

FINAL REPORT

**SYLVAN LAKE PROPERTY
ENVIRONMENTAL REVIEW**

Submitted to:

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DISTRIBUTION:

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EXECUTIVE SUMMARY

Mr. Frank Wilson currently owns a 59.69 ha (147.5 acres) property located within NE-¼, Section 34, Township 39, Range 2, west of the 5th Meridian. The site is situated near Sylvan Lake, Alberta, and is currently used for agriculture and livestock grazing. In order to develop this parcel, Lacombe County requires an Environmental Review of the property to identify environmental sensitivities and opportunities that could contribute to further stages in development planning. Information for the assessment was derived from a review of available survey plans, maps, provincial databases, and a field investigation in October 2005. Key environmental features and sensitivities are described below.

Proposed Development

The project site is located approximately 1.2 km northwest of Sylvan Lake. The proposed Project consists of a bareland condominium recreation vehicle (R.V.) park and recreational facility on the property. It will provide for 582 seasonal lease lots and 85 weekend rental lots for recreational vehicles. Recreational facilities on the site will include a nine-hole golf course, putting green, laundry, washroom, swimming pool, fitness centre, tennis courts, volleyball courts, horseshoe pits, baseball diamonds, playground areas, picnic areas, convenience store, walking and bicycle paths and trailer/R.V. storage.

Access to the site is via existing public roads. There will be two access points onto the property: one on Rainy Creek Road to the north, and one on Sunbreaker Cove Road to the east. Sewage will be managed onsite through a wastewater holding tank, which will be pumped out and hauled until a regional sewage line reaches the area. Potable water will be provided by water wells currently being developed on the property. Franchise utilities will be provided by Telus, Atco Gas, and TransAlta Utilities.

Environmental Sensitivities

Current land use of the site (agriculture) results in limited natural environmental values on the site. A small treed area (approximately 3.30 ha) of native aspen and poplar is located in the low lying area at the southwest end of the property. The biophysical character of the remainder of the site reflects livestock use (e.g., grazing). With the exception of the small treed portion, no environmentally sensitive features, such as natural wildlife habitat, native vegetation, or wetland were observed.

An Historical Resources Act clearance application is underway in April 2008, the results of which will be reported separately.

