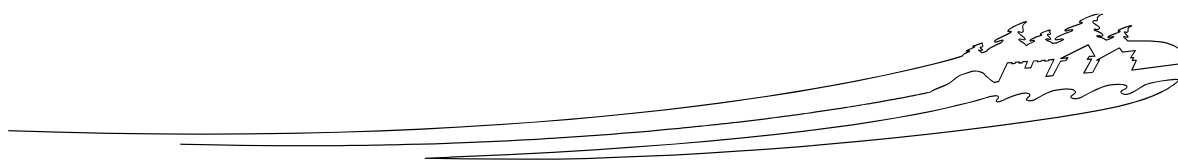


Consultation Activity	Date	Relevant Details	What Was Learned
		<p>per Park Management Plan (PMP) direction, was the consultation activity's purpose.</p> <p>The workshop took place over two days which included a site visit (McGowan Homestead – now Rock Creek Campground). There were 17 participants that attended at least one of the two days. A summary report was prepared and a follow up site planning visit was scheduled as a result.</p>	<p>Essentially, they focus on the following areas:</p> <ul style="list-style-type: none"> <li>• Need for a Master Plan for the park</li> <li>• Need for site-specific plans</li> <li>• Review and recommendation of past architectural 'motif' design recommendations</li> <li>• Critical important of access as precedent to all other developments</li> <li>• Support the premise (found in the PMP) of utilizing previously disturbed locations where appropriate</li> <li>• Challenge of designing facilities appropriate to Canada's only 'prairie' national park</li> <li>• Outlining critical next steps in planning further development</li> </ul>
East Block Party Special Event	August 6 <sup>th</sup> – 7 <sup>th</sup> , 2005	<p>This was an event whereby park neighbours and visitors were invited to a special, annual park celebration at the park's East Block. Although fostering our relationship with East Block neighbours and providing programming within the East Block was the primary purpose of this special event, it was utilized as an opportunity to discern interest and support for viewpoints further south than previously envisioned.</p> <p>55 participants joined the horse and wagon ride portion to the potential viewpoints on the former Dawson lands. No formal feedback process was developed for this event.</p>	<p>Although no formal comments were collected, anecdotally, participants expressed strong support and approval to GNP staff to consider providing vehicle access to these (Dawson land) viewpoints, particularly as they considered them to be the most scenic of this entire east side – some of the best scenery around.</p>



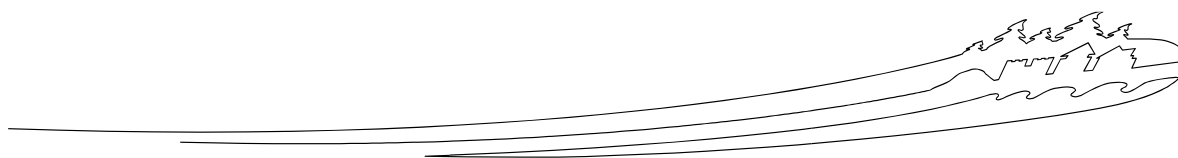


Consultation Activity	Date	Relevant Details	What Was Learned
Educational Stakeholder Site Visit Consultation	October 26 <sup>th</sup> , 2004	<p>This was a hike event whereby members of the Saskatoon Outdoor School (ODS - Grade 11 students) were invited to a presentation and to hike the northern half of the two track vehicle trail to Zahursky Point and identify their favourite viewpoint(s). Determining the most attractive viewpoints, from a visitor's 'fresh eyes' perspective, particularly that of engaged young people, was the consultation activity's purpose.</p> <p>15 different students responded and provided feedback on the feedback/map form.</p>	<p>Preferred viewpoint locations are identified in their feedback forms, assembled as <a href="#"><u>ODS Student Zahursky Trail Consultation Feedback</u></a> (Fall 2004).</p> <p>Essentially, as the last group of the 2004 consultation season, they confirmed previously identified viewpoint locations for a proposed, vehicle-accessible, scenic experience.</p> <p>This final 2004 exercise added an element of breadth by reaching out to youth, that combined with regional stakeholders (typically older adults), and general visitors, gave the three 2004 consultation activities more credibility.</p>
Regional Stakeholder Site Visit Consultation I	September 30 <sup>th</sup> , 2004	<p>This was a wagon ride event whereby regional representatives from several organizations with an East Block interest were invited to provide feedback on the potential for a scenic driving experience. Determining whether Parks Canada had regional stakeholder support for a scenic driving experience was the consultation activity's purpose.</p> <p>The following organizations were participants;</p> <ul style="list-style-type: none"> <li>• Wood Mountain Historic Society – two representatives</li> </ul>	<p>Comments are captured in their feedback forms, assembled as <a href="#"><u>Regional Tourism Group Zahursky Trail Consultation Feedback</u></a> (Fall 2004).</p> <p>Essentially, they express support for development of motorized, vehicle access to the scenic highlights along this east side.</p>



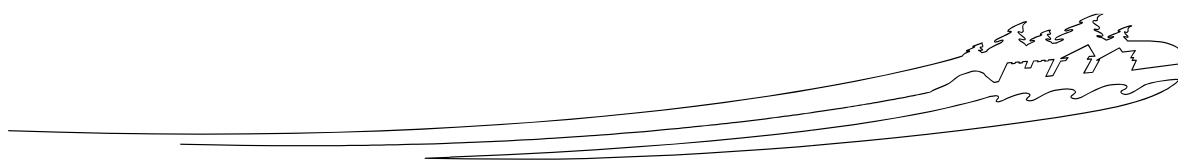


Consultation Activity	Date	Relevant Details	What Was Learned
		<ul style="list-style-type: none"> <li>• Killdeer Hall Board – one representative</li> <li>• Rockglen Tourism – two representatives</li> <li>• Wood Mountain Post Provincial Historic Site – one representative</li> <li>• Wood Mountain Lakota Reserve – two representatives</li> <li>• Wood Mountain Regional Park – one representative</li> <li>• Medicine Lodge Outfitters – two representatives (provided wagons and operators)</li> <li>• <i>*Randy Gaudry Outfitting (Metis) was invited but declined</i></li> </ul>	<p>Additionally, it is this group that directs us to consider the viewpoint potential further south on the former Dawson family land. These other viewpoints are considered even more spectacular, and have a long history of being shared with the regional community. From this point forward, we extend our planning efforts to include these south viewpoints and its disturbed bladed vehicle trail.</p>
General East Block Visitors Consultation	Summer 2004	<p>This was a hike event whereby East Block visitors were invited to hike the northern half of the two track vehicle trail to Zahursky Point and identify their favourite viewpoint(s). Determining the most attractive viewpoints, from a visitor's 'fresh eyes' perspective was the consultation activity's purpose.</p> <p>17 different visitors took the challenge and provided feedback on the feedback/map form.</p>	<p>Preferred viewpoint locations are identified in their feedback forms, assembled as <a href="#"><u>Casual Visitors Zahursky Trail Consultation Feedback</u></a> (Summer 2004).</p> <p>Essentially, they are the first to identify to GNP the best, most attractive viewpoint locations for a proposed, vehicle-accessible, scenic experience.</p> <p>This initial exercise established the first perspective on the scenic viewpoint locations, which formed the foundation for later consultation activities.</p>
Park Advisory Committee (PAC) Meetings	Ongoing from October 28 <sup>th</sup> , 2003 to	<p>This was an ongoing consultation activity spread out over the implementation life of Grasslands National Park's first management plan (2003 – 2010). This group, although representing a broad range of organizations, comprised individuals with deep roots in the</p>	<p>This forum provided an ongoing opportunity to update the development planning and the park's evolving thinking on one or both of these two projects (Rock Creek Campground,</p>



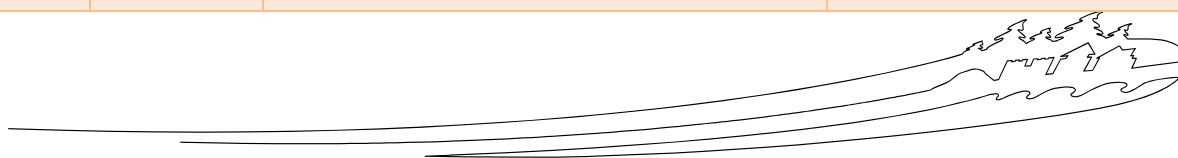


Consultation Activity	Date	Relevant Details	What Was Learned
	December 16 <sup>th</sup> , 2010	<p>park region (e.g. ranchers, town &amp; RM officials, local business operators, etc.). Soliciting feedback to guide decision making and collaborating on solutions were the consultation activity's purposes.</p> <p>We typically met twice a year when park staff would present various management topics. (These were often held in conjunction with public, community open houses.) Topics included resource conservation and visitor experience issues. Thirteen occasions were devoted to explore East Block visitor experience opportunities, particularly the McGowan (Rock Creek Campground) and Dawson viewpoints (Badlands Scenic Viewpoint Road).</p> <p>The following organizations were ongoing participants in the Park Advisory Committee. Attendance was usually strong at each meeting. Each 'bullet' category was represented by one individual;</p> <ul style="list-style-type: none"> <li>• Prairie Wind &amp; Silver Sage (friends of grasslands, Inc.)</li> <li>• Rural Municipality #17, 45 and 46 and Villages of Val Marie and Mankota</li> <li>• Rural Municipality # 43 and 44 and Village of Wood Mountain</li> <li>• Wood Mountain Historical Society</li> <li>• Saskatchewan Environment</li> <li>• Nature Saskatchewan, Canadian Parks and Wilderness Society, and Nature Conservancy of Canada</li> <li>• Métis Society of Saskatchewan</li> <li>• Tourism</li> <li>• Saskatchewan Stock Growers Association</li> </ul>	<p>Badlands Scenic Viewpoint Road).</p> <p>While an early Visitor Information Program Survey (2003) showed that 46.6% of respondents thought that scenic look-outs were very important, it was this group that recommended the East Block's east side (former Dawson viewpoints) be the first priority for a motorized access scenic lookout, and that it afforded some of the park's best scenery. There was positive support for this as a high priority throughout the life of the PAC.</p> <p>There was also positive support for the development of the McGowan Ranch yard into a campground, guided by the principle of selecting a site that was already disturbed. This group was keenly interested in regular updates on our planning and funding for this project.</p> <p>For further details, see the PAC Meeting Highlights gathered from the meeting minutes within appendix one below.</p>





Consultation Activity	Date	Relevant Details	What Was Learned
Community Open Houses	Ongoing from October 28 <sup>th</sup> , 2003 to December 16 <sup>th</sup> , 2010	<p>This was an ongoing consultation activity spread out over the life of Grasslands National Park's first management plan (2003 – 2010). This public forum rotated among the main communities within the park region. Soliciting feedback to guide decision making, and discerning regional support were the consultation activity's purposes.</p> <p>Attendance would fluctuate depending on the issues being presented, and the potential impact of that particular community. This could range from six – 76, made up of local town residents, business operators, and ranchers and farmers.</p> <p>These events were held once per year, on average, when park staff would present various management topics. (These were often held in the evening in conjunction with the daytime PAC meetings.) Topics included resource conservation and visitor experience issues. Six occasions included East Block visitor experience opportunities, particularly the McGowan site (Rock Creek Campground) and Dawson viewpoints (Badlands Scenic Viewpoint Road).</p>	<p>Similar to the PAC meetings, this forum provided an ongoing opportunity to update the development planning and the park's evolving thinking on one or both of these two projects (Rock Creek Campground, Badlands Scenic Viewpoint Road) to the larger public. Particularly, this was an important vehicle to connect with folks in the East Block region, especially as the bulk of the GNP operation and staff resided in Val Marie near the West Block.</p> <p>Participants, particularly East Block regional residents, expressed their strong pride and 'ownership' over these East Block lands (particularly the former Dawson viewpoint site). These viewpoint locations had served the community beyond the immediate family's ownership as a place to share with visitors, enjoy the scenery and celebrate important milestones.</p> <p>These residents supported, in principle, motorized access to these scenic lookout locations and had felt some disappointment that they had perceived these previously accessible lands as 'closed' by Parks Canada to them.</p>



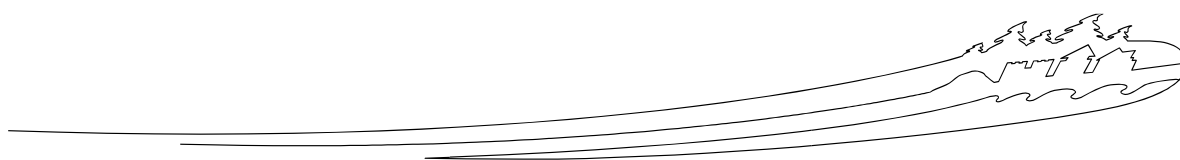


Consultation Activity	Date	Relevant Details	What Was Learned
			<p>There was also general support for the development of the McGowan Ranch yard as a campground, though some concern expressed around potential competition with the Wood Mountain Regional Park campground nearby.</p> <p>For further details, see the Open House Highlights gathered within appendix two below.</p>

Park Advisory Committee (PAC) Meeting Record of Highlights Related to East Block Visitor Experience Developments  
– appendix one

*(\*in conjunction with Community Open House)*

*Park Advisory Committee	December 16, 2010	Update was provided at the McGowan site. PowerPoint presentation and discussions.
Park Advisory Committee	November 19, 2009	Campground and Day Use development update given by Colin
Park Advisory Committee	June 2, 2009	Dawson & McGowan – identified from the feedback as “Priority”
Park Advisory Committee	July 4, 2008	General support of Grasslands experience strategy and area concepts
*Park Advisory Committee	March 27, 2008	Presentation/discussion on McGowan Ranch yard, Zahursky and Dawson Viewpoints. Discussion on Park Management Plan ‘vision’.
*Park Advisory Committee	November 26, 2007	McGowan’s Campground update given by Colin



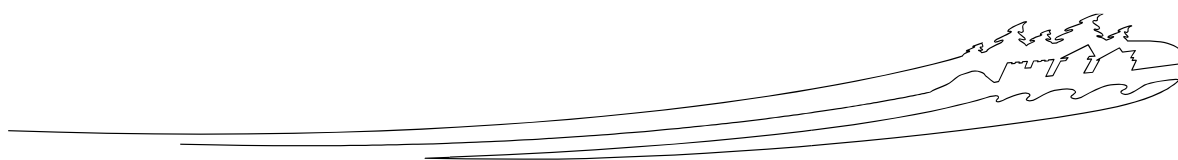




Park Advisory Committee	March 12, 2007	Commitment to the East Block development.
Park Advisory Committee	November 14, 2006	Presentation which highlighted McGowan's Campground/Day Use developments was given. East Block Viewpoint discussion resulted in an action that Ervin and Colin will contact the RM.
Park Advisory Committee	March 20, 2006	Presentation/discussion on continuing the plans for the East Block viewpoints – Agreement received. Contacted landscape designer.
*Park Advisory Committee	November 21, 2005	Poverty Ridge Introduction and New East Block Scenic Lookout Presentation. Well received.
Park Advisory Committee	March 14, 2005	East Block View Point & Trail was identified from the feedback as "Priority". Positive support.
Park Advisory Committee	March 16, 2004	East block view point discussions were held.
Park Advisory Committee	October 28, 2003	Motorized access to McGowan's discussed.  2003 Visitor Survey Feedback shows 46.6% of respondents thought the scenic look-out was very important
GNP Management Plan Steering Committee	February 24, 2003 – initial kickoff meeting!	Survey from 2003 indicate that the priority visitor services facilities are viewpoints which the park will establish some as test areas for 2004.

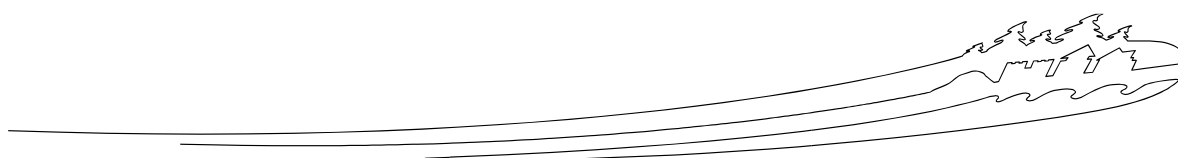
Park Open House Meeting Record of Highlights Related to East Block Visitor Experience Developments – appendix two

Community Open House – Wood Mountain, SK	December 16, 2010	Update was provided at the McGowan site. PowerPoint presentation and discussions.
Community Open House – Wood Mountain, SK	June 16, 2009	East Block Area concepts discussed – Presentation by Colin
Community	March 27 & 28, 2008	Presentation/discussion on McGowan Ranch yard, Zahursky and Dawson Viewpoints.





Open House – Wood Mountain & Val Marie, SK		
Community Open House – Mankota, SK	November 26, 2007	McGowan’s Campground update given by Colin
Community Open House – Glentworth & Val Marie, SK	April 25 & 26, 2007	Presentation by Colin on recreational sites and landscape architecture motif as part of introduction to upcoming new Park Management Plan
Community Open House – Rockglen, SK	November 21, 2005	Poverty Ridge Introduction and New East Block Scenic Lookout Presentation. Well received.
Community Open House – Val Marie & Glentworth, SK	January 27 & 28, 2004	Discussion of scenic viewpoints and trail in the East Block. Discussion of basic outhouse facility at McGowan (Rock Creek) site.
Miscellaneous Meetings Record of Highlights Related to East Block Visitor Experience Developments – appendix three		
Federal/Provincial Steering Committee Field Tour of East Block	May 6, 2008	Discussion on McGowan’s Campground new infrastructure and Dawson’s Viewpoint
Rockglen and District Tourism Committee	unknown	Letter of support for viewpoints and motorized vehicle access in the East block.





## APPENDIX C

### SARA-Compliant Authorization Decision Tool

Part A – Does a SARA authorization need to be considered for this activity?
Will the activity lead to residual adverse effects that contravene a SARA prohibition for a listed endangered (En), threatened (Th) or extirpated (Ex) species at risk, its residence or its critical habitat? (Clearly indicate if the activity will affect one/or more listed species).
SARA prohibitions: s.32 - Cannot: kill, harm, harass, capture, or take individuals; possess, collect, buy, sell or trade individuals or parts of individuals; s.33 – Cannot damage or destroy residences; s.58 – Cannot destroy any part of critical habitat; s.80 - Cannot carry out an activity that is prohibited under a protection order.
<input checked="" type="checkbox"/> Yes. Residual adverse effects of the activity will destroy critical habitat for the Greater Sage-grouse and the Sprague's Pipit. See the DIA for full details.
Is the activity authorized under S. 83 of SARA?
<input type="checkbox"/> Yes. A SARA authorization is NOT required. The activity is authorized in a recovery strategy or action plan; OR <input type="checkbox"/> Yes. A SARA authorization is NOT required. The activity is required for public safety, health or national security AND authorized by or under another Act of Parliament.
<input checked="" type="checkbox"/> No. A SARA authorization is required. Continue to Part B.
Part B – Is the activity eligible for authorization under SARA?
****Complete ONLY if you have answered <u>NO</u> to Question 2, above****
Does the activity fall into one of the following three categories?
<input type="checkbox"/> The activity is scientific research related to the conservation of the species and conducted by qualified persons; OR <input type="checkbox"/> The activity benefits the species or is required to enhance its chance of survival in the wild ; OR <input checked="" type="checkbox"/> Affecting the species is incidental to the activity (i.e. the purpose of the activity is not to engage in an activity that is prohibited under SARA (e.g., kill, harm, harass an individual; destroy a residence or critical habitat). For example, fishing for a listed species cannot be permitted, but accidental by-catch <i>may</i> be.
Alternatives that would reduce the impact(s) on the species have been considered and the best solution adopted



Providing controlled and enhanced motor vehicle access to the East Block of GNP is an idea that has been developed over the years in consultation with stakeholders, partners, and Indigenous Canadians, all of whom have indicated strong support for a scenic driving experience in the area of the proposed BSVR. The project meets commitments outlined in Grasslands National Park's (GNP) 2010 Management Plan to improve road access, develop interpretive viewing and day-use areas, and increase infrastructure to enhance visitor experience (VE) in this area of the park (Parks Canada, 2010). Off-road use has increased in the area, leading to significant impacts on the landscape, potential damage to cultural resources and increased risk of fire due to vehicles in grass environments. The BSVR will encourage vehicles to stay on a paved route and discourage off-road use.