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1. INTRODUCTION

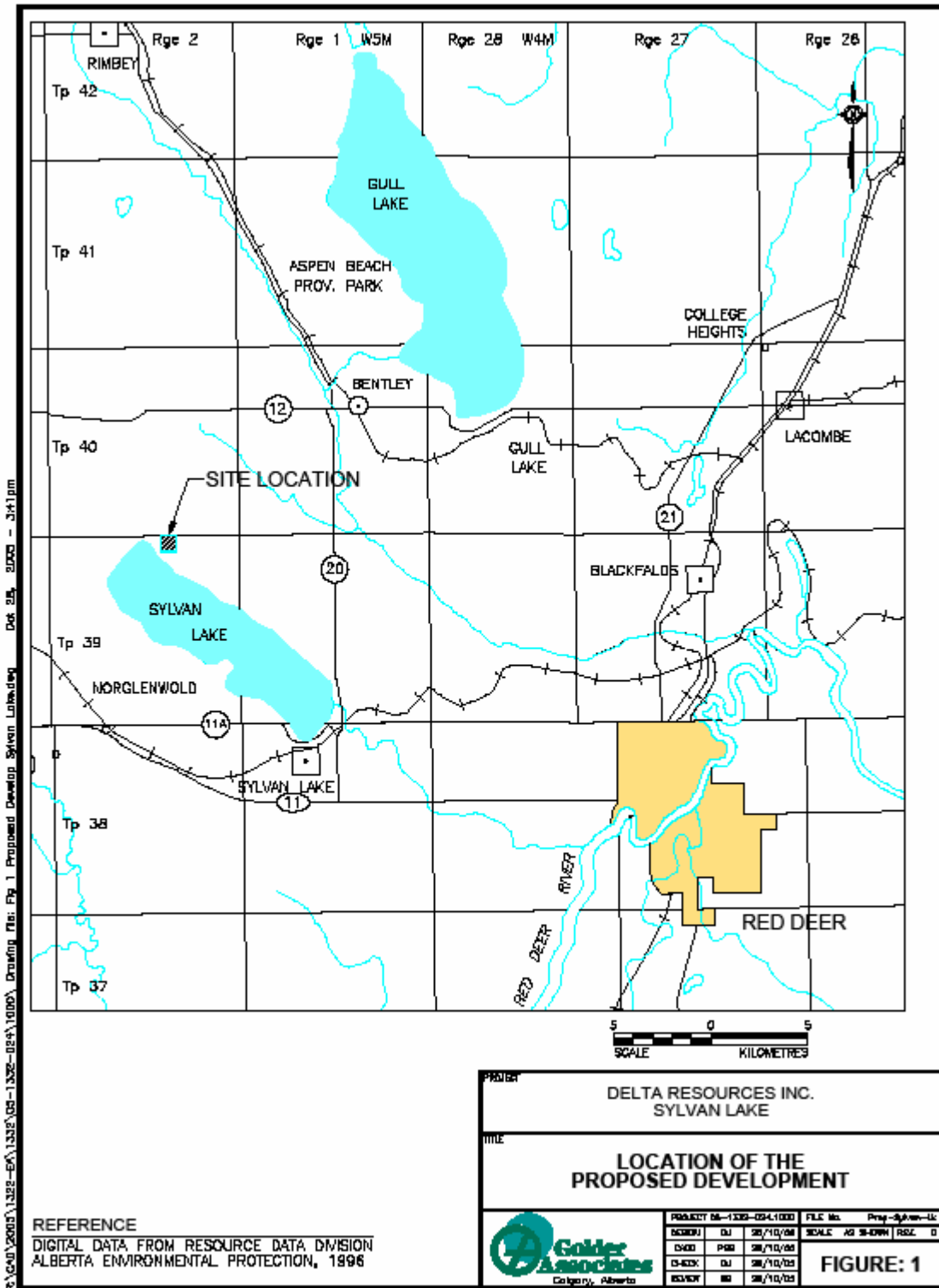
Sylvan Lake is located approximately 15 kilometers (km) west of the city of Red Deer, Alberta (Figure 1). Mr. Frank Wilson owns a 59.69 ha (147.5 acres) property northwest of Sylvan Lake located in NE-¼, Section 34, Township 39, Range 2, west of the 5th Meridian. Mr. Wilson is in the initial stages of developing a proposal for a bareland condominium recreation vehicle (R.V.) park and recreational facility on the property (the Project). This report identifies environmental opportunities and constraints associated with the proposed development site. This information will assist in the planning of the proposed subdivision.

1.1 Land Development Policies

The proposed development site falls within the Land Development Area as identified in the Sylvan Lake Management Plan: Update 2000 (IBI 2000). The policy direction for lands within the Land Development Area requires that all major multi-lot residential development proposals undergo an Environmental Review (IBI 2000). As general policy, no development will be considered for approval unless the following criteria are met:

- The integrity of the natural environment and ecosystems is protected, sustained and if possible, enhanced. Development will not be permitted if it detrimentally affects an Environmentally Sensitive Area.
- The land is not subject to flooding, subsidence, erosion, or other physical condition which could cause property damage or damage to the environment if developed upon.
- There is sufficient groundwater supply available on-site to meet the needs of the proposed development, and not interfere with any existing surrounding groundwater users.
- Soil conditions are suitable for the proper operation of a private sewage disposal system so that sewage or effluent does not present a risk to public health or the environment where the development is not intended to be serviced by a communal sewer system.

Figure 1 Location of Proposed Development Site



Surface water run-off will be managed and controlled so as not to adversely affect properties within or outside the development area.

- The municipal road system is capable of safely accommodating the traffic generated by the development, or will be made to do so through required improvements to the road system.
- Reasonable public access is available to the lake for residents of the development as determined by the local municipality.
- The development is designed to protect significant stands of trees, drainage courses, wetlands, wildlife corridors or other natural features through the dedication of reserves, the use of conservation or environmental reserve easements or other means acceptable to the local municipality.

Land development policies for the Land Development Area surrounding Sylvan Lake address, but are not limited to, the following planning issues:

- flooding, erosion and subsidence control;
- ground water supply;
- water and sewage disposal systems;
- municipal road system capacity; and
- residential and public shoreline access.

The proponent will address these issues with appropriate studies as part of future planning for the project.