Road location, routing and design alternatives were considered for the proposed BSVR. In all cases, the best option for species at risk were chosen:

#### Road Location:

The proposed location of the BSVR, along the eastern boundary of the East Block of GNP, is the best alternative because it allows for access through two existing access points and minimizes the need to develop new access points and new infrastructure (see Section 2.2 for further details). The northern access point is the existing road into the Rock Creek Campground and the southern access point will be an extension of a road to the Poverty Ridge Field Station. Alternative locations for the BSVR would have required building longer access roads, therefore increasing the infrastructure footprint and the impact on species at risk. The proposed location is also the best alternative for minimizing impacts to species at risk because it is a pre-disturbed site, focussing impacts to natural and cultural resources on already impacted areas and avoiding areas that are less impacted. It is an historic vehicle access 2-track trail and has been used by neighbours for generations. The proposed BSVR is adjacent to the Rock Creek Campground and consolidates all major VE infrastructure within the eastern periphery of East Block, leaving interior wilderness area undeveloped.

#### Road Alignment:

Based on site assessments by McElhanney (landscape architect contractors), GNP staff and additional consultation with other PCA and species at risk experts, many adjustments were made to the preliminary design plans (see Section 2.3 for further details) to avoid and/or minimize the impact of infrastructure on critical habitat and cultural resources. In general, the design team made adjustments away from the historic alignment of the previous road in the north half and stayed more to the historic alignment in the south half. The north half of the existing trail is less disturbed with greater potential for decommissioning when other values (habitat, public safety, cultural resources) suggested a diversion. In the south half, the existing trail had been maintained for several decades by grading. Given the extent of disturbance in the southern half, the designers advised maintaining the existing alignment as much as possible, regardless of scenic or VE reasons to veer from this alignment. Specific changes to the proposed alignment, based on the site visit reports, are shown in Figure 9 and Figure 10 (see Appendix A and end of this document) and include several locations where the road was routed closer to the edge of the badlands to avoid fragmenting a relatively large area of critical habitat for either species. In some cases the route was changed to avoid sagebrush plants. The numbers assigned to changes in alignment in these figures correspond to the McElhanney's site visit report recommendations, the applicable pages of which are included as Figure 11, Figure 12 and Figure 13.



### Road Design:

A single-lane road (3.5m wide) was selected in preference to a two-lane road (6m wide). This single lane road creates a more intimate experience for the user and a much narrower footprint on the landscape. GNP seriously considered the two lane approach for safety (a road type well understood by the Canadian visitor, and more accommodating to visitors who may be paying attention to scenery). The advantages of the single lane approach are:

Allows the park and designers to more intimately navigate the road alignment towards scenic highlights and away from areas of sensitive habitat, rich cultural resources or both.

It demonstrates Parks Canada's commitment to utilize innovative methods (design and construction) to meet VE objectives while upholding resource protection values.

It minimizes disruption to habitat because it requires less landscape to create the experience.

It encourages slower travel speeds, creating a more pleasant user experience and reducing the likelihood of wildlife collisions.

See Section 2.4 for further details.

All feasible measures must be taken to minimize the impact of the activity

Mitigations to reduce potential impacts to Greater Sage-grouse and Sprague's Pipits:

### Construction:

1 - No construction activities or travel to/from site will occur between 90 minutes before sunset to 90 minutes after sunrise April 1 - May 30 to avoid disturbing lekking grouse (the nearest leks are roughly 2.6 km away (historic) and ~7 km (recently active) from the proposed road).

2 - Where possible, any ground clearing activities will happen outside of the sensitive breeding window for migratory birds (April 15 - August 15). Areas will be searched by the surveillance officer prior to any ground-clearing activities occurring between April 1 and August 15 to check for signs of nesting birds or species at risk. If nests or species at risk are found, work will stop, the project manager and the Resource Conservation Manager will be informed and appropriate expertise sought (ex: SCM team).

3 - To reduce impact of anthropogenic structures on grouse, design of infrastructure will be low profile (1.2 m or under) or will incorporate perch-deterrent strategy(ies) as needed.

4 - Vehicles, machinery and equipment are limited to an 8.25m buffer surrounding road infrastructure and a 2.5 m buffer extending from the centreline of minor infrastructure (viewpoint, walking trails). Staging areas away from sensitive habitat will be identified. Turn-around areas equipped with protective geotextiles may be required to reduce/limit impacts of vehicles and machinery in sensitive habitat as identified by the surveillance officer.

5 - Ground disturbance created during construction will be monitored and recorded by the surveillance officer. A re-vegetation program to reseed the area to a representative native prairie community will be established to assist natural regeneration or to prevent exotic species from establishing and/or spreading. Re-



vegetation activities will follow standard GNP protocols for sourcing seed, developing seed mix, ground prep and seeding, follow-up monitoring and follow-up management.

6 – Sagebrush will be avoided to the extent possible during construction.

Operation:

1 - Road will be equipped to accommodate road closures as required to accommodate closures for SAR or other needs (e.g. use of gates or other blockades). If any leks are found within 3.2 km of the road, the road will be closed to traffic 90 minutes before sunset and until 90 minutes after sunrise, from April 1 – May 30.

2 – Parks Canada will ensure that efforts to restore, mitigate and manage areas for ecological integrity along the road continue once the road is in place and visitation increases. The goals of improving the ecological integrity of the area and improving the visitor experience are considered compatible and mutually beneficial.

3 – Speed limits will be posted at 30 km/hr which will reduce noise and road-kill.

4 -- Visitors and local landowners wishing to access points along the southern portion of the BSVR can enter via the access road, avoiding at least 2/3 of the BSVR; reducing the threat of vehicle noise and collisions (see Figure 24 for position of the access road).

Will the activity jeopardize the survival or recovery of the species?

☐ Yes. The activity CANNOT be authorized.

☒ No. The activity CAN be authorized.

An assessment of potential impacts of the BSVR to the critical habitat for the Greater Sage-grouse and the Sprague's Pipit led to a determination that destruction of a small portion of critical habitat will occur but will not jeopardize survival or recovery of either species. After mitigation, residual effects will include a permanent loss to infrastructure of approximately 3.5 ha of low quality Sage-Grouse critical habitat and 4.2 ha of Sprague's Pipit critical habitat, temporary disturbance (due to construction activities) of an additional 10.08 ha of Sage-Grouse critical habitat and 13.9 ha of Sprague's Pipit critical habitat, and approximately 261 ha (area of Sage-Grouse critical habitat that is affected by noise disturbance (not applicable to Sprague's Pipits)). This comprises less than 0.1% of critical habitat in Canada for both species. We cannot conclusively determine the percent of critical habitat impacted because we do not know how much of the area identified as potential critical habitat will be considered suitable and the location and amount of suitable habitat will change over time.

Greater Sage-Grouse

The Multi-species Action Plan for Grasslands National Park of Canada (Parks Canada, 2016) defines population and distribution objectives for the park based on those set in the national recovery strategy (Environment Canada, 2014a). The action plan lists the immediate population and distribution objective for the park as preventing the extirpation of sage-grouse from the park and restoring 25 hectares of habitat each year. The short-term park population and distribution objective is to demonstrate an increasing trend in the number of lekking males and the long-term population and distribution objective is to support 6-8 active leks and increase the total population to 300-400 individuals (100 – 133 males).





The immediate population and distribution objective for the park is not expected to be impacted by this project. This project will not lead to extirpation of sage-grouse from the park and will not prevent Grassland National Park from restoring well over 25 hectares of habitat each year. The park is restoring thousands of hectares of habitat each year through a grazing management program.

No lek critical habitat is expected to be affected by this project. The area impacted by this project does not currently support an active lek and the closest historic lek is 2.7 km away to the west, across the badlands. Although the production of noise greater than 45 decibels within 3.2km of any lek during the critical lekking times (April 1 – May 30) is listed as an activity likely to destroy critical habitat in the recovery strategy, the topographic and geologic nature of the area provides a natural barrier to that noise in the form of a set of badlands between the road and the historic lek. Therefore this project is not expected to affect the re-occupancy of any leks or the ability to achieve the population and distribution objectives of increasing the number of active leks in Grasslands National Park (Parks Canada, 2016).

The only life stages that may be affected by the permanent loss of critical habitat, temporary disturbance or noise disturbance are foraging and possibly some over-wintering sites. The habitat in the area is sub-optimal even for foraging and over-wintering because there are few sagebrush plants and they are not robust. The road does not fragment the critical habitat because its proposed location is along a badlands escarpment, which presents a natural break in habitat. The impacted area (including temporary and noise disturbance) covers a very small amount (1.3%) of the Sage-Grouse critical habitat in the East Block of GNP and an even smaller amount (0.09%) of critical habitat in Canada. The amended recovery strategy indicates that the critical habitat identified is more than sufficient for meeting the long-term population and distribution objectives for Sage-Grouse. Not only does the year-round critical habitat broadly surround the 41 leks identified as lek critical habitat, but it also encompasses much of the habitat in Canada within 10 km of 50 historical leks that were last active in one or more years between 1968 and 1999 (but inactive from 2000 to present). The habitat areas in the vicinity of these 50 additional historical leks have high potential to provide recovery habitat for Sage-Grouse because they are adjacent to, or interspersed among, currently or recently occupied habitat and hence can be considered most likely to be re-colonized in the future. Given the minor impacts of this project on sub-optimal Sage-Grouse habitat, the ability to reach the population and distribution objectives will not likely be impacted by the BSVR.

Efforts to recover Sage-Grouse and restore Sage-Grouse critical habitat are on-going in GNP and new projects will be implemented in 2016. For example, the park has been a partner with the Calgary Zoo and others to facilitate captive-rearing programs for reintroduction in Canada. Research has also been initiated with the University of Alberta to develop sagebrush steppe restoration techniques for the purpose of improving sage-grouse habitat.

To offset the potential impacts of this particular project, GNP will use a cooperative grazing agreement with surrounding land managers to use cattle to improve Sage-Grouse habitat in the East Block by applying grazing practices that are beneficial to sage-grouse, reducing the extent of fencing and grazing infrastructure within the proposed boundary and coordinating sage-grouse habitat assessments to evaluate the effectiveness of grazing treatments. The offset area will be 783 ha (3 times the size of the impact area), located within priority sage grouse habitat in the East Block. Priority areas are those areas considered to have high potential for nesting and early brood-rearing based on relative percent occupancy of sagebrush (data from Penniket 2004), which in the East Block of GNP is restricted to sagebrush communities in the alluvial flats. Habitat in the offset area is generally considered marginal due to insufficient sagebrush cover and low abundance and diversity of



forbs, required by sage grouse for cover and forage. With the introduction of prescribed grazing, conditions of the offset area will be manipulated to create a patchy mosaic with relatively low grass cover and abundant forbs in some areas for brood rearing, and higher grass and sagebrush cover in other areas for nesting. The cooperative approach will reduce the extent of fencing and grazing infrastructure within the proposed boundary (considered a threat to sage grouse survival) and co-ordinate sage-grouse habitat monitoring activities to inform active management.

#### Sprague's Pipit

The population and distribution objective for the Sprague's Pipit in Grasslands National Park as described in the Multi-species Action Plan for Grasslands National Park of Canada (Parks Canada, 2016), was derived from the national recovery strategy for the species (Environment Canada, 2012a). It sets the objective at maintaining a population of 45 Sprague's Pipits per 100 hectares.

Although the BSVR will lead to a very small loss of native prairie, it is not expected to delay or prevent the ability to attain the park's objective for the species because the road is largely being constructed on top of an existing trail, is along the edge of a natural break (badlands) and is designed for minimal impact on the landscape. It is possible that this project could reduce the density of pipits that breed in the area, but the impact is likely so minimal that it won't even be measurable (Stephen Davis, pers comm. 2016).

The offset to ensure that residual effects of the proposed project will not jeopardize the survival and/or recovery of Sprague's pipit will be to improve pipit habitat quality in a priority area at a 3:1 ratio. Improvements will be achieved by implementing a cattle grazing program in the East Block of Grasslands National Park that will manage 30-60% of upland grasslands for low disturbance and high vegetation structure to provide habitat for Sprague's pipit. This area is located in an area separate from the grazing offset for Greater Sage-grouse. The offset area for pipits will be 65 ha (over 3 times the size of the impact area) that will be grazed at  $\leq 0.3$  AUM or rested, and not burned for 2 or more years. Research in GNP showed that rested areas have highest pipit abundance (Sliwinski 2011) while other research shows light to moderate grazing can maximize vegetative productivity and maintain appropriate habitat characteristics for pipit nesting and brood rearing compared to idling (Environment Canada 2014). By incorporating areas of light disturbance and rested areas into the larger adaptive grazing management and fire strategies, Grasslands National Park can improve and maintain pipit critical habitat in key upland grasslands areas at the core of their range. This offset plan will ensure that pipit densities are maintained at 45 birds/100 hectares in the East Block of Grasslands National Park.



<b>Part C - Prepare the SARA authorization and posting explanation</b>
<b>8. Provide description for posting</b>
The authorization will be issued using the IA process and SARA s.74
Issue the SARA authorization using the <u>template on the intranet</u> and complete Question 8 to prepare the posting for the <u>SAR Public Registry</u> .
Provide description for posting
<i>SARA requires that an explanation of why a SARA authorization is issued be posted in the SARA Public Registry in both official languages within 30 days of the authorization being issued. Prepare the explanation, using the information you entered in the impact assessment and previous sections of this Appendix. Your regional SCM representative will have the explanation translated and will publish it on the SARA registry.</i>
<p><b>Regional or Local Number:</b></p> <p>SSFU-2015-029-GNP</p> <p><b>Purpose:</b></p> <p>Affecting the species is incidental to the activity</p> <p><b>Description of the Activity</b></p> <ul style="list-style-type: none"> <li>➤ Start Date of Authorization: XXX End Date of Authorization: XXX</li> <li>➤ Issuing Authority: Parks Canada Agency</li> <li>➤ Authority Used: SARA s.74</li> <li>➤ Location of Activity (province, territory or ocean): Grasslands National Park of Canada, Saskatchewan</li> <li>➤ Affected Species: Sprague's Pipit, Greater Sage-grouse</li> </ul> <p>Parks Canada is constructing a scenic road with parking areas, viewpoints, connecting walking trails, day use areas and a 3.2 km bypass along the eastern edge of the East Block of Grasslands National Park. The project will provide basic access to key locations in Grasslands National Park and meet commitments outlined in GNP's 2010 Park Management Plan to improve road access, develop interpretive viewing and day-use areas, and to increase infrastructure to enhance visitor experience in this area of the park. The road will be on the uplands grasslands between the killdeer badlands to the west and privately-owned cultivated fields to the east. The 10.85 km low-profile, asphalt-topped, single lane (3.5 m wide) road (no ditches, road top flush to ground) is designed to accommodate two-way traffic at speeds of 20-30 km/h using a series of laybys (pullover spots) every ~400 m. The road will replace a historic 13 km dirt vehicle trail, portions of which have been maintained as motorized vehicle access trails and others portions as hiking/wagon trails since park acquisition.</p> <p>Project activities are likely to contravene section 58 of the Species at Risk Act for Greater Sage-grouse and Sprague's Pipit, as the project area overlaps with bounded polygons of critical habitat for these species. The project will impact a total of 261 ha of Sage-grouse critical habitat, which includes 3.5 ha covered by infrastructure, 10.1 ha affected temporarily by construction activities, and the entire 261 ha area impacted by</p>



anthropogenic sources of sensory disturbance by both the construction and operation of the road. The project will impact a total of 18.2 ha of Sprague's Pipit critical habitat, which includes 4.3 ha covered by infrastructure and 13.9 ha affected temporarily by construction activities. The conversion of habitat to anthropogenic infrastructure makes it unavailable to sage-grouse or pipits and may contract or fragment critical habitat. The temporary disturbance will increase the amount of bare ground, decrease the amount of grass- and forb-cover and increase the potential for the establishment and spread of exotic grass species for the duration of construction and for the time it takes for plants to re-establish (1-2 growing seasons). Temporary disturbance may extend a few more years beyond the 1-2 growing seasons required for vegetation reestablishment for pipits as they prefer areas with moderate thatch (ie – dead fallen vegetation creating ground cover under growing vegetation). Anthropogenic sources of sensory disturbance can reduce the likelihood of Sage-grouse occupying otherwise suitable habitat possibly due to behavioural avoidance.

**Pre-Conditions** (Limit your explanation to species for which the authorization will be issued):

#### Alternatives

Not pursuing a road development in this area failed to meet significant park management plan commitments, and would prolong issues of poor visitor access and unauthorized off-roading. When considering how to improve road access in the East Block of Grasslands National Park, the eastern edge of the GNP boundary along the existing 13 km access trail was the obvious choice when taking into account existing motor vehicle access points, connectivity to rural municipality and provincial thoroughfares, avoiding disturbance of interior wilderness areas (also containing critical habitat for species at risk), focusing development in previously disturbed areas, and budget. Other sites for a scenic road would fail to offer the viewsapes and cultural landmarks that are the purpose of the road, in addition to being logistically challenging and increasing the anthropogenic footprint in more remote areas of the park, and were therefore not considered viable options.

#### Mitigations

Key planning tools used to avoid or minimize impact to Species at Risk were road design and road alignment. A two-way, single lane road design with laybys to allow passing was chosen to minimize the overall footprint of infrastructure (both length and width) while still accommodating a variety of motorized vehicle types and providing visitors with a way of returning to the nearby campground. A low-profile design, where the road top is flush to the ground and there are no ditches, was chosen to further reduce the overall footprint of infrastructure and to maintain a lower visual impact and more natural contour, allowing infrastructure to blend into the surrounding landscape more effectively. A preliminary scenic road alignment went through several adjustments in consultation with Parks Canada Agency and Species at Risk experts to avoid and/or minimize the impact of infrastructure on critical habitat, while also balancing other concerns such as archeological artefacts. Mitigations incorporated into the final design include avoiding areas most likely to possess the required biophysical attributes required for critical habitat and utilizing already disturbed areas, while also prioritizing the maintenance of contiguous patches of potential habitat. Additional mitigations include restrictions on the timing of work, limiting and clearly delineating the area of work to minimize the construction footprint, reducing the visual impact of infrastructure on the surrounding landscape through design, incorporating Species at Risk issues and conservation into visitor messaging and programming, and incorporating perch deterrent strategies, invasive species prevention and control, vegetation restoration and existing trail remediation into the project.



### Jeopardy to Survival or Recovery

An assessment of potential impacts of the BSVR to the critical habitat for the Greater Sage-grouse and the Sprague's Pipit led to a determination that destruction of a small portion of critical habitat will occur but will not jeopardize survival or recovery of either species. The project will impact less than 0.1% of critical habitat in Canada for both species. Grasslands National Park is applying adaptive management techniques in other areas of the East Block using grazing to improve both Sage-grouse and Sprague's Pipit critical habitat condition within larger, more contiguous patches of critical habitat. In addition to other active management and conservation initiatives currently being pursued, it is expected that these activities will compensate for any potential impacts to the periphery critical habitat for these two species impacted by the project.

The Multi-species Action Plan for Grasslands National Park of Canada (Parks Canada, 2016) defines population and distribution objectives for the Greater Sage-grouse in the park based on those set in the national recovery strategy (Environment Canada, 2014a). The action plan lists the immediate population and distribution objective for the park as preventing the extirpation of sage-grouse from the park and restoring 25 hectares of habitat each year. The short-term park population and distribution objective is to demonstrate an increasing trend in the number of lekking males and the long-term population and distribution objective is to support 6-8 active leks and increase the total population to 300-400 individuals (100 – 133 males).

Population and distribution objectives are not expected to be impacted by this project. Management efforts are focused away from the project area, which is at the periphery of critical habitat, and focused in higher priority core areas where greater gains can be made. The project will have a minimal effect on the impacted area's ability to support life processes of Sage-grouse (lekking, nesting, brood-rearing and wintering) as the area is only likely to support foraging, and the project will avoid and minimize impacts to sagebrush (primary forage). The area impacted by this project does not currently support an active lek and the project is not expected to affect the re-occupancy of any historic leks.

Road construction is listed in the 2012 Amended Recovery Strategy for Sprague's Pipit (Environment Canada) as an activity likely to destroy critical habitat, as well as activities that result in the loss of native vegetation and disturbance of soil substrate. While the proposed road does not meet all of the criteria of a road as defined by the recovery strategy's supporting research, it will be paved and create a larger, more distinct linear disturbance with more frequent traffic. We can therefore expect to see a decrease of pipit abundance along this proposed road. The magnitude of that decrease is unknown, though expert opinion estimates the impact to be minimal. While moving forward with the project might result in a small decrease in pipit abundance in the area, it will not likely impact the Park's ability to achieve the population and distribution objective outlined in GNP's Multi-species Action Plan of maintaining >45 Spragues's pipits per 100 ha (of suitable habitat) within the Park.

### **Contact Person(s)**

Parks Canada  
Species Conservation and Management  
Natural Resource Conservation  
Parks Canada  
30 Victoria Street 3rd floor  
Gatineau, QC  
J8X 0B3



Tel: 888-773-8888  
 Fax: 819-420-9273  
 pca\_sar.registrycomments@pc.gc.ca

#### Part D – SARA Authorization Decision

Select the appropriate answer and continue to Part E.