Environmentally Sensitive Areas (ESA) of the Sylvan Lake area are identified by the Sylvan Lake Management Plan: Update 2000 (IBI 2000). General policy direction for ESA includes:

- development on or adjacent to ESA lands shall be restricted to uses which are compatible with the environmental conditions; and
- major multi-lot and other significant developments proposed will be subject to an environmental review.

1.2 Purpose

The purpose of this study was to prepare an Environmental Review that describes the opportunities and constraints related to the environmental sensitivity of land proposed for development, as well as the surrounding area. Specifically, the environmental sensitivity of the land is described in terms of terrain features, vegetation communities, wildlife and wildlife habitat. Sensitivities of the land that relate to cultural and historical resources are also described in the Review. The nature and significance of impacts that could be associated with the development of the land as proposed are discussed. Information provided in the review is intended to provide information to assist in the design process for the proposed project.

1.3 Project Description

The following section describes the proposed Project, based on information provided by the Proponent, a review of geographical maps and site plans, and observations made during a site visit in October 2005. Photographs of the site taken during the site visit are presented in Appendix I.

The Project site is located 1.2 km northwest of Sylvan Lake within the Lacombe County. The Project occupies 59.69 ha (147.5 acres) in NE-¼, Section 34, Township 39, Range 2, west of the 5th Meridian (Figure 1). The Project site is approximately 400 m north of an existing subdivision. The Project site is bordered by the following:

- to the north by Rainy Creek road;
- to the east by an access road;
- to the south by forested land and a residence (Photo 5); and
- to the west by pastures and agriculture land.

The proposed Project consists of 582 seasonal lease lots and 85 weekend rental lots for recreational vehicles. Recreational facilities on the site will include a nine-hole golf course, putting green, laundry, washroom, swimming pool, fitness centre, tennis courts, volleyball courts, horseshoe pits, baseball diamonds, playground areas, picnic areas, convenience store, walking and bicycle paths and trailer/R.V. storage. Figure 2 presents the conceptual plan for the Project.

Access to the site is via existing public roads. There will be two access points onto the property: one on Rainy Creek Road to the north, and one on Sunbreaker Cove Road to the east. Sewage will be managed onsite through a wastewater holding tank, which will be pumped out and hauled until a regional sewage line reaches the area. Potable water will be provided by water wells currently being developed on the property. Franchise utilities will be provided by Telus, Atco Gas, and TransAlta Utilities.

2. ENVIRONMENTAL REVIEW METHODS

The Environmental Review was completed with information compiled from a literature review and field survey conducted on October 18, 2005 by Golder Associates Limited (Golder). This information was used to provide a general assessment of the proposed development site, and describe terrain features, hydrology, vegetation communities, wildlife activity and wildlife habitat potential.

Prior to conducting the field investigation, searches of both the Alberta Natural Heritage Information Centre (ANHIC) database and the Biodiversity Species Observation Database (BSOD) were completed. The information from these databases is provided by the Alberta government, and provides historical records and locations of listed plants and wildlife in Alberta. The BSOD searches were performed for a 10 km radius. Site file searches were also conducted for the Heritage Resource Overview (HRO) at the Provincial Museum of Alberta to evaluate previously recorded historical resources within the Project area.

A field investigation was conducted on October 18, 2005. Weather conditions were clear and sunny, 17°C with a light wind, which was considered suitable for the investigation. Two ecologists observed and documented the current land use and biophysical conditions of the site. The development site was viewed and a general overview of soil, vegetation and specific studies of surface run-off potential were noted during this field visit.

2.1 Environmental Description

Geology and Landforms

The development area is found in the Dry Mixedwood Natural Subregion and is characterized by low relief and level to undulating terrain. Surficial materials are mostly till as ground moraine and hummocky moraine landforms with some areas of aeolian dunes and sandy outwash plain. The Subregion includes two main areas: the southern edge of the Boreal Forest Natural Region from Cold Lake west to about Barrhead and south along the western edge of the Central Parkland Subregion to about Gull Lake and a broad band from Lesser Slave Lake to Grande Prairie then

north along the Peace River to Fort Vermilion. The Cooking Lake moraine east of Edmonton is a disjunct portion of this Subregion.

Drainage in the Subregion is to both the Saskatchewan and Mackenzie River systems via numerous rivers and small streams.

Sylvan Lake lies within the western extent of the Alberta Plain or Third Prairie Steppe physiographic region (Bostock 1970). A sequence of continental glacial events during the Pleistocene, and subsequent postglacial processes, have influenced local topographic patterns through surficial modifications to the preglacial bedrock terrain. The area around Sylvan Lake is mantled by a low relief glacial till veneer, generally less than 50 m deep. Occasional bedrock outcrops are limited to isolated locations along the Sylvan Lake shoreline.

The topography at the site is gently rolling (up to 5%) (Photo 6). A low lying area (swale) is situated in the south section of the site, running south between the boundaries then southwest through the property boundary, which also slopes very gently (2 to 5 %).

Hydrology

Drainage into the Sylvan Lake basin occurs via a series of seasonal and permanent creeks and through groundwater discharge. Regional drainage patterns are from northwest to southeast, leading to the Red Deer River. Water from the Sylvan Lake basin has no major outlet, although some flow occurs via a creek southeast to Cygnet Lake.

No wetlands, streams, or other surface water bodies were observed at the Project site.

Soils

Soils within the Sylvan Lake area are typical of the Aspen Parkland Ecoregion of Alberta. Black Chernozem and Eutric Brunisol profiles predominate on well-drained upland sites while a mosaic of Humic Gleysols and Regosols occupy lowland or transitional sites adjacent to the Sylvan Lake shoreline. Weakly developed Dark Grey Luvisols and dark Grey Chernozems reflect moist upland conditions and are more typical of the Boreal Forest Natural Subregion.

Vegetation

Sylvan Lake falls within several different vegetation regions: the Central Parkland subregion of the Parkland Natural subregion and the Dry Mixedwood Natural Subregion of the Boreal Forest Natural Region (AEP 1994). Vegetation in the Central Parkland Natural Subregion is characterized by aspen forests interspersed with fescue grassland. Other characteristic species include rough and Idaho fescue, June grass, spear grass, sticky geranium, northern bedstraw, saskatoon, wild rose, buckbrush and silverberry. Vegetation of the Dry Mixedwood Natural Subregion is characterized by aspen and balsam poplar in less well-drained locations. Other characteristic species include reed grass, wild rye, peavine, vetch, dogwood, saskatoon and willow.

Much of the project site has been cleared for agricultural operations and livestock, and supports a variety of grasses, as well as cattle production (Photo 1). Vegetation on the site has been impacted by tracked vehicles and foot traffic, presumably related to livestock husbandry. There is a small treed portion of native aspen and poplar located by the southwest corner in the low lying area (swale) at the southwest end of the Project site.

No listed vegetation species were found in the ANHIC (2005) search or observed during the field investigation.

Wildlife

The agricultural landscapes interspersed with native vegetation in the region provides habitat for a variety of wildlife species. Upland and lowland vegetation communities provide feeding and nesting habitat for a diversity of songbirds, in particular in areas of transition between forest and willow shrub communities (EMA 1990). Uplands also provide habitat for woodpeckers, owls and raptors. Deer and moose frequent lowlands, drainage areas, upland depressions and upland forests. Patches of native upland vegetation provide both habitat and travel routes for wildlife. Other wildlife species, such as red fox, coyote, porcupine and small mammals such as snowshoe hare frequent upland habitat within the Sylvan Lake region.

Waterfowl and shorebird habitat at Sylvan Lake area is limited due to lake size and depth and a lack of emergent vegetation (EMA 1990). Other wildlife, such as muskrats and certain species of amphibians may frequent wetland habitats.

No listed wildlife species were found in the ANHIC and BSOD searched or observed within a 1 km radius of the Project site.

Although no tracks were found in the Project site, the vegetation suggests that the area could support some the species listed above. There is a small treed portion of approximately 3.30 ha (8.05 acres) of native aspen and poplar in a low lying area (swale) at the southwest end of the property (Photo 2). The biophysical character of the remainder of the site reflects extensive agricultural use (e.g., pasture and livestock production).

Fisheries

Sylvan Lake is 42.8 km² in size and supports a sport fishery but no commercial or domestic fisheries. The main sport fish species in the lake are northern pike, yellow perch and walleye. Burbot are also present in the lake. Both yellow perch and walleye were introduced and are considered self-sustaining populations. In the late 1980s, lake whitefish were also stocked in the lake (Mitchell and Prepas 1990). The main forage fish species are brook, stickleback and fathead minnows.