- ☐ This activity does not require a SARA authorization, as indicated in Questions 1 and 2.
- ☐ This activity requires a SARA authorization but CANNOT be authorized because it does not fit into one of the three required categories (see response to Question 3) OR it does not meet one of the SARA pre-conditions (see responses to Questions 4-6).

This activity meets the SARA authorization requirements; an authorization may be issued (see response to Questions 3-6). The residual adverse effects (effects remaining after mitigations have been applied) MAY contravene the following SARA prohibition:

- ☐ s.32 - Cannot: kill, harm, harass, capture, or take individuals; possess, collect, buy, sell or trade individuals or parts of individuals;
- ☐ s.33 – Cannot damage or destroy residences;
- ☒ s.58 – Cannot destroy any part of critical habitat;
- ☐ s.80 - Cannot carry out an activity that is prohibited under a protection order

#### Part E – SARA Authorization Recommendation and Approval

Prepared by (add additional blocks as required)	Date: YYYY-MM-DD
Name & position of author: Joanne Tuckwell, Species Conservation Specialist, Winnipeg. Richard Pither, Species Conservation Specialist, Gatineau Krista Cairns, Grasslands National Park	
Name & position of additional collaborator(s) & reviewer(s):	Date: YYYY-MM-DD
Recommended by	Date: YYYY-MM-DD
Name & Position:	
Decision Approval	
Name & Position ( <i>FUS/Director of a Waterway, or Delegate</i> ):	
Signature:	Date: YYYY-MM-DD



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## APPENDIX E

### Offsetting plan for impacts to Greater Sage-grouse Critical Habitat

Avoidance and mitigation are the primary means for managing the potential adverse impacts of an activity on species at risk, their residences or critical habitat. Offsets will only be considered after all avoidance and mitigation options have been exhausted. While avoidance and mitigation measures reduce the scale and severity of adverse impacts, offsets do not change the direct impacts of the activity, but instead aim to counterbalance any residual adverse impacts that may remain after accounting for avoidance and mitigation measures. When an offset is proposed, it will be considered in making the determination of jeopardy under paragraph 73(3) (c). Section 73 of SARA does not require that an offsetting plan be submitted with an application for a permit. In some cases, however, an offset may be the only practical way to satisfy the conditions in section 73. If an offsetting plan is submitted, the competent minister will take into account the proposed plan in determining whether or not to issue a permit. (Guidelines for the use of Biodiversity Offsets as part of an Application for a Species at Risk Act Section 73 Permit included on the Attachments List)

#### Section 1: Description of the residual impacts of the activity for which a section 73 or 74 permit is requested on the Greater Sage-grouse, its residences and critical habitat

Residual impacts to sage grouse will be the destruction, damage and/or disruption of a total of 261 ha within the geographic extent of critical habitat defined in the 2014 Amended Recovery Strategy in the East Block of Grasslands National Park (GNP). This area represents 1.3% of the total 19,759 ha included in the geographic extent of critical habitat within the boundaries of the East Block of GNP.

Specifically, residual impacts to the year-round critical habitat are:

- Destruction of 3.5 ha by converting native prairie into a paved road.
- Damage of up to 10.08 ha within the geographic extent of critical habitat due to ground disturbance potentially damaging/destroying native plants including some sage brush as a result of construction activities, considered a short-term impact lasting for the period of construction plus the time required for disturbed areas to be reclaimed (~1-2 growing seasons).
- Disruption of the functional attribute of limited anthropogenic auditory disturbance required for critical habitat over 261 ha of area within the geographic extent of critical habitat.

Residual impacts are not expected to jeopardize the survival or recovery of the species, as the project will not affect lekking critical habitat and the quality of the year-round critical habitat in the proposed project area is low. The 261 ha of impacted area is not likely good sage-grouse habitat, but is being treated as such as a precaution due to the species' sensitivities, steep population decline, and a lack of baseline data for the project area. The 261 ha is located in the uplands grasslands land unit at the eastern edge of the geographic extent of identified critical habitat in Canada. There are few records of sage grouse in this area, and it is likely the area does not meet all of the biophysical or functional attributes required for critical habitat because the amount of sage-brush is extremely low in the area. Please refer to the area description and effects analysis sections of this detailed impact assessment for further details concerning impact site condition with respect to sage-grouse.

#### Section 2: Offset description



The offset to ensure that residual effects of the proposed project will not jeopardize the survival and/or recovery of the greater sage-grouse will be to improve sage-grouse habitat quality in a priority area at a 3:1 ratio. This offset is expected to increase the availability of food for the sage-grouse and improve nesting and brood-rearing success, leading to the ability for the area to support a larger number of nesting, over-wintering and foraging birds. This offsets the negative impacts to the area from the BSVR.

The offset will be implemented using a cooperative prescribed grazing strategy on 783 ha of marginal sage-grouse critical habitat in a high priority area, shown in Figure 29. This is the alluvial flat area that is the best habitat in the East Block for sage-grouse due to the abundance of sage brush, but has decreased in suitability due to management for fire suppression and the exclusion of domestic livestock. Habitat in this area is generally considered marginal due to insufficient sagebrush cover and low abundance and diversity of forbs, required by sage grouse for cover and forage. Within alluvial ecozones, forb-rich microsites rarely occur in the absence of disturbance and tend to be more common where grazing has created patches with low vegetation structure.

The cooperative grazing strategy creates a partnership between GNP and surrounding land managers to use cattle in the East Block of GNP to improve sage-grouse habitat by creating a mosaic of high quality nesting and brood rearing microsites through prescriptive grazing. The cooperative approach will also reduce the extent of fencing and grazing infrastructure within the proposed boundary (considered a threat to sage grouse survival) and co-ordinate sage-grouse habitat monitoring activities to inform active management. Prior to this program, herd animals have been largely excluded from this area of the East Block since its acquisition roughly 20 years ago. Improving the quality of habitat in these high-priority areas will provide greater value to sage-grouse recovery than that which is being lost through the proposed development within a low-priority area.

The objective of the cooperative grazing strategy is to apply grazing at a moderate level of utilization to create a patchy mosaic within the herbaceous understory of relatively low grass cover and abundant forbs in some areas for brood rearing, and higher grass and sagebrush cover in other areas for nesting. Because many forb species act as increasers under grazing, plant communities in grazed microsites are likely to show an increase in forb abundance and diversity over time and a decrease in the vertical structure associated with grass and litter. Throughout the project, these key sage grouse vegetation attributes will be monitored. How those indicators change over time will indicate if vegetation attributes are improving or declining. Desirable outcomes of grazing include changes in species composition and distribution of native vegetation, increased landscape patchiness, and increased rates of nutrient cycling. Restoration is considered complete when desired landscape patchiness and adequate forbs are present (refer to the Offsetting plan for Effect to Greater Sage-Grouse Critical Habitat in the Appendices for further detail).

**Location:**

The offset is taking place in the alluvial flat surrounding Horse Creek in the East Block of Grasslands National Park of Canada. The 783 ha area is highlighted in red in Figure 29 below. The offset is located within the following land locations:

Section 1, Township 1, Range 7, West of the 3rd Meridian  
Section 12, Township 1, Range 7, West of the 3rd Meridian  
Section 13, Township 1, Range 7, West of the 3rd Meridian  
Section 7, Township 1, Range 6, West of the 3rd Meridian  
Section 17, Township 1, Range 6, West of the 3rd Meridian  
Section 18, Township 1, Range 6, West of the 3rd Meridian

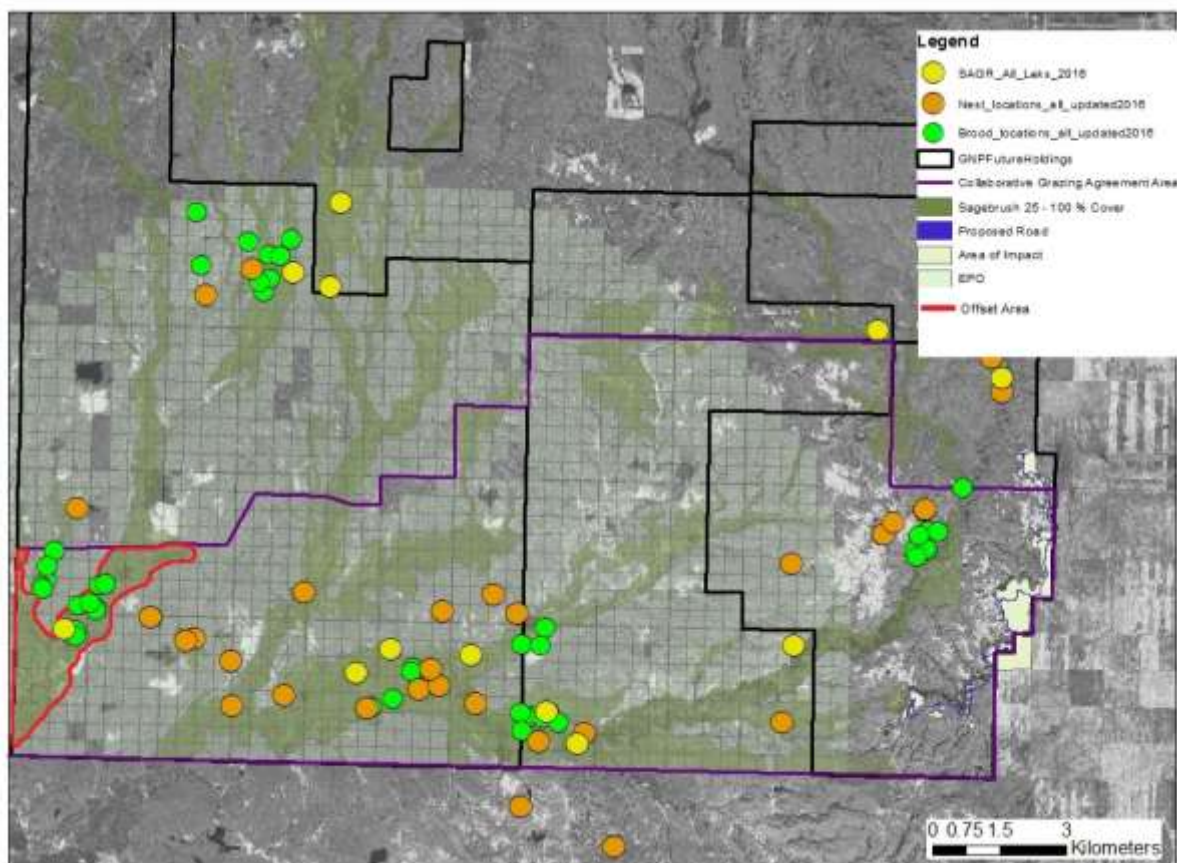


Figure 29: Map of the East Block of Grasslands National Park and surrounding area with the impact area and offset area highlighted within the area subject to the Collaborative Grazing Agreement. The green polygons show priority sage-grouse habitat based on sagebrush % cover as measured by Penniket (2004), this habitat is used to define the offset area. Also shown are known sage-grouse occurrences (active and inactive leks, broods and nests).

### Section 3: Contingency measures

Livestock will be manipulated using riders to help achieve habitat targets, with riders visually estimating the % cover of grazed microsites at the site-scale in areas they are managing, and manipulating livestock in such a way that maintains this pattern over large areas. Sage-grouse habitat assessments and grazing monitoring will provide the feedback required to assess and adapt prescriptions. Prescriptions will be developed on an annual basis prior to the beginning of the grazing season based on last season's evaluation, and will outline the locations of grazing, stocking rate, duration of grazing, timing of grazing, manipulation methods (i.e. riders, salt, water), and grazing infrastructure that will be used for the following one year period.

Short-term outcomes of the offset will be the establishment of grazed patches across the offset site, removing ~25% of available forage. Grazing began in 2016 and beneficial differences in vegetation structure and forb abundance/% cover in the offset area are expected as early as 2017. Long-term impacts will be the establishment of a patchy mosaic of relatively low grass cover and abundant forbs in



some areas for brood rearing, and higher grass and sagebrush cover in other areas for nesting. The Collaborative Agreement provides a legal framework within which GNP and the private landowner will work together to develop Annual Grazing Plans for each of the 5 years of the agreement. Stocking rates (AUM), timing and other grazing parameters will be adjusted as needed to achieve vegetation targets. The collaborative agreement includes an option of renewing in 2019 until January 1, 2024. The program will be reevaluated before renewing to determine if prescriptions have been effective at achieving vegetation targets, as well as to review if set vegetation targets are adequate to bring about desired change at the landscape level.

It is not anticipated that livestock grazing will occur on all high potential habitat during the 1<sup>st</sup> year(s) of the reintroduction. Until that time when all high potential habitat has been impacted by grazing, only sites in areas directly impacted by grazing will be subject to grazing monitoring.

#### Section 4: Monitoring and reporting

Parks Canada is implementing the cooperative grazing strategy in conjunction with participating landowners. Sage-grouse habitat monitoring will be carried out according to Grassland National Park's Sage-grouse Habitat Assessment Protocol. Administration and training services will be provided by GNP staff to field technicians that will be hired by the participating land owner for the dual purpose of manipulating grazing patterns to achieve prescriptions and collecting data according to GNP's monitoring protocol. Both Park staff and riders hired by the participating landowner will participate in monitoring, with Park staff providing the design, training, and administrative services for the program. Pre-grazing monitoring and post-grazing monitoring have been built into the cooperative grazing program, and as data becomes available it will be used to evaluate efficacy of treatments following active management principles.

**OBJECTIVES AND TARGETS:** The objective is to apply grazing at a moderate level of utilization to create a mosaic of grazed microsites within the herbaceous understory. Plant communities in grazed microsites are likely to show an increase in forb abundance and diversity (food life requisite) over time and a decrease in the vertical structure associated with grass and litter (cover life requisite). To ensure that sufficient microsites with suitable grass cover for nesting are left ungrazed, a target has been set to manage of 25% of the area as grazed microsites and 75% as ungrazed microsites, as measured at the site-scale (Stiver et al. 2015) within areas where livestock have been present. Livestock will be manipulated using riders to help achieve these targets, with riders visually estimating the % cover of grazed microsites at the site-scale in areas they are managing, and manipulating livestock in such a way that maintains this pattern over large areas. A second target has been set to manage for a spatial pattern where grazed microsites are evenly distributed within the herbaceous understory and their average size is in the range of 1 to 2 meters.

**MONITORING SITES:** Monitoring will be targeted in areas with high potential for Sage-grouse use for nesting and early brood-rearing. High potential sites were determined based on data from Penniket (2004), which classified areas based on relative percent occupancy of sage-brush (an estimate of the amount of a mapped polygon covered by sage-brush plants). 20 permanent vegetation transects will be established in the grazed offset area and 5 in a control areas (Figure 30). Transects will be 50 meters long, with twelve 20 cm by 50 cm permanent sample plots where vegetation measurements will be taken. Locations were randomly selected using ArcGIS with a minimum spacing of 200 meters between transects, and will be ground-truthed to ensure transects fall within suitable vegetation communities.



Locations of PSPs will be determined according to a stratified random design, with 6 quadrats located in grazed microsites and 6 quadrats located in ungrazed microsites.

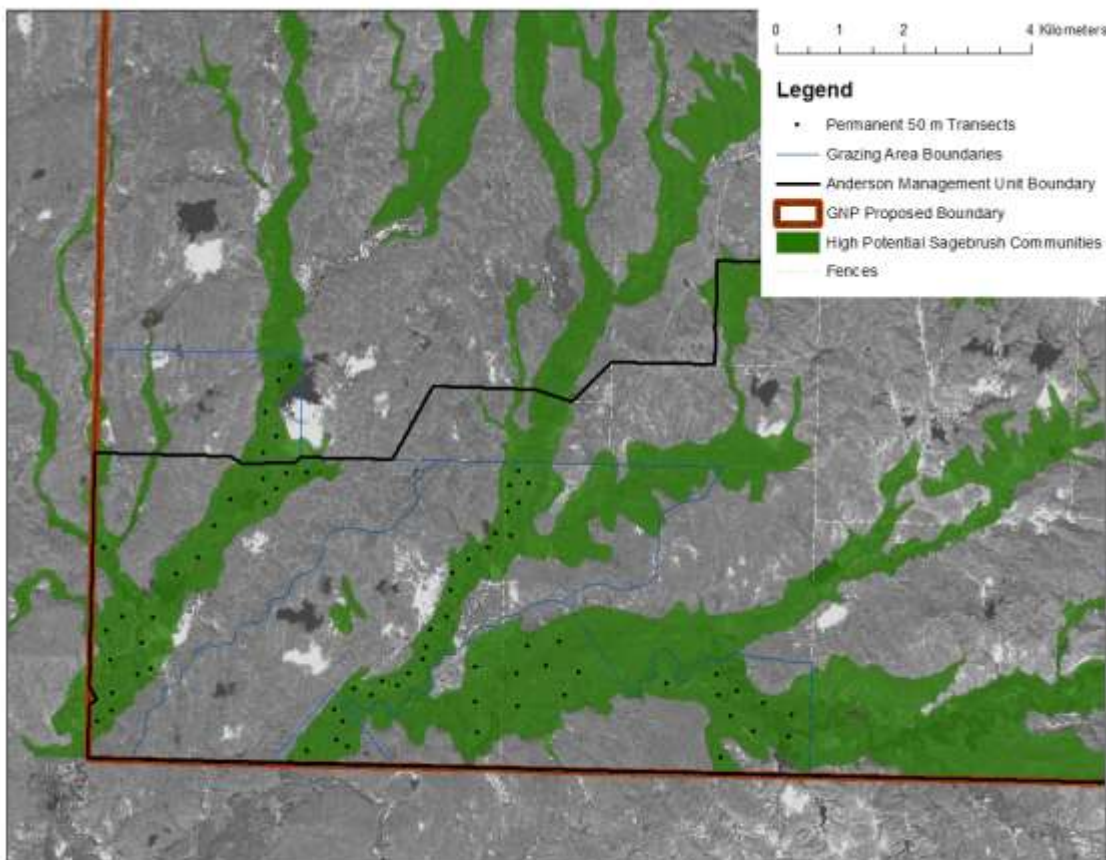


Figure 30: Locations of Permanent Transects within high potential Sage-grouse habitat in the Anderson Management Unit of GNP East Block.

INDICES: The following indices will be used to measure the availability of cover in both grazed and ungrazed microsites:

Index	Location	Measurement Method	Relevancy
Vertical cover	PSPs	Robel Pole	Estimate of average hiding cover
Vertical cover	Tallest sagebrush in 2 m radius plot around each PSP	Robel Pole	Estimate of best accessible hiding cover
Grass height	PSPs	1) Droop height of tallest grass.	1) Grass height is an important cover component in low-





		2) Average grass height measured using a 50x20 cm piece of Styrofoam placed over the quadrat according to Grant-Hoffman and Detling (2006).	density sage-brush habitats.  2) In GNP, grass height can be highly heterogeneous even within a quadrat. This method is being tested as an alternative to droop height.
Sage-brush canopy cover	Along transect	Line-intercept method	Estimate of local sagebrush cover

#### *Food*

The following indices will be used to measure the availability of food in both grazed and ungrazed microsites:

Index	Location	Measurement Method	Relevancy
Preferred forb cover	PSPs	Visual cover estimate	Estimate of food resource availability

#### *% Cover and Spatial Distribution*

The following indices will be used to measure the % cover and spatial distribution of grazed microsites at the site-scale:

Index	Location	Measurement Method	Relevancy
Size and distribution of grazed patches	Along transect	Line-intercept method	Indication of relative abundance and distribution of grazed and ungrazed microsites

#### *Rider Effort*

Index	Location	Measurement Method	Relevancy
Hours spent manipulating	At Grazing Areas, excluding travel time	Start time and finish time	Indication of level of management required to achieve the target spatial distribution



<p>TIMELINES: A collaborative agreement was signed in 2016 for the period of February 1 2016 to February 1 2019 with the option of renewing in 2019 until January 1, 2024. Grazing began in the spring of 2016. Permanent transects and permanent vegetation quadrats will be established within 3 weeks of the end of the grazing period in the offset area, expected to occur in the fall of 2016. Grazing treatments are planned to occur within the offset area on an annual basis. Results of monitoring will be analyzed annually. Frequency and timing of grazing will be adjusted as needed to achieve desired changes to habitat.</p>			





## APPENDIX F

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### Offsetting plan for impacts to Sprague's Pipit critical habitat

#### Section 1: Description of the residual impacts of the activity for which a section 73 or 74 permit is requested on Sprague's pipit, its residences and critical habitat

Residual impacts to pipits will be the destruction, damage and/or disruption of a total of 18.2 ha within the geographic extent of critical habitat defined in the 2016 proposed GNP's Multi-species Action Plan (Parks Canada 2016 [Proposed]) in the East Block of Grasslands National Park. 4.3 ha will be converted from prairie to infrastructure (destruction). Ground disturbance is expected within an additional 13.9 ha area (damage and/or disruption), lasting for the duration of construction plus the time required for remediation. The conversion of critical habitat to anthropogenic infrastructure makes that habitat unavailable to pipits and may contract or fragment remaining critical habitat. This may result in a decrease in the total number of pipits that the impacted habitat polygon can support, though a baseline abundance for pipits has not been determined for this area. The 18.2 ha represents 0.82% of the total 23,078 ha included in the geographic extent of critical habitat within the boundaries of the East Block of GNP.