Environmentally Sensitive Areas

Sylvan Lake is identified as a “regionally significant area”, due to important fish spawning areas, diverse breeding bird habitats, regionally uncommon plants and important ungulate habitat (Sweetgrass Consultants 1988). A regionally significant area is a feature that is of limited distribution or is the best examples of a feature within the County of Lacombe.

The Sylvan Lake Management Plan: Update 2000 (IBI 2000) identifies Environmentally Sensitive Areas in the Sylvan Lake Region based on a review of existing published data sources. Environmentally Sensitive Areas include zones of key fisheries, ungulate and waterfowl habitat. No additional field research was completed during the course of preparing the Plan. As a result,

the Environmentally Sensitive Area designation may be adjusted following more site-specific environmental assessment. A small portion within the southwest boundary of the proposed development site falls within a zone of Key Ungulate Habitat, as identified by the Sylvan Lake Management Plan: Update 2000 (IBI 2000). This zone is identified as habitat for white tailed deer and moose.

The Sylvan Lake Natural Area is a provincially designated site that falls within a zone of key ungulate habitat. This parcel of public land has been set aside to represent the biological diversity of this region. It is located in Sections 28 and 33 of Township 39 Range 2 W5M, approximately 2.0 km on the west side of the lake across from the proposed development. Two provincial parks, Jarvis Bay Provincial Park and Sylvan Lake Provincial Park, are located along the shoreline at the south end of Sylvan Lake. These sites are at least 5 km from the proposed development. Sun Haven Provincial Recreation Area is located in Sections 26 and 27 of Township 39 Range 2 W5M, approximately 2.0 km from the proposed development.

Land Use

The site is currently accessed from Rainy Creek Road, west of Highway 20. The site consists primarily of cultivated land and is used for livestock production (Photo 3). There are a number of existing buildings on the northeast corner of section 34 including a house, garage and shed (Photo 4). Land use on properties adjacent to the development site includes forested land south of the site (Photo 5), access road to Sylvan Lake on the eastern boundary, Rainy Creek Road on the northern boundary and agriculture activities west of the site. Over all, the land use to the north, east and west of the development site consists primarily of agricultural activities, while the land use to the south is made up by residential area.

Cultural and Historical Resources

The proposed development site is situated 500 m from the shores of Sylvan Lake in the Alberta Parklands, a region that possesses a rich and varied prehistoric and historic record. Regional site distributions indicate that such lakeside locations have high potential for the occurrence of archaeological sites. Game animals would have been attracted to the lakeshore for water and forage and prehistoric hunters would have taken advantage of this situation throughout the

10,000 years of human occupation in the region. Since the late 19th century, the shores of Sylvan Lake have been attractive for agricultural settlement by Euro-Canadians of diverse background. More recently the focus of settlement has been for recreational pursuits. These historic period activities likely provide the most visible aspects of the regional historic record.

The Isaac Lampi Homestead located at the nearby Boy Scouts Camp (Camp Woods), is situated in the vicinity of the proposed development, but is well outside of the impact zone. The homestead consists of a log and fieldstone structure originally built in 1900, by an early Lutheran minister, and is considered of local historic significance.

Based on the site file search and the fact that much of the proposed development area is cultivated, it is unlikely that intact historical resource sites and/or historic structures, similar to the Isaac Lampi homestead are present within the development area.

A review of the Alberta Culture and Community Spirit (ACCS) Listing of Historic Resources for March 2008, revealed that LSD 10 Section 34, Township 39, Range 2 west of the 5th meridian has a historical resource value of 5a. This indicates the potential for historical resources to be located in this LSD. Accordingly, a *Historical Resources Act* clearance will be required prior to any ground disturbance activities. An application and a report for the *Historical Resources Act* clearance are being completed in April 2008.

3. POTENTIAL ENVIRONMENTAL IMPACTS AND MITIGATION

The emphasis of this Environmental Review was on describing the environmental sensitivity of the lands proposed for development and the surrounding area, and discussing the nature of the potential impacts associated with the proposed development. Impacts and mitigations related to the development of the proposed R.V. park and recreational area are presented below based on the stage of the project, from design, to the construction phase and finally, the long-term management of the development project.

The main potential environmental impacts arising from development of the site are as follows:

- potential effects to surface water from erosion and site runoff; and

- loss of approximately 3.30 ha (8.15 acres) of native aspen and poplar and associated wildlife habitat.