Specifically, residual impacts are:

- Destruction of 4.24 ha by converting native prairie into a paved road.
- Damage of an additional 13.9 ha within the geographic extent of critical habitat due to ground disturbance potentially damaging/destroying native plants as a result of construction activities, considered a short-term impact lasting for the period of construction plus the time required for disturbed areas to be reclaimed (~1-2 growing seasons).



## Section 2: Offset description

The offset to ensure that residual effects of the proposed project will not jeopardize the survival and/or recovery of Sprague's pipit will be to improve pipit habitat quality in a priority area at a 3:1 ratio. Improvements will be achieved by managing a 65 ha area (over 3 times larger than the 18.2 ha impact area) of upland grasslands in core pipit habitat to minimize disturbance and maintain high vegetation structure. Sprague's pipits prefer vegetation of intermediate height (10-30 cm) and density, few shrubs, high amounts of residual vegetation from previous years and little bare ground (Environment Canada 2012)<sup>2</sup>. These vegetative characteristics are typical of landscapes under light disturbance regimes, where grazing is <0.3 AUMs/ha and the area is unburned for at least 2 years. Some studies show that pipit abundance is greatest in rested pastures and decrease with increased stocking rates (Slewinski 2011). Conversely, continual idling of uplands grasslands can decrease the suitability of pipit habitat while a grazing regime with appropriate timing, frequency, intensity and duration can benefit pipit habitat (Environment Canada 2012), increasing mean vegetation height at a low to moderate cattle stocking rate (Slewinski 2011). Pipit abundance is also positively correlated with increased habitat patch size as well as with decreased edge-to-area ratio (ie – less edge habitat, more interior habitat), with 145 ha being the minimum patch size (95% Confidence Interval 60 ha – 314 ha) (Davis 2004<sup>3</sup>, Davis et al. 2006<sup>4</sup>). Managing the offset area for low disturbance and high vegetation structure will create and maintain suitable pipit habitat contributing to a much larger, more contiguous patch of habitat at the core of Sprague's pipit habitat (see Figure 31). The impact area is at the periphery of Sprague's pipit habitat in a relatively isolated patch with a high edge-to-area ratio (see Figure 31). Contributions made in the offset area will provide greater value to Sprague's pipit survival and recovery than that which is being lost in the impact area.

Disturbances created by grazing and fire are important tools used by Grasslands National Park to promote heterogeneity on the landscape and to promote biodiversity, with commitments to achieve targets for each under the 2010 GNP Management Plan and PCA's Conservation and Restoration program. Grasslands National Park is partnering with neighbouring agricultural operators to achieve grazing targets, allowing an overall reduction in required infrastructure such as fencing, which creates artificial perches for predators. By incorporating areas of light disturbance and rested areas into the larger adaptive grazing management and fire strategies, Grasslands National Park can improve and maintain pipit critical habitat in key upland grasslands areas at the core of their range. The offset will be evaluated using permanent sample plots that combine vegetation species composition and structure measurements to assess whether appropriate habitat characteristics are being achieved, as well as songbird point counts to assess whether pipit population and distribution objectives are being met.

Population and distribution objectives in the recovery strategy are to increase populations to 1980-1989 levels, from 1.9 BBS index to 4.6 BBS index Canada-wide or from 1.3 BBS index to 3.8 BBS index for Saskatchewan specifically. The Grasslands National Park Multi-species Action Plan identifies a site-specific population goal of maintaining ≥45 pipits per 100 ha (or suitable habitat), stating under the comments and broad park approach section for this goal:

<sup>2</sup> Sliwinski, M.S. 2011. Changes in grassland songbird abundance and diversity in response to grazing by bison and cattle in the northern mixed-grass prairie. Master's thesis, University of Manitoba.

<sup>3</sup> Davis, S.K. 2004. Area sensitivity in grassland passerines: Effects of patch size, patch shape, and vegetation structure on bird abundance and occurrence in southern Saskatchewan. *Auk* 121: 1130–1145.

<sup>4</sup> Davis, S.K., R.M. Brigham, T.L. Schaffer, and P.C. James. 2006. Mixed-grass prairie passerines exhibit weak and variable responses to patch size. *Auk* 123: 807–821.



*GNP currently has some of the highest recorded densities of this species, and maintaining these densities is an important role for the park. Variation in grazing intensities will shift optimal habitats but total available CH will likely remain unchanged.*

The offset area is located in the East Block of Grasslands National Park, in the upland grasslands landscape unit defined as undisturbed areas with slopes less than 5% occurring primarily on elevations over 950 m ASL, where grasses and forbs are dominant ground cover with shrubs being low or absent (Westworth & Associates Ltd. 1994). It is also within the geographic extent of pipit critical habitat (see Figure 31). Both the offset and the impact areas have been managed for fire suppression and the exclusion of domestic livestock for most of the last 20 years, resulting in a predominantly late seral stage perennial grass community. The offset area has, however, been recently grazed at 0.38 AUM/ha in 2012, 2013 and 2014 and in 2015 was reduced to 0.19 AUM/ha. No fires have occurred within the paddock since 2006, with the exception of one 12 ha wildfire in 2010. The offset area is immediately available to pipits and will be available long-term (though location will periodically change).

Pipit occurrences are not evenly distributed between the two areas, as most originate from point count plots performed as a part of PCA Ecological Integrity Indicator Monitoring or as a part of a research partnership with the University of Manitoba (large-scale grazing study from 2007-2012). As such, occurrences are limited to areas of monitoring and research, and so a comparison of pipit abundance and/or frequency between the offset area and the area of impact based on existing information is not possible. Those areas considered of greatest value to pipits are upland grassland areas possessing the biophysical attributes required for critical habitat, are large, contiguous, have greater core habitat to edge habitat ratios, are further from anthropogenic disturbances and little to no invasion by exotic species. As shown in Figure 31, the impact area occurs at the periphery of pipit habitat in a relatively discontinuous patch adjacent to croplands to the east. Maintaining 55 ha (3 times the area disturbed or destroyed by the proposed project) of upland grasslands at any given time in core pipit habitat under a light disturbance regime (by resting or grazing at <0.3 AUM/ha and not burning for ≥2 years) will provide greater value to the Sprague's Pipit conservation than that which would be potentially lost as a result of the project.

*Identify the location of the offset, including a map (e.g., ratio of 1:50 000) and geographic coordinates.*

The offset area is in the East Block of Grasslands National Park. The exact location of the offset area will change as grazing and fire disturbance regimes are strategically introduced into different areas of the East Block over time. The area currently being managed for pipits is a 1300 ha paddock, highlighted in yellow in Figure 32. The offset area will be 55 ha located within this pasture until prescriptions change. The Adaptive Grazing Management Strategy aims, in part, to perpetuate variation in grazing over time and space, varying the use of intensive grazing, moderate grazing, light grazing and rest as well as timing and in some cases targeting specific species or age classes of forage. For fire, GNP's estimated fire return cycle is 25 years (draft Fire Management Plan 2008) and has set an active management target to introduce fire on to the landscape at a rate of 400 ha over a 5 year period (CoRe program target). With each prescription of grazing, as well as with each prescribed fire plan, providing a 55 ha area of rested or lightly grazed upland grasslands within pipit critical habitat that has not been burned for ≥2 years will be a priority as an offset to the proposed BSVR project.

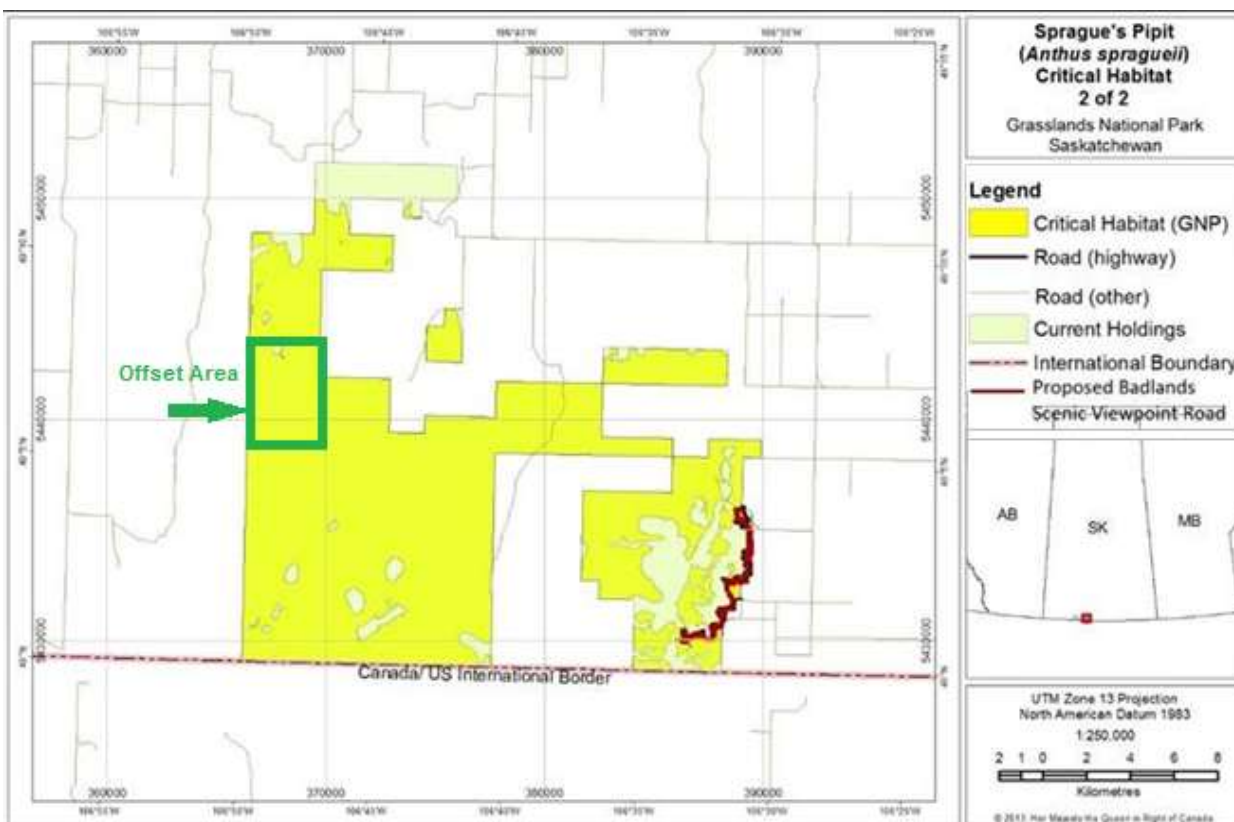


Figure 31: Location and extent of critical habitat for Sprague's Pipit in the East Block of Grasslands National Park as listed in GNP's draft multi-species Action Plan with the proposed Badlands Scenic Viewpoint Drive (BSVD) highlighted in red.