The following mitigation is recommended and incorporates planning and development guidelines from the Sylvan Lake Management Plan: Update 2000 (IBI 2000) and the Environmental Reference Manual for the Review of Subdivisions in Alberta (Alberta Environment 1996). The following criteria should be implemented within the development phase of design:

- A Master Drainage Plan should be developed to outline best management practices for storm water management.
- An Erosion Control Plan should be developed to outline best management practices for minimizing erosion from the site during construction. This should include the use of erosion control structures, topsoil stripping and storage, and measures taken during construction with high wind or wet conditions.
- A Landscape Plan should be completed for the development and should encourage the use of native species in the landscaping.
- Consider design opportunities to preserve the treed area on the property for the native aspen and poplar.
- Consider options for capturing and using stormwater for irrigation.
- All outdoor lighting should be designed to limit upward lighting and limit any off-site light pollution.

4. DEVELOPMENT DESIGN

The proposed development site is considered to have historical resource value, meaning that there is potential to identify historical resource sites that will yield significant information adding to the regional history. The results of the Historical Resources Act clearance application will determine any mitigations or avoidances of historical resources that will be required.

The Environmental Review produced information on local environmentally sensitive areas at the proposed development site. A small wooded area in the southwestern portion of the site possesses higher habitat values than other portions of the site and would be the optimum location on the site for an environmental reserve.

4.1 Construction Procedures and Long Term Operations

A summary of potential impacts of development construction and long term development activity, and associated mitigation measures is presented in Table 1.

Table 1 Potential Impacts and Mitigations Related to Construction and Operation

Potential Impact	Mitigation and Potential Residual Impact
Landform and Soils	
Erosion and Surface Run-off	An Erosion Control Plan should be developed to outline best management practices for minimizing erosion from the site during construction. This should include the use of erosion control structures, topsoil stripping and storage, and measures taken during construction with high wind or wet conditions. All building and landscaping should be completed as quickly as possible to minimize the time that sites are not vegetated or otherwise protected from erosion.
Loss or Compaction of Soil	Topsoil should be salvaged and used for reclamation.
Vegetation	
Noxious Weed Invasion	Noxious weeds should be controlled through the use of horticultural practices. During the construction period, the site should be periodically monitored and weed control measures implemented as required.
Wildlife	
Terrestrial habitat	Retention of the wooded area in the southwest corner, and protection from damage during construction activities would retain some limited opportunity for wildlife habitat.
Wildlife-human conflicts	Domestic waste should be contained in animal proof containers to prevent wildlife (e.g., birds, coyote) from becoming nuisance scavengers.
Hydrology	
Water Quality	Capture and treatment (e.g., settling ponds) of site run-off, particularly during construction, is required prior to release of water off-site. Collection of domestic wastewater and removal to a wastewater treatment plant will protect water quality.
Historical and Cultural Impacts	
Historical and Cultural Resources	A Historical Resources Act clearance application is being conducted in April 2008, including a field assessment of potential historical resources. Avoidance or mitigation may result from the clearance application. Construction must adhere to any guidelines set out in the document and the Historical Resources Management Branch of ACCS must be contacted if any historical resources are encountered.

5. CONCLUSIONS

The area proposed for the R.V. park and recreation area is primarily occupied by agricultural activities and retains a limited amount of natural wooded area in the southwest corner of the property. The proposed development would occupy the entire site. To protect water quality, an erosion control plan, a surface water management plan, and collection and off-site treatment of domestic wastewater will be required. The protection of historic resources which may be situated on the property will be addressed by obtaining a *Historical Resources Act* clearance.

6. CLOSURE

We trust the above meets your present requirements. If you have any questions or require additional details, please contact the undersigned.

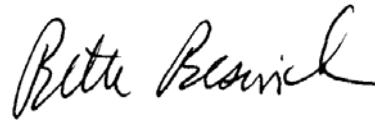
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APPENDIX I
PHOTOGRAPHS



Photo 1 Overview of the Development Site; agriculture and livestock production.



Photo 2 Forested area consisting of trembling aspen and poplar, located on the Southern boundary.



Photo 3 Site consists of cultivated land and is used for livestock production.



Photo 4 A number of buildings on the Northeast corner of Section 34, including a house, garage, and shed.



Photo 5 Forested land consisting of trembling aspen and poplar, on the Southern boundary.



Photo 6 Local terrain features of the Development Site consist primarily of gently rolling slopes.