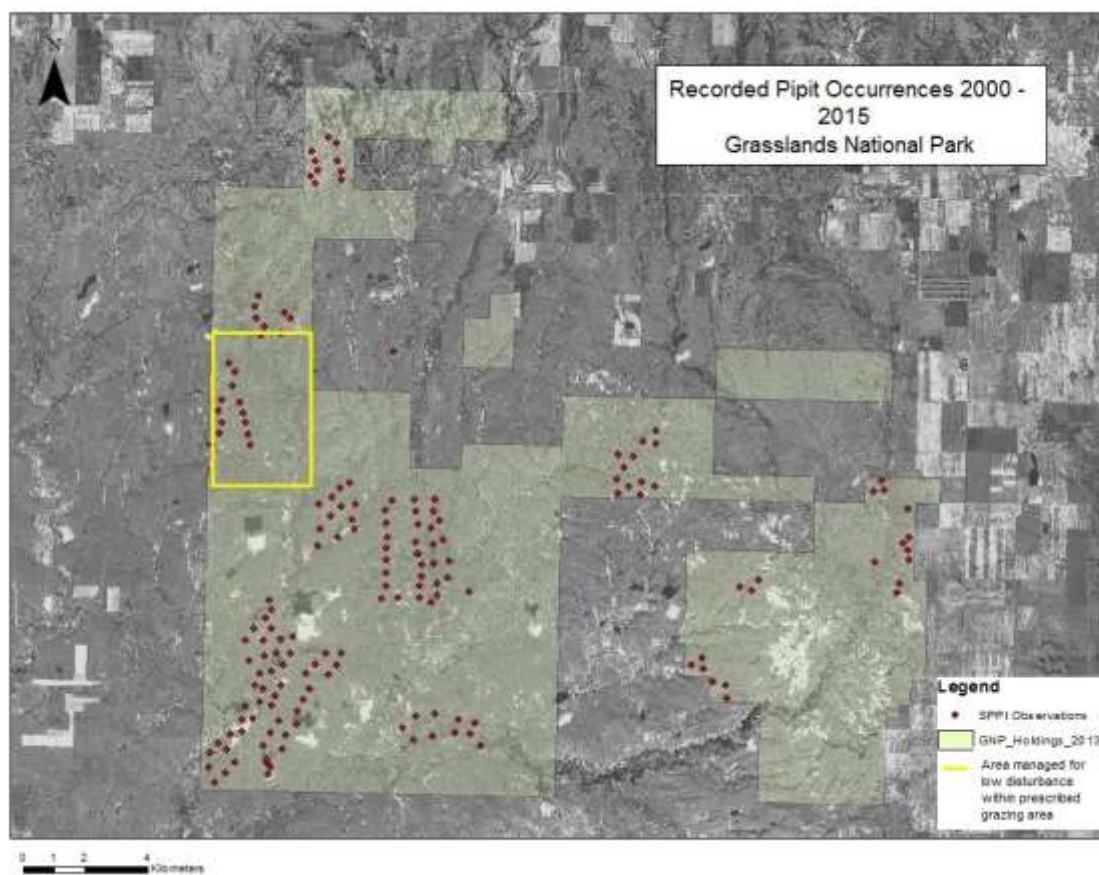


Figure 32: Map of Pipit occurrences in the East Block of Grasslands National Park. Note that occurrences are mostly clustered, following study sites for research and monitoring programs. The yellow border indicates area grazed at a rate of 0.3 AUM or lower to provide habitat for Sprague's pipit.

Explain how the benefits of the offset were determined. Include a description of the extent to which the type of offset has been demonstrated to be effective, particularly in similar circumstances; describe all relevant uncertainties.

Outcomes of the offset will be the improvement and maintenance of pipit habitat condition as the park seeks to increase in the spatial and temporal variation in grazing intensity and representative natural fire cycles. Sprague's pipits are most common in areas with grasses of intermediate height and thickness with moderate litter depths (COSEWIC 2010<sup>5</sup>, Davis et al.1996<sup>6</sup>). The recovery strategy for this species states that "...such areas tend to occur where habitats are lightly to moderately grazed or where vegetation is periodically removed by haying or burning" (Environment Canada 2012<sup>7</sup>), supported by research that suggests pipits are tolerant of light to moderate grazing (Davis et al. 1999). Light grazing

<sup>5</sup> COSEWIC. 2010. COSEWIC assessment and status report on the Sprague's Pipit *Anthus spragueii* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 34 pp.

<sup>6</sup>

<sup>7</sup> Environment Canada. 2012. Amended Recovery Strategy for the Sprague's Pipit (*Anthus spragueii*) in Canada. *Species at Risk Act* Recovery Strategy Series. Environment Canada, Ottawa. vi+ 44 pp.



(0.3 AUM/ha or less) or rest, and 2+ years since the last burn will create and maintain these vegetative characteristics in the offset area. Research in GNP found that cattle stocking rates of "...0.4 AUM/ha was an important ecological threshold in this region, in that habitat structure changed dramatically at this stocking rate" (Slewinski 2011<sup>8</sup>). GNP's multi-species action plan population and distribution goal for pipits is 45 pipits per 100 ha of habitat, and lists prescribed burns and grazing management strategies as a way to maximize optimal habitats for upland grasslands songbirds including pipits and chestnut-collared longspurs. It is expected that pipits will use the offset area for nesting in 2017, and that benefits of a light disturbance regime will be already available.

The Recovery Strategy also states in Actions Already Completed or Underway (Environment Canada 2012, section 1.6) that research is being conducted on the effects of grazing on pipit abundance and nest survival in Grasslands National Park. This offset will contribute additional point count and habitat measurement data to that effort.

### Section 3: Contingency measures

Outcomes of the offset will be the establishment and maintenance of a light disturbance regime with high vegetation structure to improve and maintain pipit habitat, supporting GNP's multi-species action plan target of 45 pipits/100 ha of habitat. Permanent sample plots for songbird point counts and vegetation assessments will provide the feedback required to assess and adapt prescriptions every 2 years. Prescriptions will outline the locations of grazing, stocking rate, duration of grazing, timing of grazing, manipulation methods (i.e. riders, salt, water), and grazing infrastructure. Grazing permits are issued on a 1 year basis with the option of renewing for 1 additional year. If prescriptions consistently fall short of desired outcomes, the offset will be reviewed as a part of the Adaptive Grazing Management Strategy review.

### Section 4: Monitoring and reporting

#### OBJECTIVES AND TARGETS:

The monitoring objective is to use a standardized point count protocol to report on the abundance of Sprague's pipit within the offset area, as part of the park's larger songbird monitoring effort. Point counts are thought to provide an accurate measure of habitat quality because birds are usually more abundant in habitats where reproduction is highest (Bock and Jones 2004)<sup>9</sup>. GNPC's objective for Sprague's Pipit is to maintain pipit numbers above the average reported in suitable conditions within the park in the past 10 years, or 45 Sprague's pipit per 100 ha. Specific thresholds are:

Good: >45 singing males per 100 ha and >30% of GNPC's upland grasslands with low disturbance and high structure (stocking rates of < 0.3 AUMs/ha and unburned for the last 2 years);

Fair: 18-45 singing males per 100 ha or < 30% of GNPC's upland grasslands with low disturbance and high structure;

Poor: <18 singing males per 100 ha and < 30% of GNPC's upland grasslands with low disturbance and high structure.

<sup>8</sup> Sliwinski, M.S. 2011. Changes in grassland songbird abundance and diversity in response to grazing by bison and cattle in the northern mixed-grass prairie. Master's thesis, University of Manitoba.

<sup>9</sup> Bock, C.E. and Z.F. Jones. 2004. Avian habitat evaluation: should counting birds count? *Frontiers in Ecology and the Environment* 2(8): 403-410.



To determine thresholds, point count data from within the park were organized according to plot treatment (i.e. burned, grazed, control, etc). Only available data with known plot treatments were included in the calculations to determine thresholds and >800 point counts from 2000 to 2013 were included. The 'Poor' thresholds were estimated based data from plots with unsuitable conditions for this species. The 'Good' thresholds were estimated based on conditions considered optimal for this species. Every survey year the abundances will be reported based on point counts in suitable habitat.

**MONITORING SITES:** Ten plots within the offset area were randomly selected in groups of 5. The center of each point count plot is at least 250 m apart, to ensure birds are not double counted. Songbird abundance is assessed using five-minute, 100 m radius point count surveys. All birds seen or heard on the plot are recorded, indicating which individuals were singing, calling or only seen with specific symbols. Individuals that fly over the plot but do not land or sing also have a specific symbol. Surveys are not conducted in rain, heavy fog or if wind exceeds 15 km/hr. Point counts begin shortly after sunrise and are completed before 10 am. Point counts occur between May 15 and June 30.

**INDICES:** The following indices will be used:

Index	Location	Measurement Method	Relevancy
Shrub Cover	PSPs	Line Intercept Method	Pipit abundance negatively correlated to shrub cover
Vertical cover	PSPs	Robel Pole	Estimate of vegetation height and density (pipits prefer grass cover 10 cm – 30 cm and moderate densities)
Foliar, litter and bare ground cover	PSPs	Daubenmire	Estimate of foliar cover of herbaceous plants, bare ground and litter cover. Pipits prefer little bare ground, dense litter.
Litter Depth	PSPs	ruler	Estimate of litter depth on ground surface. Pipits prefer moderate litter accumulation.

**TIMELINES:** Monitoring at permanent sample plots in the offset area is to occur every 2 years. For the songbird point count portion, two replicates should be done between May 15 and June 30.